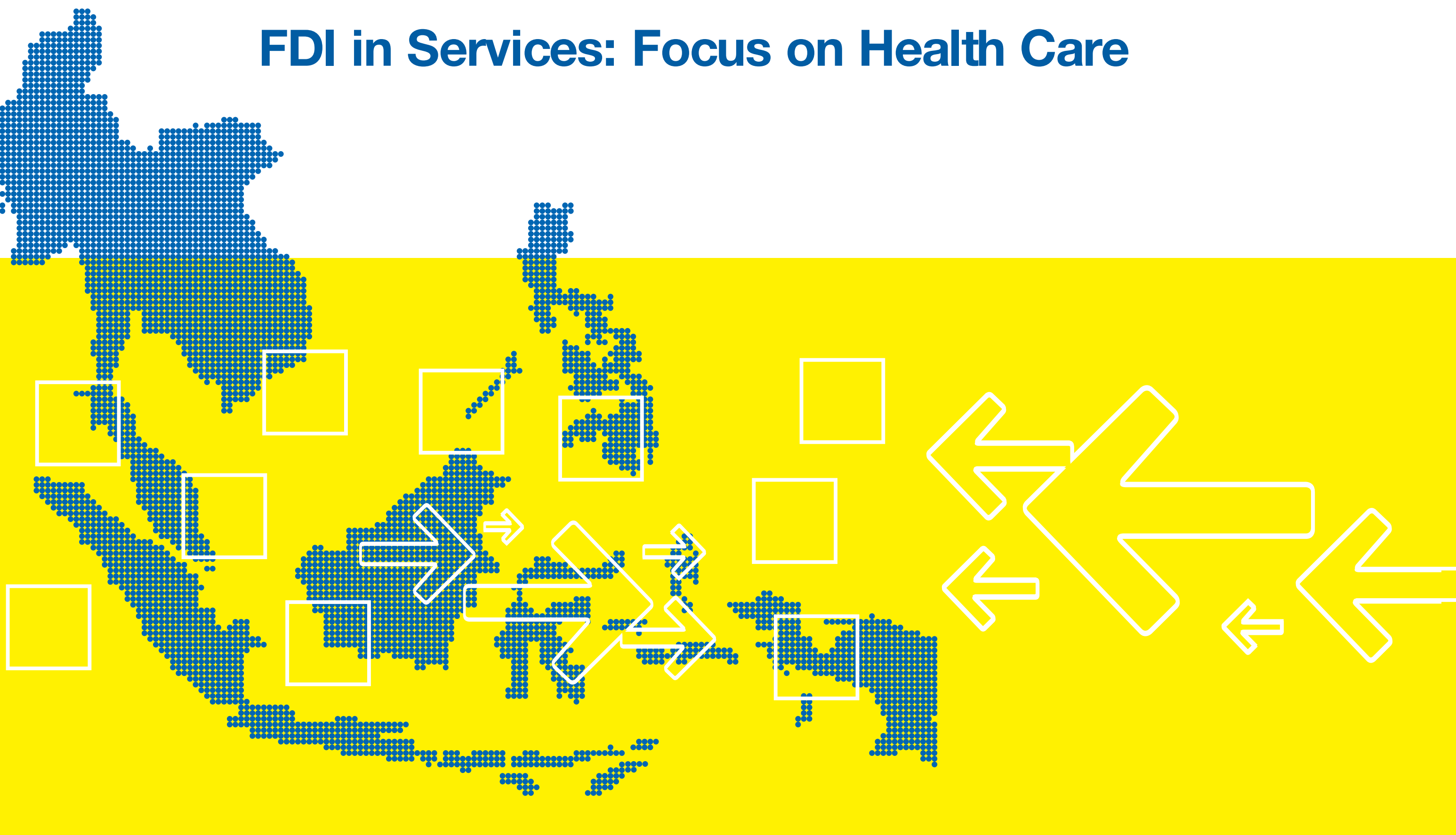
ASEAN Investment Report 2019

FDI in Services: Focus on Health Care



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ASEAN Investment Report 2019

FDI in Services: Focus on Health Care

The ASEAN Secretariat

United Nations Conference on
Trade and Development

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The Member States of the Association are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

The ASEAN Secretariat is based in Jakarta, Indonesia.

For inquiries, contact:
The ASEAN Secretariat
Community Relations Division (CRD)
70A Jalan Sisingamangaraja
Jakarta 12110
Indonesia
Phone : (62 21) 724-3372, 726-2991
Fax : (62 21) 739-8234, 724-3504
E-mail : public@asean.org

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The map in this publication is only indicative and is not drawn to scale.

FOREWORD

Foreign Direct Investment (FDI) inflows into ASEAN increased for the third consecutive year in 2018, reaching an all-time high level of US$ 155 billion. The region's share of global FDI inflows also rose to 11.5 per cent in 2018. This trend is expected to continue, taking into account the dynamic industrial developments and improvement of investment and business environment in the region.

Services sector is the largest recipient of FDI in ASEAN. The share of services sector in total FDI grew from 50 per cent in 1999–2003 to 66 per cent in 2014–2018, in line with global average. A significant part of FDI in services flows into financial services, wholesale and retail, and real estate activities.

This year's *ASEAN Investment Report* features the FDI in the services sector, with a special focus on health care. The *Report* looks into foreign investments and the Multi-National Enterprises (MNEs) in the healthcare industry in ASEAN, as well as the investment environment they thrive in. ASEAN is doing much to strengthen regional health care provision. Work on improving market opening and investment regime in health care is progressing, along with the implementation of other related sectoral agreements and strategic action plans.

It is worth noting that the demand for health care services in ASEAN and the corresponding need for investment in this sector are expected to increase rapidly in the coming years. This demand is driven by population growth, changing demographics, universal health care programmes and rise in the incidence of non-communicable diseases. Therefore, policies to support the development of private health care are necessary to complement public health care spending in order to keep up with the demand.

The *Report* provides recommendations in moving forward to develop a competitive health care environment in the region. We hope that policy makers and stakeholders in the industry will find the *Report* useful.

Dato Lim Jock Hoi
Secretary-General of ASEAN

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It was overseen by Aladdin Rillo, Deputy Secretary-General of ASEAN for ASEAN Economic Community, ASEAN Secretariat, and James Zhan, Director, DIAE, UNCTAD, with technical supervision from Richard Bolwijn, Head, Investment Trends and Issues Branch, DIAE, UNCTAD.

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Any correspondences or queries on the content of the AIR 2019 should be addressed to:

Services and Investment Division
Market Integration Directorate
ASEAN Economic Community Department
ASEAN Secretariat
70A Jl. Sisingamangaraja
Jakarta 12110, Indonesia
Email: investment@asean.org

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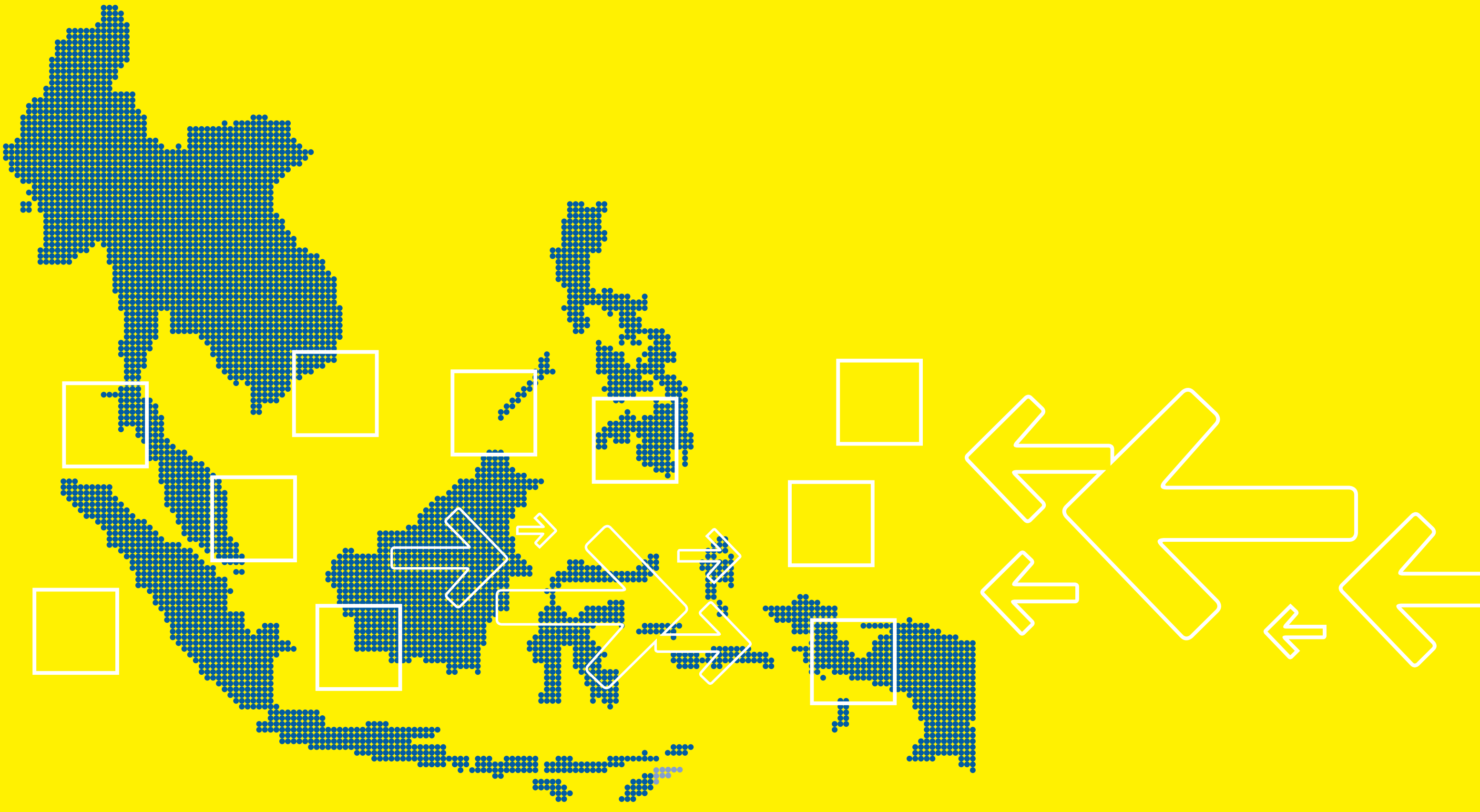
ABBREVIATIONS

4IR	Fourth Industrial Revolution
ACCSQ	ASEAN Consultative Committee for Standards and Quality
ACIA	ASEAN Comprehensive Investment Agreement
ACTD	ASEAN Common Technical Dossier
ACTR	ASEAN Common Technical Requirements
AEC	ASEAN Economic Community
AFAS	ASEAN Framework Agreement on Services
AIR	ASEAN Investment Report
AMDD	ASEAN medical device directive
ATIGA	ASEAN Trade in Goods Agreement
ATISA	ASEAN Trade in Services Agreement
AUM	asset under management
BPO	business process outsourcing
CAGR	compound annual growth rate
CLMV	Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam
EMR	electronic medical record
EPC	engineering, procurement and construction
FDI	foreign direct investment
GMP	Good Manufacturing Practice
IoT	Internet of Things
IT-BPO	information technology and business process outsourcing
JCI	Joint Commission International
M&A	merger and acquisition
MNE	multinational enterprise
MRA	Mutual Recognition Arrangement
OFDI	outward foreign direct investment
PE	private equity
PPP	public-private partnership
SEZ	special economic zone
SME	small and medium-sized enterprise
UHC	universal health coverage
VC	venture capital
WIR	World Investment Report

OVERVIEW

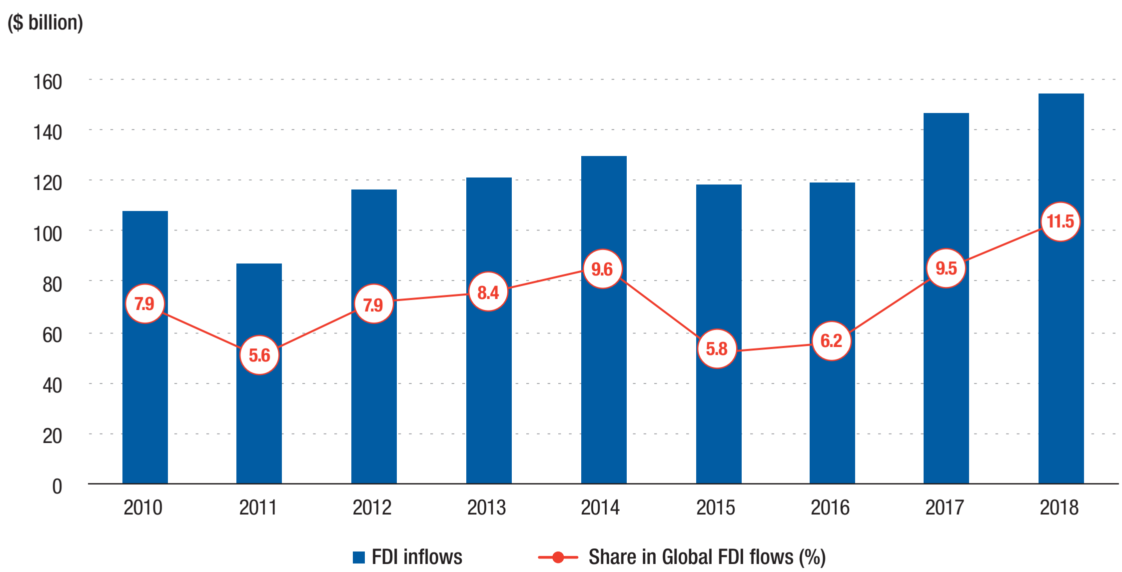


OVERVIEW

FDI AND CORPORATE INVESTMENT TRENDS

ASEAN attracted an all-time high inflow of FDI in 2018, the third consecutive year of rising investment (figure 1). FDI rose from $147 billion in 2017 to $155 billion, with four Member States reaching new records (Cambodia, Indonesia, Singapore and Viet Nam). The region's share of global FDI inflows rose from 9.6 per cent in 2017 to 11.5 per cent last year.

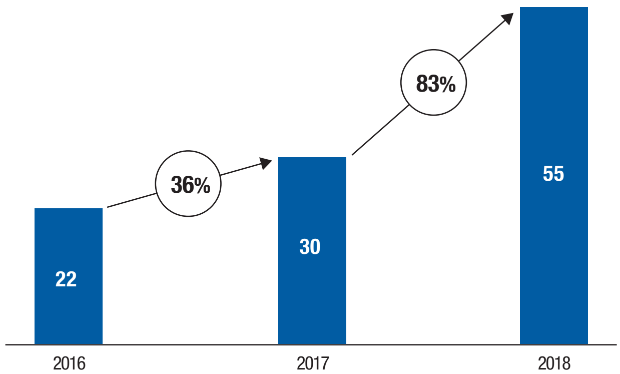
Figure 1. FDI flows in ASEAN, 2010–2018 (Billions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

The continued dynamism was driven by a jump in manufacturing FDI, with an increase from $30 billion in 2017 to $55 billion (figure 2), and a rise in inflows to financial services (from $39 billion in 2017 to $42 billion). Most of the increase was due to rising inflows from the European Union, Japan, Hong Kong (China), India and the Republic of Korea. The expansion was accompanied by a further increase in cross-border mergers and acquisitions (M&As) after the jump in 2017.

Figure 2. ASEAN: FDI flows in manufacturing, 2016–2018 (Billions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

The rise in manufacturing FDI was widespread across ASEAN Member States. The majority went to Singapore, Indonesia, Viet Nam and Thailand. The growth was part of the gradual shift of production capacity from China and elsewhere to ASEAN, caused by structural factors (the increase in relative labour costs in China) and accelerated by the United States–China trade tensions.

Despite a 3 per cent drop, intra-ASEAN investment ($25 billion in 2018) was still the largest source of FDI, accounting for 16 per cent of inflows. However, this includes some investment originating outside ASEAN that was channelled through Singapore. Singapore remained the largest regional investor and Indonesia the largest recipient of such investment.

Combined FDI flows to the CLMV countries rose by 4 per cent in 2018, to a record level of $23 billion, representing 15 per cent of flows into ASEAN. Companies from ASEAN, China and other Asian economies are shifting production to the CLMV countries for cost reasons.

FDI from the United States plummeted to just $8 billion in 2018, from $25 billion in 2017. This was in line with the global fall in United States investment due to the 2017 tax reforms. The FDI fall in ASEAN was concentrated in Singapore, where United States investment fell from $28 billion in 2017 to just $4 billion in 2018. However, United States FDI in manufacturing activities in ASEAN reversed from -$1.2 billion in 2017 to $12.4 billion, with significant increases in Indonesia and Thailand.

Governments in ASEAN are encouraging the adoption of fourth industrial revolution technologies (e.g. industrial robots, artificial intelligence, data analytics, additive manufacturing technologies) in industry, and promoting investment by start-ups and producers of relevant technologies.

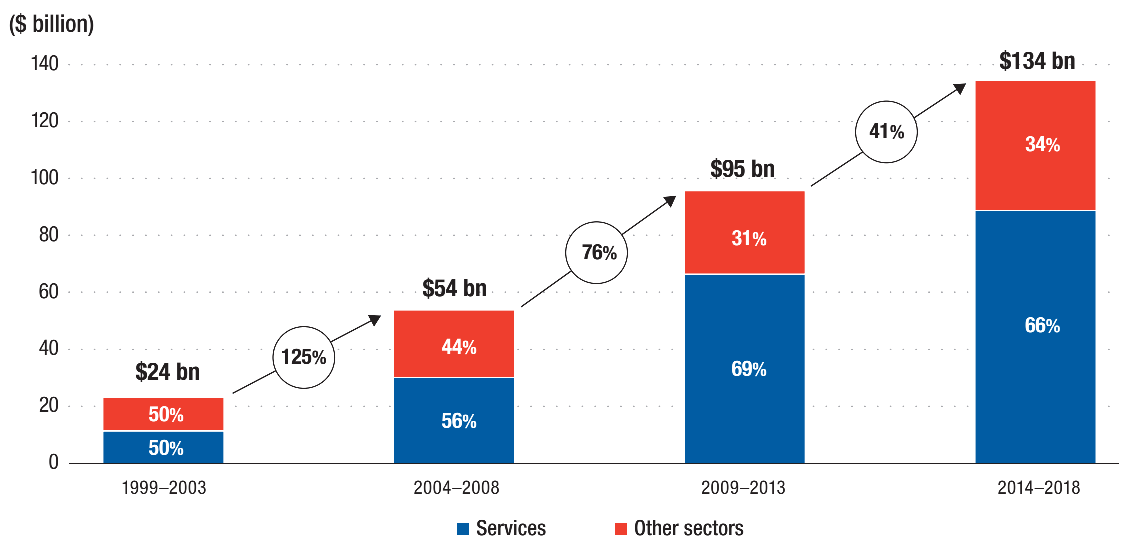
Private equity and venture capital firms are playing a significant role supporting FDI in ASEAN. The private equity and venture capital markets in the region are growing. Combined assets under management rose by 8.6 per cent, from $26 billion in 2017 to $28 billion in 2018. These funds support the growth of start-ups in the region, building future ASEAN MNEs. Governments across ASEAN have introduced initiatives to support the growth of start-ups and to foster investment, including by providing public-private co-investment opportunities and tax incentives.

FDI into ASEAN is expected to continue its upward trend, driven by progress in regional integration, dynamic industrial development with new growth opportunities from production links with and shifts in production from China, and the improving regional investment environment. MNEs from many countries (e.g. Australia, Japan and the United States, as well as some from the European Union,) have indicated plans to invest in or expand their operations in ASEAN in the next few years.

FDI IN SERVICES

The services sector is the largest recipient of FDI in ASEAN. The share of services in total FDI in the region grew from 50 per cent in 1999–2003 to 66 per cent in 2014–2018, in line with the global average, but much higher than the share of services in regional GDP (50 per cent). Such FDI rose from an annual average of $12 billion in 1999-2003 to $88 billion in 2014–2018 (figure 3) due to increasing investment in financial services, wholesale and retail, and real estate. These industries accounted for 78 per cent of FDI in services in 2012–2018.

Figure 3. ASEAN: Rising FDI in services, annual average, 1999–2003, 2004–2008, 2009–2013 and 2014–2018 (Billions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

More than 70 per cent of FDI in services goes to Singapore. This includes investment in holding companies, back-office activities, regional headquarters activities and distribution functions, which may support industrial activities throughout ASEAN but are classified as services FDI. The implication is that most FDI in other ASEAN Member States is in manufacturing.

Services activities accounted for nearly three-quarters of M&As in ASEAN in 2014–2018. Cross-border M&As in services rose to a total of $43 billion in 2014–2018, from just $16 billion in 2009–2013. The growth in recent years is due in part to the relatively late opening-up of some services industries, given the strategic or sensitive nature of the services sector.

A significant part of FDI in services flows into segments that are connected to the development of the digital economy (*AIR 2018*), including financial services (e.g. for fintech, payment systems, e-readiness), wholesale and retail, and logistics (relevant for e-commerce).

Financial services

Financial services have traditionally been the largest recipient of FDI in the region, *accounting for an average 29 per cent of FDI flows.* The annual average FDI in the industry more than tripled between 2001–2007 and 2012–2018, from $11 billion to $36 billion.

The top 50 banks of the world are all present in ASEAN. More than half have subsidiaries in at least four Member States, with nearly all having a presence in Singapore. ASEAN banks, although not yet in the top 50, are also expanding regionally. There is still significant potential to attract investment for the development of the financial sector with several markets underserved. Promoting investments in fintech has the potential to speed up development. Fintech firms' development and regional expansion benefits from venture capital backing – both foreign and from within ASEAN.

Wholesale and retail

FDI flows to the wholesale and retail industry in ASEAN accounted for 16 per cent of total FDI inflows (or 24 per cent of services FDI) in 2012–2018. Investment into this industry amounted to an annual average of $29 billion in the last five years. Divestments, sales of foreign assets to local retailers, have been a key feature.

About 70 per cent of FDI flows in this industry went to Singapore. Indonesia, the second largest recipient, accounted for an 18 per cent share. A majority of the FDI in this industry in Singapore is in wholesale trade, as MNEs and Singapore-based wholesalers operate regional logistics hub and coordinate purchases from there.

Retail is an intensely competitive industry in which major foreign MNEs have entered (and some exited) the ASEAN market. The majority of cross-border M&As are in this industry. The retail industry accounts for the largest source of employment in ASEAN, accounting for 16 per cent of the region's employment.

Intra-ASEAN investment has risen steadily in this industry since 2012 as ASEAN retailers have expanded in the region. In 2013, intra-ASEAN investment in retail was just $500 million. It rose to $1.4 billion in 2014 and reached $4.3 billion in 2018, surpassing all other major investment sources – making intra-ASEAN investors the largest source of FDI in this industry. Asian retailers from Japan, the Republic of Korea and ASEAN Member States have been actively expanding and opening more stores across the region. Many global retailers, such as Aeon (Japan), Alibaba (China), Amazon (United States), Carrefour (France), Lawson (Japan), Seven & I Holdings (Japan), Tesco (United Kingdom), Walmart (United States) are present in ASEAN, and they continue to expand regionally.

New start-ups have also emerged in the retail industry, using technology to venture into the e-commerce space, contributing to the increase in retail activities. The 50 most-funded e-commerce start-ups in ASEAN had raised $12.6 billion as of July 2019, with most of the funding raised in the last two years. Many have raised venture capital to scale up operations and invest in other ASEAN Member States.

Logistics

FDI in the logistics sector appears small. The annual average value of FDI in logistics is less than $1.3 billion, or 1 per cent of total FDI flows in ASEAN in 2012–2018. However, FDI has the potential to significantly increase the efficiency of the industry as most domestic providers are small businesses. Over time, some foreign operations have been sold to local operators, leading to divestment and explaining the fluctuations in FDI. There are several options for promoting more investment in the sector, including promoting logistics start-ups that serve niche markets (especially in last-mile delivery) and digital technology companies.

***

The prospects for more FDI in services (financial, retail and logistics) in ASEAN are promising, with the rapid rise in trade volumes and industrial activity, improvements in logistics facilities and the growth of e-commerce. Growth will also be supported by regional agreements signed recently, and the implementation of the programmes of the AEC Blueprint 2025. The agreements include the ASEAN Trade in Services Agreement, signed in 2019, which builds upon the market liberalization achieved under the ASEAN Framework Agreement on Services (AFAS) and the ASEAN Agreement on e-Commerce, signed in 2018, which aimed to increase digital connectivity, and advance trade rules and strengthen the environment for e-commerce.

INVESTMENT, PLAYERS AND POLICY OPTIONS IN HEALTH CARE

Health care demand in ASEAN, and the need for investment in the regional health care market, will increase rapidly in the coming years. This increase is driven by population growth, changing demographics, universal health care programmes and the rise in the incidence of non-communicable diseases. Currently, health care expenditure in ASEAN accounts for 4 per cent of the region's GDP, well below the global average of 10 per cent, and is expected to grow.

In 2016, health care expenditure in ASEAN was $99 billion, equivalent to 1.3 per cent of the world's health care expenditure. By 2025, it is expected to reach about $270 billion, more than the projected size of the region's fast-growing internet economy ($240 billion by 2025).

Policies to support the development of private health care are a necessary complement to public health care spending, as the public sector alone is unlikely to fully meet this demand. Private hospitals are already important in some Member States in the region, accounting for more than 50 per cent of hospitals in Cambodia, Indonesia, Malaysia and the Philippines, and about one-third of hospitals in Brunei Darussalam, Singapore and Thailand (table 1). In other Member States, private sector participation in health infrastructure is relatively low but growing.

Table 1. Private sector involvement in health care, various years (Share of hospitals and hospital beds that are private, per cent)

	Hospitals		Hospital beds	
	Year	Private sector share (%)	Year	Private sector share (%)
Brunei Darussalam	2017	33	2013	14
Cambodia	2016	62	..	..
Indonesia	2017	64	2017	47
Lao People's Democratic Republic	2016	8	..	..
Malaysia	2017	57	2017	24
Myanmar	2016	15	2015	7
Philippines	2018	60	2016	53
Singapore	2018	29	2015	25
Thailand	2016	30	2015	20
Viet Nam	2016	14	2016	<10[a]

Sources: National sources, WHO and media reports.
[a] Viet Nam targets a private sector share of hospital beds of 20 per cent by 2020.

The successful development of the health care industry depends on promoting investment not only in hospitals and care services, but across the health care value chain. This value chain includes health insurance, pharmaceuticals and medical equipment manufacturing, as well as new sectors such as tele-health and other medical technologies. Competitive local and regional industries in the health care value chain can help curb health care expenditures and support services exports.

Promoting investment in the health care value chain includes facilitating international investment. FDI in health care in ASEAN is still small, but it is rising and already significant compared to other developing regions. Greenfield investment projects in the health care industry within the region rose by more than 40 per cent in the past decade, from an annual average of $1.4 billion in 2009-2013 to $2 billion in 2014-2018. Foreign investors from outside the ASEAN region are mainly pharmaceutical and medical device companies; 79 of the world's 100 largest pharmaceuticals MNEs have operations in ASEAN.

Intraregional investment in health care industries is starting to grow, involving a diverse set of companies and activities. Large ASEAN-based hospital groups and private equity companies are important investors in care services. The 15 largest hospitals with investment in the region are from Malaysia, Singapore and Thailand. In pharmaceuticals, most global MNEs have subsidiaries in three or more ASEAN Member States involving multiple business functions (e.g. sales, marketing, manufacturing, R&D and regional headquarters). ASEAN-based pharmaceuticals firms are mainly contract manufacturers for global MNEs, but some are expanding to other ASEAN markets.

Regional investment in the health care value chain also extends to small and medium-sized enterprises and start-ups. The 50 most funded medical start-ups, most of them based in Singapore, had raised more than $1 billion as of July 2019. Many of these start-ups, especially in tele-health and medical devices, raised funds to scale up and to expand in the region.

Medical tourism has been a factor stimulating private investment in health care industries in some Member States. Medical tourism is rising in Malaysia, Singapore and Thailand, which have become significant destinations because of their high-quality and efficient health care services (table 2). Promoting medical tourism can have positive effects on the attractiveness of the market for private investors, due to its potentially higher returns. It can help finance better equipment and training and avoid the brain drain of highly qualified medical personnel – all with potential benefits for care services provided to locals, which should remain the primary objective.

Table 2. Medical tourists in ASEAN Member States, 2011 and 2017 (Selected cases) (Number)

Country	2011	2017
Malaysia	643,000	1,050,000
Singapore	540,000	Between 370,000 and 550,000[a]
Thailand	500,000	2,400,000
Viet Nam	..	80,000

Sources: Media and other sources.
[a] Estimates for 2016.

Investors identify three key challenges that are slowing the growth of regional cross-border investment in health care industries:

(i) **Hindrance factors related to the general investment environment**. Complexities in regulations and administrative procedures for investors affect all industries. However, they can be more of a constraint for firms that are relatively new to international expansion and for small and medium-sized enterprises – both of which are common in health care.

(ii) **Differences in health care industry standards and regulations across ASEAN**. The need for international investors in the industry to adapt to and comply with multiple regulatory systems to operate in the region adds complexity and increases costs.

(iii) **Skills shortages and technology weaknesses**. The limited availability of doctors and skilled health care workers continues to weigh on the development of the health care industry across the region.

The findings in this report highlight **health care development priorities and possible investment policy initiatives.** They include:

(i) **Universal access.** This priority drives the need for more investment in hospitals; the complementary role of private investment, including through public-private partnerships; and the necessity to make the industry a priority for investment promotion agencies and to step up investment facilitation efforts.

(ii) **Affordable high-quality care.** This priority drives the need to balance the development of private health care with appropriate regulation, to target the promotion of private investment selectively and to safeguard competition to keep prices in check. Appropriate regulation should consider the need to promote continued innovation to advance the industry and improve efficiency in the delivery of care services. For example, regulations to ensure data privacy need to take into account development opportunities in digital health care services (e.g. tele-health and data analytics).

(iii) **Sustainable public expenditures and economic development benefits.** In addition to increased private investment in primary care, this priority requires the promotion of investment in local production of pharmaceuticals and generics. It also implies incentivizing and supporting small and medium-sized enterprises and venture capital firms; promoting local ownership and local start-ups; and providing support for innovation, medical tourism and services exports.

Medical tourism is an important mechanism through which development benefits can be gained. Development of the medical tourism market should involve an interplay of various stakeholders (e.g. private hospitals, government institutions, health care enablers, transportation and logistics services, the hospitality industry and tourism boards).

(iv) **Supporting the ASEAN regional cooperation and integration agenda**. This priority requires seizing opportunities such as jointly promoting medical services in ASEAN and building on the relative strengths of Member States between financing, training doctors and nurses, and medical technology development. It requires removing or mitigating barriers to regional development in the sector, completing the implementation of the ASEAN Medical Device Directive (AMDD) and the Mutual Recognition Arrangements (MRAs) on health care services, and improving the transportability of health insurance.

ASEAN is already doing much to strengthen the regional health care environment for investment. Work on harmonization and market opening in health care is ongoing under the ASEAN Economic Community (AEC) and the implementation of sectoral agreements and strategic action plans. Under the ASEAN Framework Agreement on Services (AFAS), ASEAN Member States have already relaxed foreign equity ownership restrictions in health care (table 3). The implementation of agreements including the AFAS, the ASEAN Comprehensive Investment Agreement (which covers investment promotion, facilitation and liberalization) and the ASEAN Trade in Goods Agreement (which aims to establish an integrated market and production base) has contributed to improving the investment environment for health care in the region.

Table 3. Foreign equity ownership allowed under AFAS commitments, 2008, 2010, 2016 and 2018 (Per cent)

	Hospital services		Health insurance	
	2010 (AFAS-8)	2018 (AFAS-10)	2008 (AFAS-4)	2016 (AFAS-7)
Brunei Darussalam	100	100	100	100
Cambodia	100	100	100	100
Indonesia	70	70	..	49
Lao People's Democratic Republic	100	100	100	100
Malaysia	70	70	51	100
Myanmar	51	70	..	..
Philippines	100	100	60	100
Singapore	70	100	49	49
Thailand	70	70	25	25
Viet Nam	100	100	100	100

Source: ASEAN Secretariat, AFAS commitment.
Note: AFAS = ASEAN Framework Agreement on Services and commitments made by the ASEAN Member States at the mentioned rounds of negotiation.

Although much work has been done in the MRAs and the AMDD, further standardization of approval processes for medical devices and pharmaceuticals as well as greater mobility of medical human resources is needed in order to build up ASEAN as an efficient medical hub.

In moving forward to develop a competitive health care environment in the region, the following further policy options could be considered.

Promoting public-private partnerships. Deeper engagement with private sector stakeholders – from hospital groups to private equity investors, and from pharmaceuticals companies to insurers – and mechanisms for regular consultation at the regional level could help spearhead greater private sector participation in the development of the industry, including in digital health. One such mechanism could be an "ASEAN health care council" involving private sector stakeholders to promote the development of an efficient and competitive health care environment.

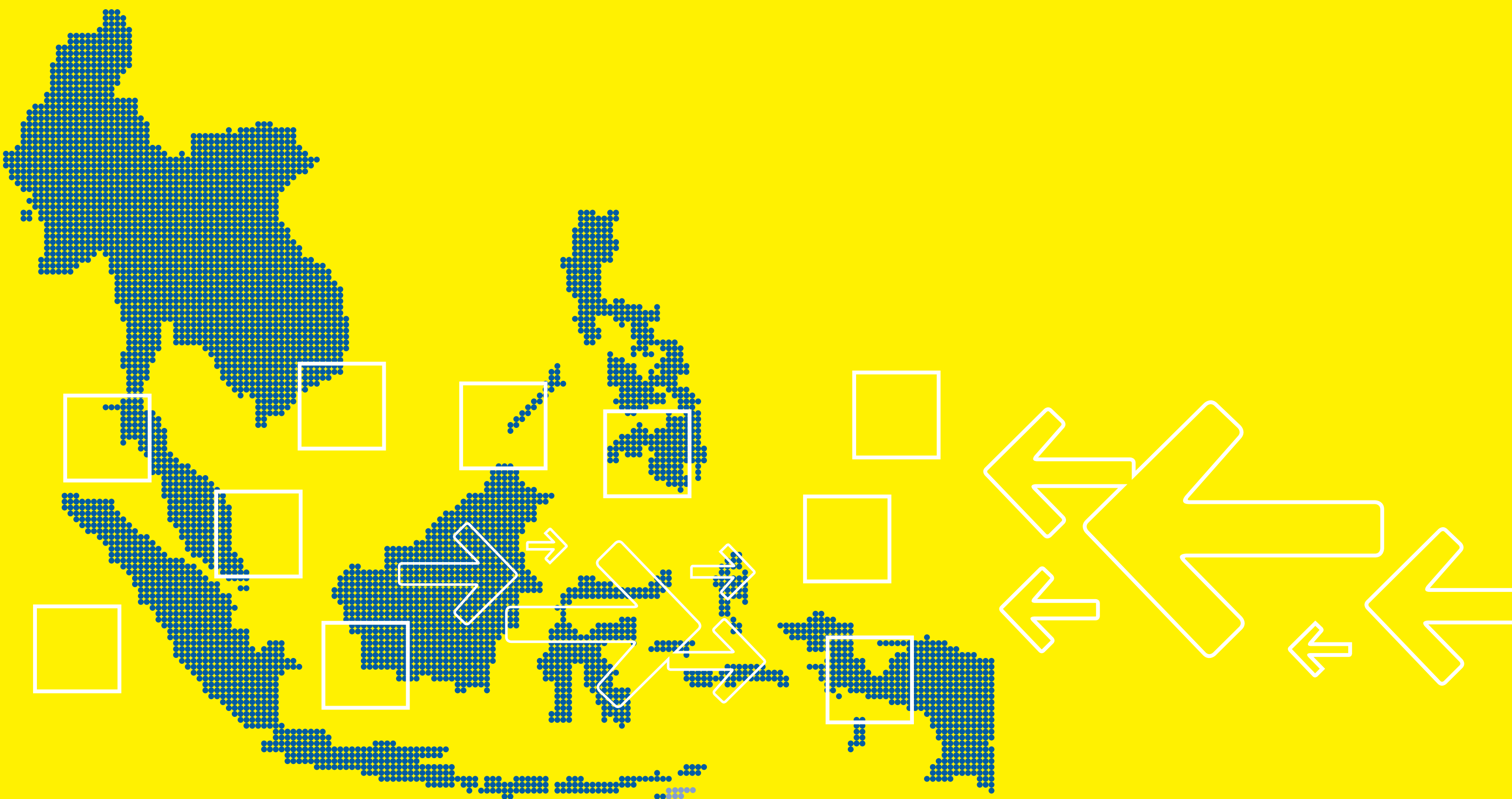
Considering an "ASEAN medical tourism hub". The aim would be for Member States to cooperate and draw on each other's strengths, skill sets and capabilities to develop the subsector. Such regional cooperation to develop comprehensive health care solutions could bring complementary benefits and synergies to participating countries, including in supporting the objectives of the AEC.

Supporting digitalization and medical technologies. Member States could work on developing an environment that is conducive for venture capital firms, start-ups and health care innovators to establish operations in the region and develop digital and medical technology. Attracting MNEs and local investors and nurturing start-ups in this emerging area of health care delivery is important. In promoting digital or e-health, measures need to take into account regional agreements such as the ASEAN Agreement on Electronic Commerce.

Jointly addressing skills shortages. Regional cooperation on MRAs such as on the services of medical and dental practitioners and nurses is important for addressing skills shortages, as they aim to facilitate the mobility of medical and nursing services professionals within ASEAN. There is a need to expedite the implementation of existing MRAs to achieve AEC objectives (i.e. free flows of skilled labour). In addition, health care providers in the region could foster close collaboration with other ASEAN and foreign institutions and centres of excellence (as is done by some hospitals in ASEAN) to upgrade medical standards and the skills of doctors and nurses.

PART ONE

FDI AND MNE DEVELOPMENT IN ASEAN



CHAPTER 1

FDI and Corporate Investment Trends

1.1. INTRODUCTION

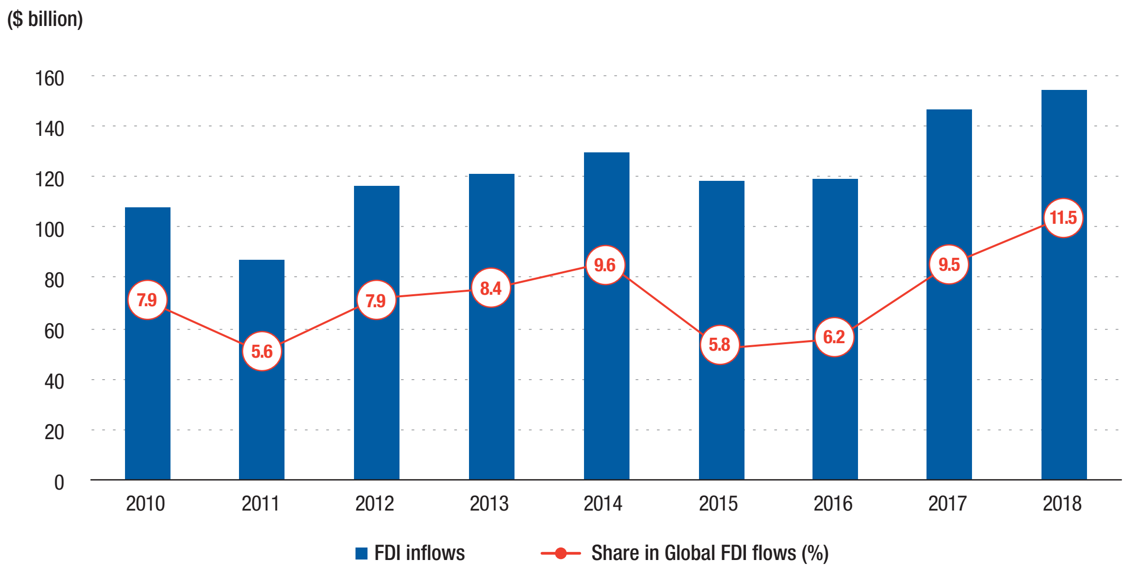
FDI flows to the region rose to $155 billion in 2018, despite a decline in global FDI. Global MNEs and ASEAN companies are investing in and expanding their activities in the region, further strengthening regional production networks and the region's participation in global value chains. Steady economic growth, the increasing number of middle-class consumers, a rapidly integrating region of more than 650 million people and a vibrant industrial landscape continue to underpin the attractiveness of the region for FDI.

This chapter examines FDI trends and MNE development in ASEAN in 2018 and the first half of 2019. It highlights the investment activities of MNEs from within and outside the ASEAN region, their strategies, their regional expansion and their contribution to production networks. Rising private equity and venture capital investments, as well as investment in fourth industrial revolution (4IR) technologies, are also covered. The chapter concludes with an assessment of investment prospects.

1.2. FDI TRENDS AND DEVELOPMENTS

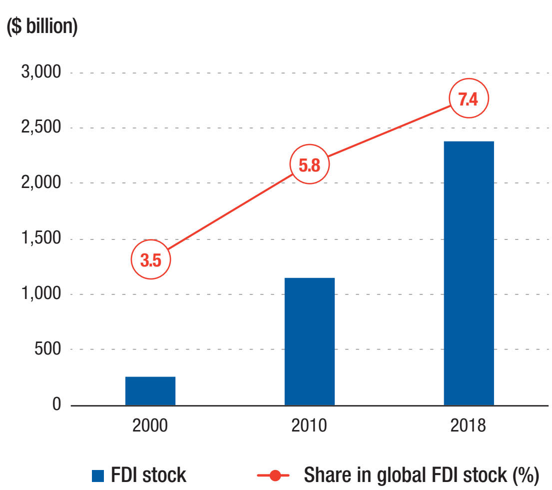
FDI to ASEAN rose by 5 per cent to a record $155 billion in 2018 (figure 1.1a). This is the third consecutive year of rising investment in the region, with six ASEAN Member States receiving higher inflows,[1] four of those at record levels (Cambodia, Indonesia, Singapore and Viet Nam). The sources of FDI have further diversified, with more companies from more countries investing in the region.

Figure 1.1a. FDI flows in ASEAN, 2010–2018 (Billions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 1.1b. FDI stock in ASEAN, 2000, 2010 and 2018 (Billions of dollars and per cent)



Source: UNCTAD, FDI database.

The increase in investment pushed up ASEAN's share of global FDI flows to 11.5 per cent in 2018, from 9.5 per cent in 2017. Strong FDI inflows since 2010 have led to an increase in the region's FDI stock to $2.4 trillion (figure 1.1b).

In addition to strong intra-ASEAN investment, other sources contributed to the rise. They include the European Union (EU), Japan, Hong Kong (China), India and the Republic of Korea. The increase brought a record level of FDI to the manufacturing sector (the second consecutive year of increase, from $30 billion in 2017 to $55 billion) and further inflows to finance (from $39 billion in 2017 to $42 billion). Cross-border mergers and acquisitions (M&As) in ASEAN also rose, from $17 billion in 2017 to $18 billion in 2018, following their 124 per cent increase between 2016 and 2017 (section 1.2.4).

1.2.1. FDI by destination

In 2018, FDI flows to ASEAN Member States were mixed. Six ASEAN Member States (Brunei Darussalam, Cambodia, Indonesia, Singapore, Thailand and Viet Nam) received higher inflows in 2018 than in 2017 (table 1.1). The four other Member States, however, witnessed a lower level of inflows last year.

1.2.1.1. FDI in six Member States

The section below highlights FDI flows in the six advanced Member States and section 1.2.1.2 provides a detailed analysis of investment in the CLMV countries.

Table 1.1. FDI flows in ASEAN, 2015–2018
(Billions of dollars)

	2015	2016	2017	2018
Brunei Darussalam	0.2	-0.2	0.5	0.5
Cambodia	1.7	2.3	2.7	3.1
Indonesia	16.6	3.9	20.6	22.0
Lao People's Democratic Republic	1.1	1.1	1.7	1.3
Malaysia	10.2	11.3	9.3	8.1
Myanmar	2.8	3.0	4.0	3.6
Philippines	5.6	8.3	10.3	9.8
Singapore	59.7	73.9	75.7	77.6
Thailand	8.9	2.8	8.0	13.2
Viet Nam	11.8	12.6	14.1	15.5
ASEAN	**118.7**	**119.0**	**146.9**	**154.7**

Source: ASEAN Secretariat, ASEAN FDI database.

Brunei Darussalam

FDI in Brunei Darussalam rose from $460 million in 2017 to $504 million in 2018 due to a 42 per cent increase in investment from Hong Kong (China), to $669 million. However, FDI from traditional major investors (Malaysia and the United Kingdom) fell by 96 per cent, to just $21 million and -$343 million, respectively. MNEs in the oil and gas industry divested -$277 million, while investment in manufacturing rose from $493 million in 2017 to $701 million in 2018, which helped push up inflows.

Indonesia

After a four-fold increase in inflows in 2016-2017, FDI in Indonesia rose further to a new height ($22 billion) in 2018. Increases in manufacturing FDI (to $14 billion) and in investment in wholesale and retail trade (a 54 per cent rise to $7 billion) offset the -$6 billion divestment in mining activities. Strong intra-ASEAN investment and increased inflows from China, Japan and the United States supported the rise. Singapore remained the single largest investor in Indonesia, accounting for more than 48 per cent of total inflows.

Malaysia

FDI in Malaysia fell for the second consecutive year, by 13 per cent to $8 billion, mainly due to a 79 per cent decline in investment from other ASEAN Member States. There were some bright spots in the industrial distribution. FDI in manufacturing rose by 2.7 times to $4 billion and FDI in finance more than doubled, to more than $1 billion. The significant decline in investment in real estate, from $3 billion in 2017 to less than $1 billion in 2018, contributed to the lower inflows.

Philippines

FDI to the Philippines was flat at $10 billion, following the 2016 increase of 48 per cent and the 2017 increase of 24 per cent. The significant decline in investment from the EU (from $2 billion in 2017 to $340 million in 2018) and from the United States was offset by a rise in FDI from three economies. Investment from Hong Kong (China) increased by 2.5 times, investment from Japan rose three-fold and investment from China surged, with a seven-fold rise. FDI in finance, real estate and other services rose, which compensated the decline in investment in manufacturing (to $1 billion); FDI to the power industry dropped from more than $1 billion in 2017 to $193 million.

Singapore

Inflows to Singapore rose moderately by 3 per cent to $78 billion – the highest recorded level. Singapore remained the largest host country in the region. FDI flows from the EU rose by 4.7 times to $18 billion, Japanese investment increased by 32 per cent to $5 billion and that from the Republic of Korea increased more than three times to $2.3 billion. FDI from other economies also rose, and they all compensated for the significant drop in United States investment (from $28 billion in 2017 to just $4 billion in 2018). United States MNEs accounted for 37 per cent of FDI inflows into the country in 2017, but in 2018 their share dropped to just 6 per cent. Despite the rise in FDI in Singapore, the country's share of FDI flows in ASEAN continued to decline, from 62 per cent in 2016 and 52 per cent in 2017 to 50 per cent in 2018.

Thailand

Thailand witnessed a 65 per cent increase in FDI to $13 billion in 2018, building on the 186 per cent rise from 2016 to 2017. The rise was contributed by a considerable increase in FDI in manufacturing, from $2 billion in 2017 to more than $5 billion in 2018. The increase in FDI in finance, real estate, wholesale and retail trade also help pushed up inflows. Manufacturing and two key services industries (finance and real estate) accounted for more than 88 per cent of FDI inflows in the country last year.

Table 1.2. CLMV countries: FDI flows, 2015–2018
(Millions of dollars and per cent)

	2015	2016	2017	2018
Cambodia	1,701	2,280	2,732	3,103
Lao People's Democratic Republic	1,079	1,076	1,695	1,320
Myanmar	2,824	2,989	4,002	3,554
Viet Nam	11,800	12,600	14,100	15,500
Total CLMV countries	**17,405**	**18,945**	**22,530**	**23,476**
CLMV share of FDI flows in ASEAN	**14.7**	**15.9**	**15.3**	**15.2**

Source: ASEAN Secretariat, ASEAN FDI database.

1.2.1.2. FDI in the CLMV countries

Combined FDI flows to the CLMV countries rose by 4 per cent in 2018, to a record level of $23 billion. The share of the CLMV in total FDI inflows in ASEAN remained at 15 per cent (table 1.2). The highest-ever inflows in Cambodia and Viet Nam helped the group record the stronger level of investment. In contrast, FDI in the Lao People's Democratic Republic and in Myanmar declined but remained at a high level. With flows exceeding $15 billion, Viet Nam was the third largest recipient in ASEAN (after Singapore and Indonesia) and accounted for 66 per cent of investment that went into the CLMV countries in 2018. MNEs continued to expand in these Member States. Chinese and other Asian MNEs are shifting production to the CLMV countries for cost reasons and in some cases because of the effect of the United States-China trade tensions.

Consistent with past years, Asian investors including those from ASEAN Member States, remained the major sources of investment in the CLMV countries. However, there are differences across countries. Chinese and ASEAN companies were leading investors in Cambodia. They accounted for more than 51 per cent of inflows into the country last year. Chinese companies remained the single largest group of investors in the Lao People's Democratic Republic, accounting for nearly 80 per cent of total flows. In Myanmar, ASEAN remained the largest source of investment (59 per cent), led by companies based in Singapore. Companies from China and Hong Kong (China) were also active investors in Myanmar last year. Japan, the Republic of Korea and ASEAN were the principal investors in Viet Nam, contributing 63 per cent of investment in that country.

Infrastructure, including construction and electricity generation, has been the largest recipient of FDI in the Lao People's Democratic Republic. In 2018, construction-related activities received the most FDI and investment in electricity declined significantly. Finance, real estate and manufacturing were the dominant recipients of inflows to Cambodia. Manufacturing remained the single largest recipient of FDI in Viet Nam, contributing to 47 per cent of all FDI in the country. In Myanmar, investors continued to participate in all three sectors (mining, manufacturing and services).

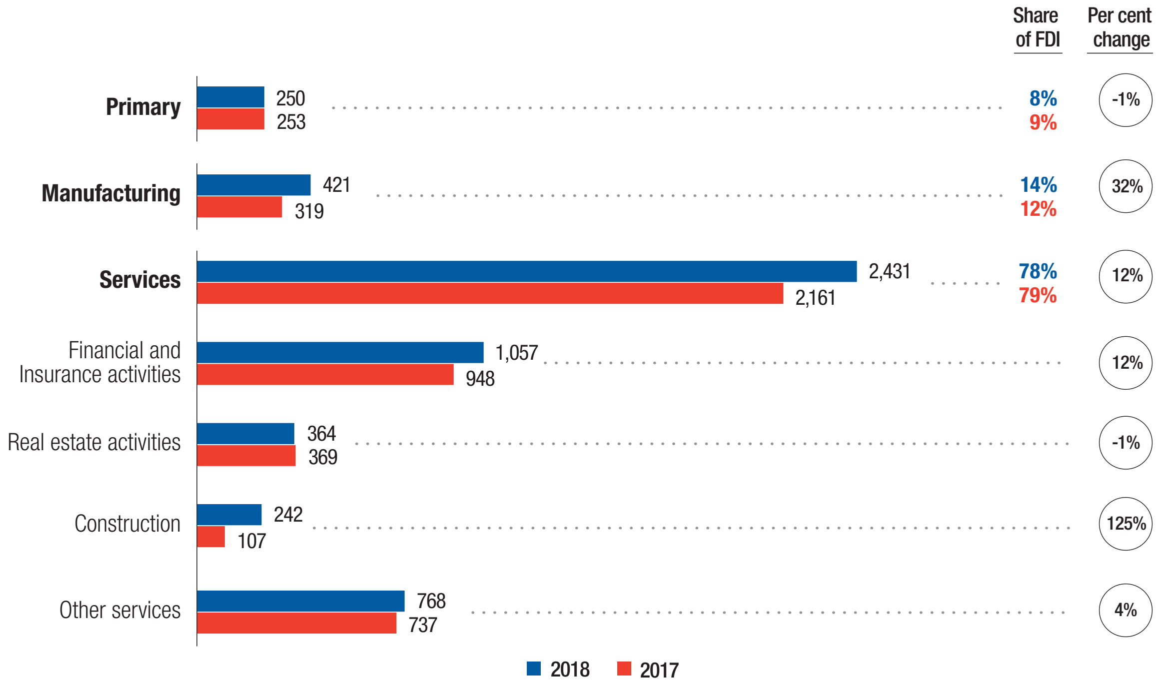
Cambodia: *FDI flows at all-time high, with growth concentrated in manufacturing and services*

FDI in Cambodia increased by 15 per cent to its highest-ever level ($3 billion), driven by growth in manufacturing and services (finance and insurance) (figure 1.2). Services accounted for 79 per cent of all FDI in Cambodia, while manufacturing accounted for 12 per cent. A significant proportion of manufacturing FDI is in the garment industry; however, MNEs outside of garments invest in a diverse range of industries, from toy manufacturing to electronics and automotive parts. MNEs from Asian economies were the major source of investments. The top five investors were all Asian (figure 1.3), which accounted for more than 75 per cent of investment in 2018 (a trend that has not changed much). Some special economic zones (SEZs) in the country, such as in Phnom Penh, facilitated FDI activities (*WIR 2019, AIR 2017*).

Manufacturing

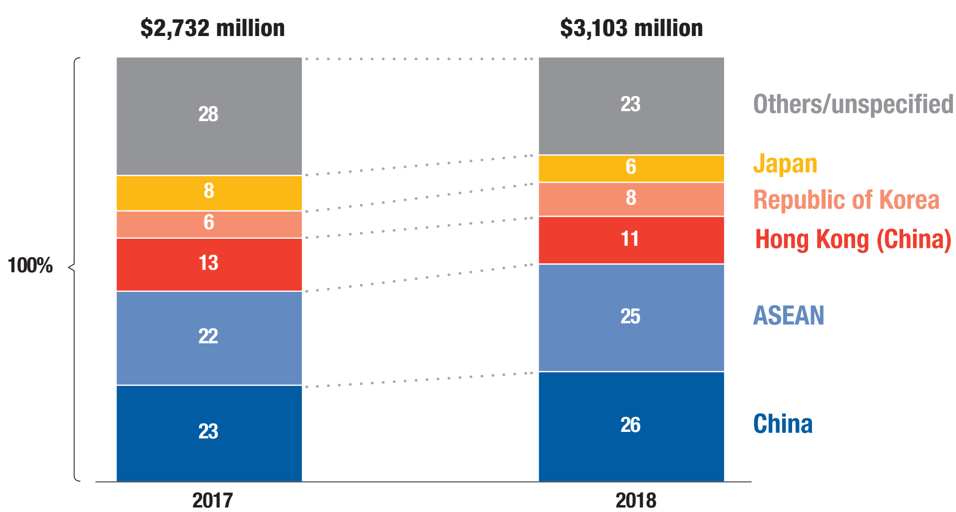
FDI in garment manufacturing, the traditional major recipient, remained significant. Investment in this industry was mostly by investors from Asia (e.g. China, Hong Kong (China) and the Republic of Korea). Many foreign garment manufacturers also opened factories in 2018–2019 (table 1.3). QLM (Australia) opened a $1.5 million facility in the country as a base to expand into other emerging markets. In 2019, Shenzhou International Group Holdings (China) began

Figure 1.2. Cambodia: FDI flows, by economic sector and industry, 2017–2018 (Millions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 1.3. Cambodia: The five largest investor home economies, 2017–2018 (Per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Table 1.3. New garment factories established in Cambodia, 2018–2019 (Selected cases)

Company	Year established	Economy of origin	Products	Number of workers
J&H Garment Co, Ltd	2018	Hong Kong (China)	Knitwear	719
Meng Yee Garment Manufactory Co, Ltd	2018	Hong Kong (China)	Denim, woven	430
Bagsac Hong Kong Co Ltd	2018	Hong Kong (China)	Handbags, wallets	150
Sansho Clothing Co, Ltd	2018	Japan	Dresses	394
D & Blue Co, Ltd	2018	Republic of Korea	Ladies' clothes	327
Na Jung Garment Co, Ltd	2018	Republic of Korea	Sportswear	280
JS Leather Collection Phnom Penh Co, Ltd	2018	Republic of Korea	Bags, handbags	1,600
Seo Rim Co, Ltd	2019	Republic of Korea	T-shirts, sweaters, robes, pants	800
Qins Textile Co, Ltd	2019	Republic of Korea	T-shirts, skirts, pants	5
De Xiang Garment Co, Ltd	2019	China	Hats, blankets, laundry bags, caps, napkins	250
Eucloth International Garment Co, Ltd	2019	China	T-shirts	1,157
Rongwin Garment Co, Ltd	2019	China	Knitwear	775
Qingdao Roy Ne Garment Co, Ltd	2019	China	T-shirts, underwear	715
JP Sunny Products Co, Ltd	2019	China	Handbags, backpacks	700
Hong Kang Garment Co, Ltd	2019	China	Children's, ladies, and men's clothes	400
Fashiontex Apparel Co, Ltd	2019	China	T-shirts, trouser	1,200
GG Fashion Co, Ltd	2019	Singapore	Jackets, pants, shirts	1,600

Source: Information compiled from data of the Garment Manufacturers Association in Cambodia.

building a $150 million garment factory in the Phnom Penh SEZ, to be completed in 2021. Shenzhou is one of the major suppliers to Nike. Foreign garment manufacturers such as Shenzhou help Cambodia participate in the global value chain for garments, controlled by major sportswear MNEs and global clothing retailers.

Non-garment manufacturing

Non-garment manufacturing activities are increasing because of the favourable investment environment, increasing industrialization and the supply of low-cost labour. Non-garment manufacturing activities that started operations in 2018 cover a wide range of industries. Japanese companies such as Shinohara started manufacturing cosmetic tools and containers, and Okato acquired land for building a manufacturing plant at the Phnom Penh Special Economic Zone. Sumitronics further expanded in the country, automotive parts manufacturer Denso added a $21 million factory, and Toyota Tsusho Corporation strengthened its business development and marketing activities.

MNEs from other countries also expanded further last year. They include Kampot Cement (Thailand), which started construction of a third cement plant, and Zuellig Pharma (Hong Kong, China) and Fresenius Medical Care (Germany), which formed a strategic partnership to expand operations in both Cambodia and Myanmar. DKSH Holding (Switzerland) acquired Europ Continents, a producer and supplier of medical equipment in Cambodia and other ASEAN Member States. Socfin (Luxembourg) constructed a $5.7 million rubber processing factory and Green Leader Holdings Group (Hong Kong, China) started building a cassava processing facility. Conch International Holdings (China) and local partner (Battambang KT Cement) opened a $230 million cement factory.

Walita Toys (China) started toy production in Cambodia, and Le Guérandais (France) formed a partnership with Confirel (Cambodia) for salt production for export. Diaper company Winsun (Taiwan Province of China) established a manufacturing facility and plans to invest $22 million within five years. In addition, Midori Techno Park Corporation (Japan) (an investor in the Phnom Penh SEZ) further developed manufacturing space for ecofriendly manufacturing clients, with expectations that more MNEs will undertake manufacturing activities in the country.

In 2019, BASF (Germany) established new operations in Cambodia, driven by increased opportunities in the local market and opportunities to serve the regional market. Minebea (Japan) added to its investment in the country, after expanding for two consecutive years, and Yamato Printing (Japan) opened a manufacturing plant specializing in stationary products.

Services

In 2018, jewellery retailer Luk Fook (Hong Kong, China) moved into Cambodia with a flagship store in Phnom Penh, Jacobs Douwe Egberts (Netherlands) acquired the operations of OldTown White Coffee (Malaysia) in the country, and Aeon (Japan) opened more malls – and announced plans to build more. Isuzu (Japan) opened two showrooms to support its marketing and distribution business; Furla (Italy) (a luxury goods company), in partnership with China Duty Free Group (China), opened a boutique store; and retail company Circle K (Canada) opened a store in 2018 and expanded further in 2019. Sportswear retail company Decathlon Group (France) opened its first store, with plans to expand further in the next five years. Bookstore chain Kinokuniya (Japan) and furniture company Arredoclassic (Italy) each opened their first store in the country. Other service companies such as Tokyo Hotel Apartments & Spa (Japan) and TGG Takara Gaming Group (Hong Kong, China) established a presence in the country last year.

Last year also witnessed an increase in MNE activities in banking and insurance. For instance, life insurance firm Manulife (Canada) expanded, Bank South Pacific (Papua New Guinea) completed a joint venture with a local partner, and Dai-ichi Life Holdings (Japan) established a wholly owned subsidiary with $37.7 million investment planned for further expansion in the country. ABA Bank (Canada) opened new branches in Cambodia and plans to open more in 2019. Shinhan Bank (Republic of Korea) expanded operation, Taiwan Cooperative Bank (Taiwan Province of China) and Industrial Bank of Korea (Republic of Korea) each opened a representative office and plans to open branches in 2020. Technology related companies in finance also established operations in Cambodia to better service clients. They include Unionpay (China) with a digital payment system, Alipay (China) and fintech company World Remit (United Kingdom) provides mobile banking services.

The increase in international trade activities in the country has led more shipping and logistics companies to invest and expand in Cambodia. In 2019, Evergreen Marine Corporation (Taiwan Province of China) established a subsidiary, logistics company Nippon Express (Japan) started construction of a new warehouse and packaging company Oji group (Japan) further expanded. With the growing economy and increasing purchasing power in the country, foreign retail companies undertook more FDI activity. They include Makro (Germany), which opened another supermarket after entering the country in late 2017. In the same year, Budget Rent a Car (United States) started operation in Cambodia.

Infrastructure

Many MNEs are participating in the country's infrastructure development. In 2018, Sumitomo Electric Industries (Japan) secured a contract for high-voltage underground cables for transmission and distribution of electricity, Hanshin Construction (Republic of Korea) won an $85 million contract to repair and expand roads in the country, Tetra Tech (United States) was awarded a five-year contract worth $21 million to provide sustainability management and biodiversity conservation services, and Nokia (Finland) won a contract to develop a high-speed broadband service in Cambodia.

In 2019, Guangdong Provincial Changda Highway Engineering (China) won a $20 million road upgrade and maintenance contract. Toshiba (Japan) began constructing a 150 MW power station involving its subsidiaries TPSC Engineering (Malaysia) and TPSC (Thailand). General Electric (United States) and Toshiba Plant System & Services Corporation (Japan) won a supply and equipment contract for a 35 MW coal-fired power plant scheduled for completion at the end of 2019. Sinomach (China) was operating 28 engineering projects with a total contract value of $170 million, including a power station project.

Lao People's Democratic Republic: *FDI fell but remained at a high level. FDI in electricity – traditionally the largest recipient – and from China declined significantly.*

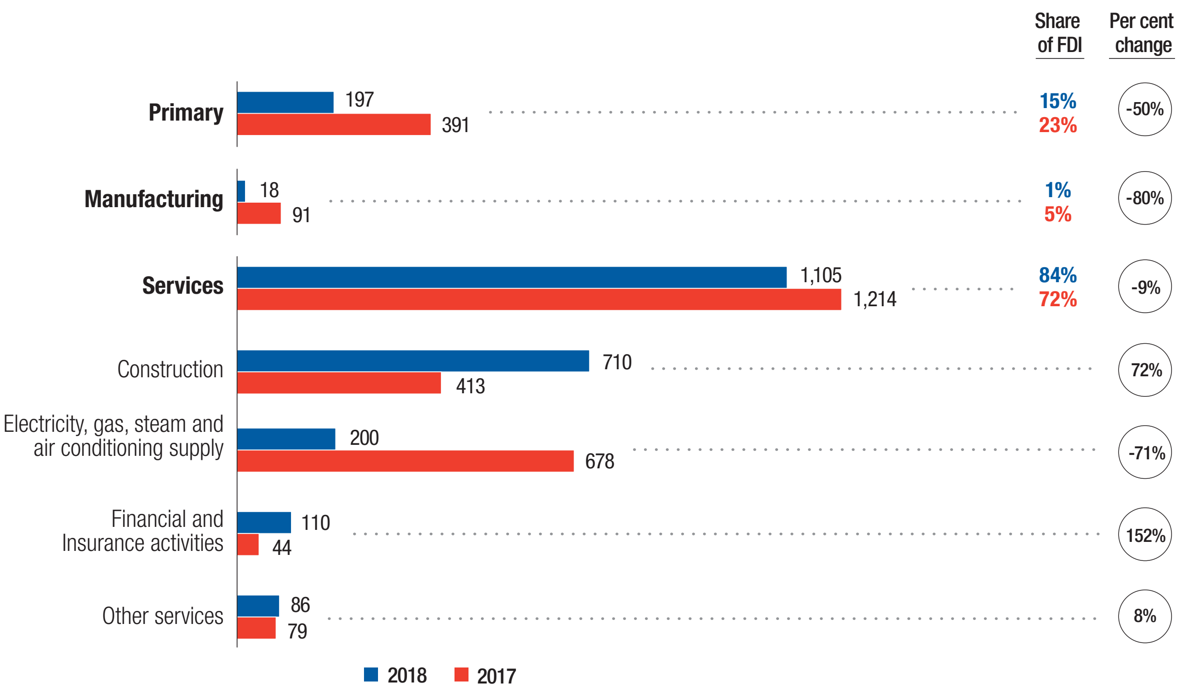
FDI in the Lao People's Democratic Republic dropped from $1.7 billion in 2017 to $1.3 billion in 2018 – the highest and second highest years of FDI inflows for the country. Manufacturing FDI fell by 80 per cent, to only $18 million (figure 1.4). FDI in electricity, traditionally the largest recipient, fell by more than 70 per cent. The collapse of a dam in the southeast of the country in mid-2018 led the Government to suspend approvals of new hydroelectric dams while it reviewed construction practices.[2] The decline was also due to a 20 per cent drop in Chinese investment. Nonetheless, China remained the single largest investor, accounting for 79 per cent of all FDI in the country (figure 1.5).

There were some bright spots. Investment in finance and insurance increased by 152 per cent as well as in construction. Construction was the largest industry recipient in 2018, attracting some 54 per cent of total FDI inflows. Steady economic growth and industrial activities encouraged strong construction investment.

Manufacturing

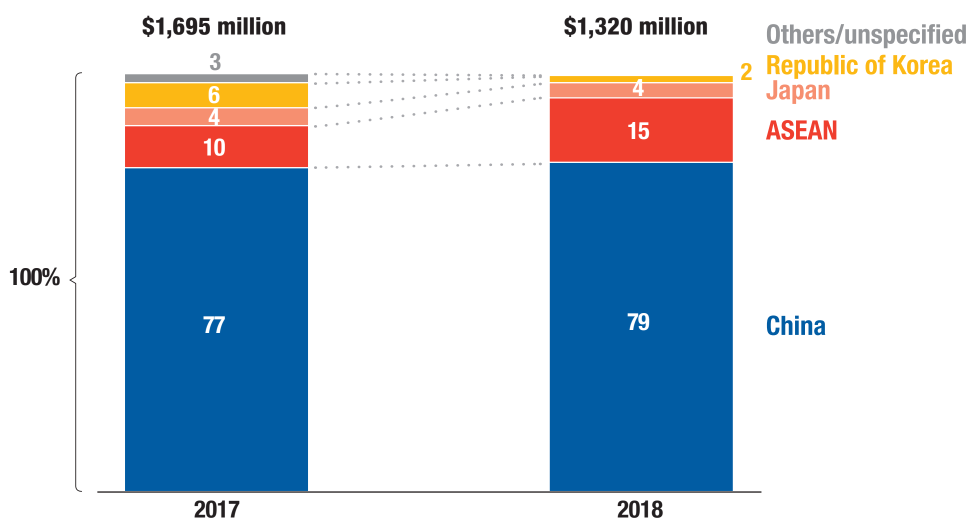
Foreign companies continued to invest in the manufacturing industry. In 2018, Vietnam Rubber Group started construction of a $10 million rubber processing factory, Essilor expanded with a new plant and Hanoi Liquor Joint Stock Company (Viet Nam) opened a representative office

Figure 1.4. Lao People's Democratic Republic: FDI flows, by economic sector and industry, 2017–2018
(Millions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 1.5. Lao People's Democratic Republic: The largest investor home economies, 2017–2018
(Millions of dollards and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

with plans to open a factory in the country. Total Solution Business Group (Japan) opened another factory to manufacture electrical wiring products and Shan Dong Sun Paper Industry (China) is investing an additional $673 million over the course of the next few years to expand an existing plant.

In 2019, Hoya Corporation (Japan) started construction of a $273 million plant for making glass substrates for hard disk drives. Hunan Jinye Zhongwang Technology (China) and Xuanye (Lao People's Democratic Republic) are establishing an organic and biofertilizer processing factory.

Services

In 2018, Forte Insurance (Cambodia) acquired Toko Assurance Service (Lao People's Democratic Republic), Vietcombank (Viet Nam) opened a subsidiary with an $80 million capital investment and Kasikornbank (Thailand) further expanded in the country. In the same year, Bosch (Germany) opened a business hub after having previously opened a representative office in the country. SAIC Hongyan (China) opened stores to meet local demand for trucks, and Nippon Express (Japan) opened new branches to meet an increase in demand. Parkson Retail Group (Malaysia) and Mango (Spain) opened stores in the country. Texas Chicken (United States) opened a second outlet, and Wimbledon School of English (United Kingdom) opened its first British English language centre in the country. In 2019, fintech company Everex (Singapore) expanded into the country to offer blockchain technology for digital border trade transactions.

Infrastructure

In 2018, Dongfang Electric Corporation (China) won an engineering, procurement and construction (EPC) contract for a 120 MW hydropower plant, its fifth project in the country. Impact Energy Asia (Thailand) is constructing a $1.5 billion wind farm, the largest in ASEAN, which is expected to be operational in 2019. In 2018, Norinco International Cooperation (China) commissioned the 86 MW Nam Phay hydropower plant, of which it owns 85 per cent, with the remaining 15 per cent owned by Électricité du Laos (Lao People's Democratic Republic).

Asian MNEs are building other power plants with target operational years between 2018 and 2020 (table 1.4). These projects also involve many Asian and European subcontractors in engineering and supervisory work. For instance, the China–Lao People's Democratic Republic railway construction project, to be completed by 2021, involves many Chinese companies. They include China Railway No. 5 Engineering Group, China Railway International Group, China Railway No. 8 Engineering Group, China Machinery Engineering, China National Electric Engineering Company, China Communications Construction, China Gezhouba Group and China Civil Engineering Construction. In 2018, Poyry (Finland) won an engineering services contract for development of a hydropower plant, and Serba Dinamik Holdings (Malaysia) won an EPC and commissioning contract for another hydropower plant. Viet Phuong Group (Viet Nam) began the biggest Vietnamese mining project in the country with a $650 million investment for building, exploiting and processing bauxite ore, including building an alumina factory.

Table 1.4. Lao People's Democratic Republic: Power projects, 2018–2020 (Selected cases)

Project	Location	Installed capacity	Investors	Year of operation	Planned market	Remarks
Nam Phay		86 MW	• Électricité du Laos (Lao People's Democratic Republic) (15%) • Norinco (China) (85%)	2018	Lao People's Democratic Republic	Project contractor was Power China Resources (China).
Nam Tha 1	Louangnamtha and Borkeo	168 MW	• Électricité du Laos (Lao People's Democratic Republic) (25%) • China Southern Grid Co (China) (75%)	2018	Lao People's Democratic Republic	..
Xayabouy (Mekong)	Xayabouly Luangphabang	1285 MW	• Électricité du Laos (Lao People's Democratic Republic) (20%) • Ch. Kanchang (Thailand) (30%) • Electricity Generating Public (Thailand) (12.5%) • Natee Synergy (Thailand) (25%) • Bangkok Expressway (Thailand) (7.5%) • Others (5%)	2019	Thailand Lao People's Democratic Republic	SK E&C (Republic of Korea) won the EPC contract. Other subcontractors included KOWEPO (Republic of Korea) for the operations and maintenance contract and Ratchburi (Thailand) for construction supervision. Other MNEs involved are Tractebel Engineering (Belgium), Team Group (Taiwan Province of China) and AF Consult (Sweden).
Xe-Pian Xe-Namnoy	Attapeu and Champasak	410 MW	• LLHSE (24%) • SK Engineering & Construction (Republic of Korea) (26%) • Korea Western Power (Republic of Korea) (25%) • Ratchaburi Electric Generating (25%)	2019	Thailand Lao People's Democratic Republic	..
Nam Ngiep 1	Bolikhamxay	290 MW	• Lao Holding State Enterprise (25%) • Kansai Electric (Japan) (45%) • Electricity Generating Authority of Thailand (30%)	2019	Thailand Lao People's Democratic Republic	IHI Infrastructure Systems (Japan) won the EPC contract, and Obayashi (Japan) is providing civil engineering works.
Nam Pha	Luangnamtha	130 MW	• AP Bizlink Group (Malaysia) (100%)	2019	Lao People's Democratic Republic	Toshiba (Japan) is to provide sales and maintenance of hydroelectric equipment.
Nam Phak	Champasak	45 MW	• Électricité du Laos (Lao People's Democratic Republic) (20%) • Kobe Green Power (Japan) (80%)	2020	Lao People's Democratic Republic	..
Nam Ou 1, 3, 4 and 7	Luangphabang Phongsaly	732 MW	• Sinohydro (China) (85%) • Électricité du Laos (Lao People's Democratic Republic) (15%)	2020	Lao People's Democratic Republic	..

Source: ASEAN Investment Report 2018 research and company websites.

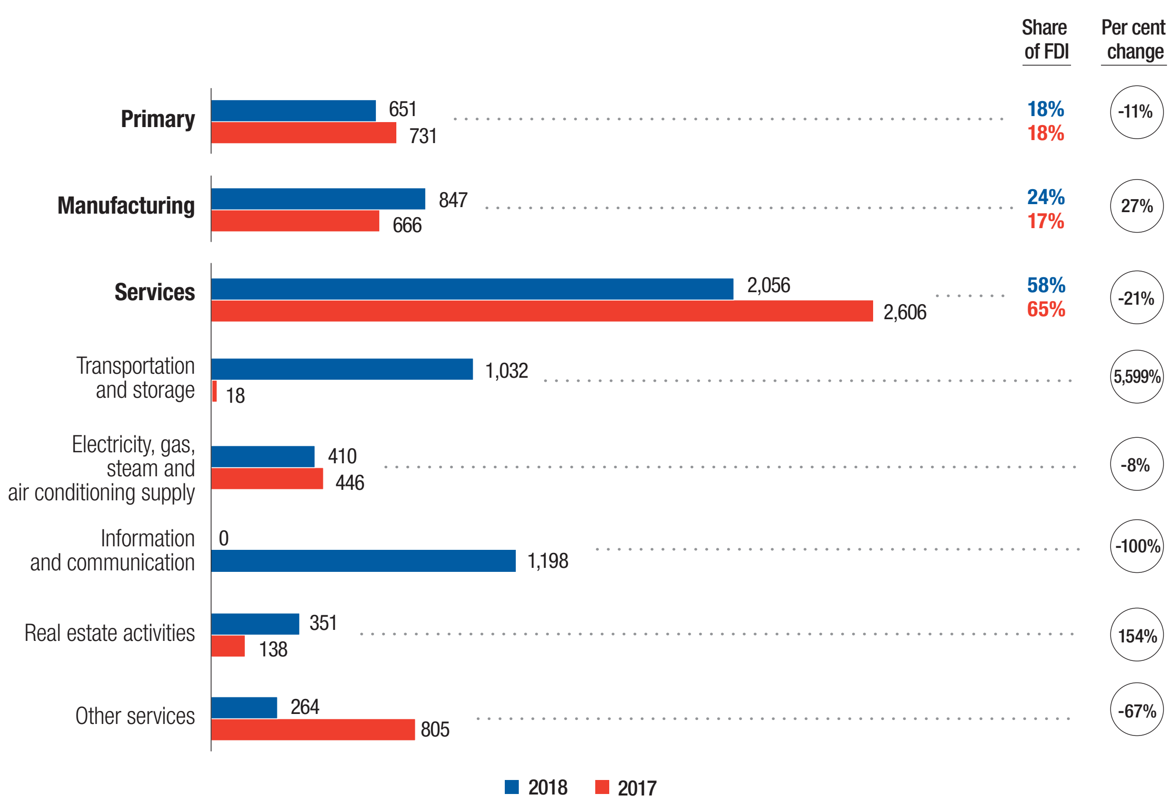
Myanmar: *Intraregional investment remained the largest source of FDI. Manufacturing continued to receive strong investment, and transportation and storage received the highest inflows.*

FDI in Myanmar fell by 11 per cent to $3.6 billion in 2018, which was nevertheless the country's second highest recorded volume of inflows. The fall in FDI was attributed to a 48 per cent decline in FDI in the extractive industry, from $645 million in 2017 to $333 million, and negligible investment in information and communication (which reached $1.2 billion in 2017). Investment in transportation and storage increased the most, by $1 billion and FDI in manufacturing rose by 27 per cent, from $666 million in 2017 to $847 million (figure 1.6). ASEAN continued to be the largest source of FDI (in particular Singapore), accounting for about 60 per cent of inflows (figure 1.7). Sources of FDI for the country remained highly concentrated. As in past years, the top five investors accounted for more than 90 per cent of investment in 2018.

Mining

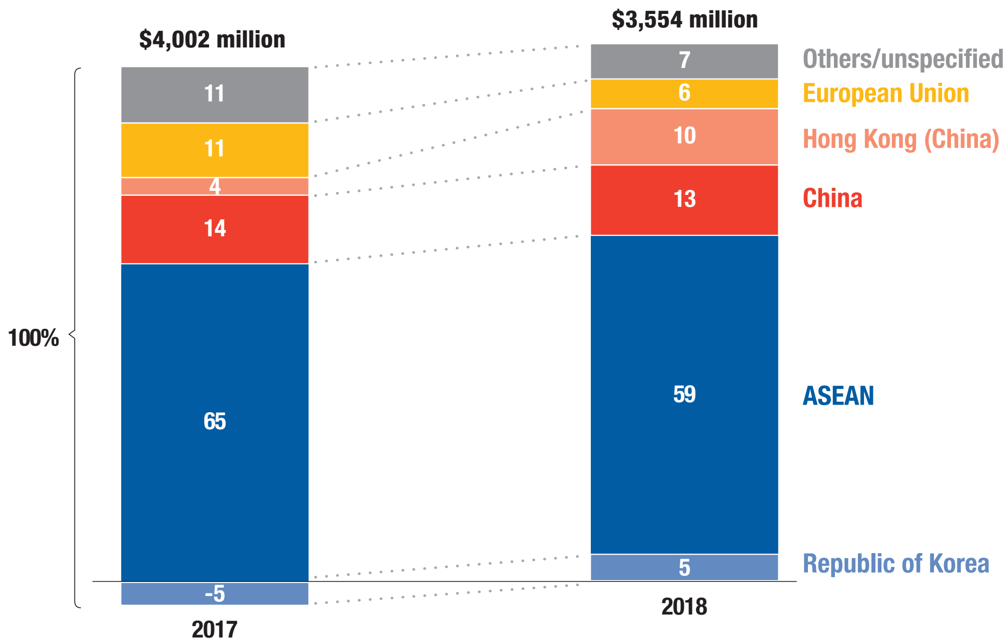
FDI in the extractive industry in Myanmar did not reach the same level as in 2018, but MNEs from Asia, the EU and the United States continued to be active in extractive activities. In 2018, a consortium led by McDermott International and Baker Hughes (both United States) won

Figure 1.6. Myanmar: FDI flows, by economic sector and industry, 2017–2018 (Millions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 1.7. Myanmar: The five largest investor home economies, 2017–2018 (Per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

a contract to develop a gas field, and Coens (Republic of Korea) won a technical services contract from EPC Posco Daewoo Corporation (Republic of Korea). Pacific Hunt Energy (Australia) started drilling and exploration projects with two local companies, and Total (France) started extraction of natural gas. ZhenHua Oil (China) continued its oil project in the country, while Rotary Engineering (Singapore) won a petroleum EPC contract, to be completed in 2020. A joint venture between GC Rieber Shipping and Rasmussengruppen (both Norway) was awarded a seismic survey contract by Total (France) and Eni (Italy). Vallourec (France) secured a contract in 2019 from PTTEP (Thailand) to deliver oil tubular goods for an offshore project. In 2019, PTTEP (Thailand), Eni (Italy), Daewoo (Republic of Korea) and Woodside Energy (Australia) undertook drilling and seismic activities in Myanmar. In the same year, Vryhof (Netherlands) won a contract to supply engineering and rig moving services, and KNM Group (Malaysia) won a $25 million EPC contract for a liquefied petroleum gas facility in Myanmar. FDI in the extractive industry is expected to rise as the Ministry of Electricity and Energy's Oil and Gas Planning Department opens up bidding rounds for offshore and onshore oil and gas blocks.[3]

Manufacturing

FDI continued to flow to a wide range of manufacturing industries, which included food, automotive and garments. In 2018, De Heus (Netherlands) opened a second feed plant, Trouw

Nutrition (Netherlands) opened a $6 million manufacturing facility, and Nestle (Switzerland) opened a factory to serve the local market. Lotte Confectionery (Republic of Korea) acquired an 80 per cent stake in L&M Mayson Company (Myanmar) for $68 million, Koryo Cable (Republic of Korea) made an $8.2 million investment to build a cable manufacturing plant and LS Cable & System (Republic of Korea) opened a $22 million power cable plant.

In 2018-2019, some major automotive MNEs began operations in the country. Suzuki Motor Corporation (Japan) started production in a new factory in 2018, Hyundai Motor (Republic of Korea) opened an automobile knockdown factory in 2019 and Daewoo Bus Myanmar Company (Republic of Korea) expanded its manufacturing and marketing activities in 2019. Other investments made in 2018 included Southland Myanmar Rubber (Thailand) in a rubber production plant and BASF (Germany) in its first manufacturing plant in the country.

In 2019, steelmaker HG Metal Manufacturing (Singapore) opened a plant, Toyo Ink (Japan) established a $6.5 million manufacturing subsidiary and garment company Bogart Lingerie (Hong Kong, China) expanded with a training centre. Hongkong International Sugar Engineering (China), together with Great Wall Food Stuff Industry (Myanmar), started construction of a sugar mill and a biomass power plant estimated to cost $350 million in total. Oshimanoki (Japan) opened a $5 million rice processing machinery factory, and Abba Aluminium (Taiwan Province of China) opened a $13 million aluminium manufacturing plant.

Services

FDI in services covers a wide range of activities from finance, to health care to retail businesses. In 2018, Commercial Bank of Ceylon (Sri Lanka) opened a microfinance company, its second subsidiary in Myanmar, two years after opening a representative office in the country. In the same year, Fresenius Medicare Care (Germany), a provider of dialysis products and services, opened an office in Myanmar. Super Hotel (Japan) opened a $13.5 million four-story hotel in Thilawa Special Economic Zone. Aeon (Japan), The Coffee Bean and Tea Leaf (United States), Gloria Jean's Coffees (Australia), Kentucky Fried Chicken (United States), Pizza Hut (United States), BBQ Chicken (Republic of Korea) and Marrybrown (Malaysia) all expanded their presence by opening stores. Fraser & Neave (Singapore) and Starbucks (United States) also increased their investments in Myanmar in 2018. In addition, logistics companies are expanding in the country; for example, Yamato (Japan) is investing in warehousing and Kamigumi (Japan) acquired a port terminal operating license at the Port of Thilawa.

Digital companies have also been active. Viettel Group (Viet Nam) launched a 4G mobile network, and ride-hailing taxi company Grab (Singapore) expanded into Myanmar in 2018. Fintech investment attracted Ooredoo (Qatar), a mobile payment company, and National Bank of Canada acquired a 22 per cent stake in Ongo (Myanmar), a mobile money service company.

In 2019, insurance companies Dai-ichi Life Insurance (Japan), Manufacturers Life Insurance Company Canada (Canada), AIA (Hong Kong, China), Chubb Tempest Reinsurance (Bermuda) and Prudential (United Kingdom) all established a presence in Myanmar.

Infrastructure

In 2018, Myanmar Railways awarded a $2.5 billion contract to a consortium of Oxley Holdings (Singapore), Sino Great Wall (China) and Min Dhama (Myanmar). In the same year, Sembcorp (Singapore) started operation of the country's largest gas-fired power plant ($300 million) under a 22-year build-operate-transfer agreement, and Korea Electric Power (Republic of Korea) was awarded a $5.3 million service contract from the Myanmar Ministry of Electricity and Energy.

In 2019, Taiyo Nippon Sanso (Japan) opened a gas manufacturing plant and China Energy Engineering Corporation (China) constructed a combined-cycle gas turbine power plant. Energeia Asset Management (Norway), Eco Solutions (Myanmar) and Pyi Phyo Tun (Myanmar) jointly began development of a solar power plant at the Thaton Industrial Zone. Sanli Environmental (Singapore) secured two EPC contracts from the Myanmar government. SepcoIII Electric Power Construction (China) awarded Wärtsilä (Finland) a contract to provide the generating equipment for a new gas-fired power plant in Myanmar.

Viet Nam: *FDI inflows hit a record level, mostly in manufacturing and two key services industries (real estate, and wholesale and retail trade)*

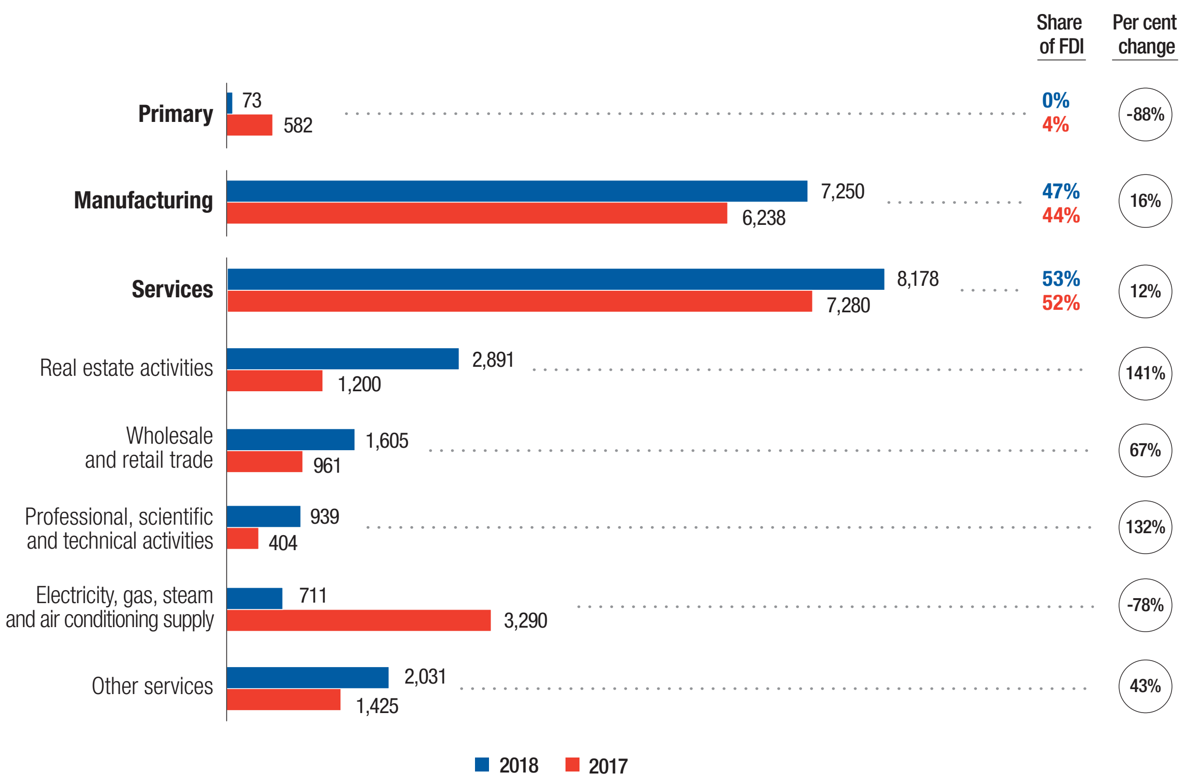
FDI in Viet Nam rose for the seventh consecutive year to an all-time high at $16 billion. Inflows increased by 10 per cent from the previous year. FDI was mostly in manufacturing, real estate, and wholesale and retail activities, all of which received higher inflows than in 2017 (figure 1.8). Japan, the Republic of Korea and ASEAN (primarily Singapore) were the three largest investors in 2018 as they were in 2017 (figure 1.9). These three sources accounted for 62 per cent of investment in 2018. Strong inflows from Japan, intra-ASEAN, Hong Kong (China) and China contributed to the $1.4 billion rise in investment last year.

Manufacturing

As in past years, manufacturing remained the largest recipient of FDI, and FDI to the sector continued to rise. Manufacturing FDI into Viet Nam in 2018 covered a wide range of activities, suggesting the continuous diversification of industries invested by MNEs. Foreign companies established production facilities for aircraft engines, animal feed production, automotive, electronics, clothing and other products. Many of these companies already have a presence in the country, and they invest to expand production capacity to serve the local market and for exports.

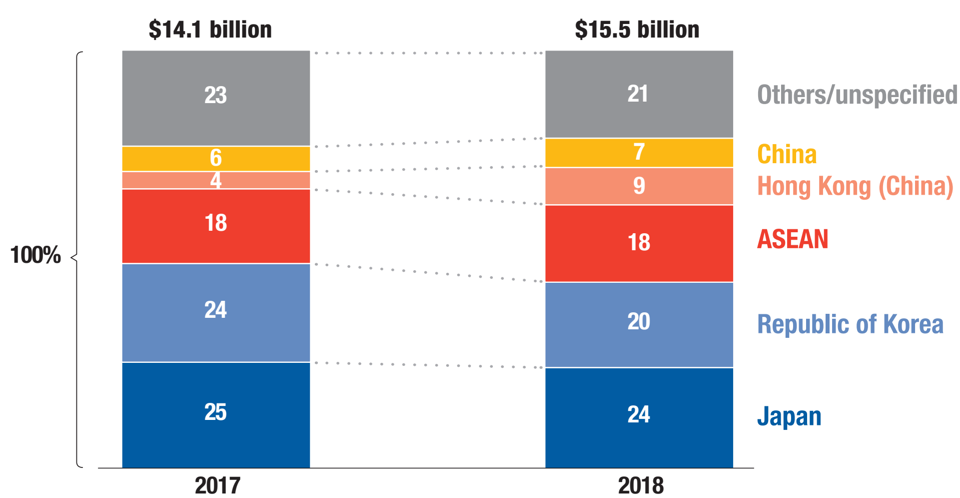
In 2018, CJ Group (Republic of Korea) opened a sixth animal feed plant for an estimated $13.6 million, Sunjin (Republic of Korea) opened a fourth animal feed factory at a cost of $25 million, Cargill (United States) opened a $28 million feed mill (its 12th facility in the country) and Samsung (Republic of Korea) – which has had a significant presence in the country since 2008 – further expanded its production facilities. Other MNEs also expanded: Showa Aluminium Can Corporation (Japan) opened its second factory. Nestle (Switzerland), which already has several production facilities in the country, opened another production plant that sources coffee from local growers; about 90 per cent of the outputs are exported to Indonesia, the Philippines and other Asian countries.

Figure 1.8. Viet Nam: FDI flows, by economic sector and industry, 2017–2018 (Millions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 1.9. Viet Nam: The five largest investor home economies, 2017–2018 (Per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

In the same year, Daikin (Japan) opened an air-conditioner factory and Spectre (Denmark) and Lakeland Industries (United States) opened garment factories for exports. The Pokemon Company (Japan) opened a factory to meet global demand for its merchandise, RCH Group (Italy) opened a high-tech electronics factory for export and Huntsman Corporation (United States) opened a multi-purpose facility to produce polyurethanes and advanced materials for the ASEAN markets. Adidas (Germany) and Nike (United States) moved manufacturing operations from China to Viet Nam for cost reasons, and Hestra (Sweden) opened a glove factory.

Automotive MNE Mazda (Japan) opened a $527 million plant. EDAG (a German engineering service provider) was awarded a contract by VinFast (Viet Nam) to develop the first electric vehicle for the Vietnamese market, while Magna (China) provides engineering expertise for the project. Mabuchi Motor (Japan) also started construction of a motor plant. Foton Motor (China) established Foton Vietnam, the company's second expansion in ASEAN after Thailand. Isuzu (Japan) formed a partnership with Quyen Auto (Viet Nam) to produce refrigerated trucks, Kolon Industries (Republic of Korea) started a new polyester tire cord plant, and VinFast (Viet Nam) and LG Chem (Republic of Korea) formed a joint venture to produce international-standard batteries.

In 2019, Tan Chong Motor (Malaysia) invested $50 million in a new car plant while Hyundai (Republic of Korea) formed a sales joint venture with Thanh Cong Group (Viet Nam). Furukawa Electric (Japan) expanded production capacity, and Nihon Plast (Japan) (manufacturer of automotive parts) established a subsidiary. Engine and transmission parts manufacturer Orient Precision Industries (Republic of Korea) expanded its operations, Kyosha (Japan) established a printed wiring board production subsidiary for the automotive industry and electronic contract manufacturer Key Tronic Corporation (United States) opened a $70 million factory for export. The decision by Key Tronic (United States) to open a plant was motivated by the United States–China trade tensions.[4] Peugeot Group (France), in partnership with Truong Hai Automobile Corporation (Viet Nam), opened a $200 million manufacturing plant to serve the local and export markets. Hanwha Techwin (Republic of Korea) is opening a $100 million manufacturing facility, and Showa Denko (Japan) expanded its production facilities in the country to meet rising regional demand. Hanwha (Republic of Korea) opened a $200 million aircraft manufacturing plant to produce aircraft engine components for export, and Universal Alloy Corporation (United States) started construction of a $170 million aircraft components factory, with the first phase to be completed in 2020.

Also in 2019, Schaeffler (Germany) (manufacturer of bearings for the automotive, aerospace and industrial industries) started construction of a $45 million production plant. Group Intellect Power Technology (Hong Kong, China), a power conversion manufacturer, opened a second factory, and Tata Coffee (India) opened a production plant. CCGrass (China), an artificial-grass manufacturer, started the first phase of a $120 million production plant. Tetra Pak (Sweden) opened a $120 million plant to manufacture aseptic-carton packaging for export to countries in ASEAN and elsewhere.

Services

MNEs in services have also stepped up investment activities in Viet Nam. In the hospitality industry, Rezidor Hotel Group (Belgium) is building a 522-room hotel. SwissBelhotel International (Switzerland) is adding new hotels. In 2018, Mövenpick Hotels & Resorts (Switzerland) started construction of a hotel. In 2019, OYO Hotels and Homes (India), a franchise and lease hotel chain, invested $50 million to expand into the country.

Foreign companies in the wholesale and retail trade, such as drinks company Tealive (Taiwan Province of China) and skin-care company G&M Cosmetic (Australia), opened more stores and supermarkets in Viet Nam in 2018–2019. Retailer Lotte (Republic of Korea), supermarket retailer Aeon (Japan) and Seven-Eleven (Japan) also opened more facilities. TCP Group (Thailand), a drinks company, established an office to conduct marketing and distribution activities, and Cheers (Singapore) also expanded in 2018. The Smoothie Factory (United States) opened more stores across the country in 2018 and 2019. Lotte Mart (Republic of Korea) expanded operations in 2019, adding more stores.

In 2018, other services companies also expanded in Viet Nam. They include architecture firm BSBG (Dubia), logistics company Preferred Freezer Services (United States), and digital freight forwarder Twill (Netherlands). Logistics companies Red Wolf Global (Thailand) and Gold Line Company (Republic of Korea) merged their Viet Nam operations in order to expand in the country. Management consulting company ABeam Consulting (Japan) and Industrial and Commercial Bank of China each opened an office. Hansen Technologies (Australia), a provider of billing and customer care technologies, expanded while ABB (Switzerland-Sweden) opened a Robotics Technical and Service Center to serve global and local manufacturers based in the country.[5]

In 2019, digital and creative agency Vero (Thailand) opened an office in Viet Nam, and polyurethane company Huafon Group (China) established a sales and marketing office. Valmet (Finland), a developer and supplier of technologies, automation and services for the pulp, paper and energy industries, opened an office to support local sales. Fast React (United Kingdom), a supply chain planning company, also expanded in the country.

Infrastructure

MNEs in infrastructure, construction and real estate were particularly active in 2018. JGC Corporation (Japan) won an EPC contract to build a 49 MW solar plant, SK E&C (Republic of Korea) and Technip (France) signed a contract to develop a $2 billion ethylene plant, and Posco E&C (Republic of Korea) and Vietnam Long Son Petrochemical (Thailand and Viet Nam joint venture) started construction of a $680 million wharf facility. Bosch Rexroth (Germany) won a contract for the production of 94 hydraulic cylinders and components for 36 hydraulic power units for flood protection. A consortium led by Alstom (France) with Colas Rail (United Kingdom) and Thales (France) secured a metro system contract, to be completed by 2021. Mai House Hospitality Group (Viet Nam) awarded Mace (United Kingdom) a project to manage the construction of a golf and hotel resort. In 2019, a consortium of Vinci (France) and Acciona Agua (Spain) won a $200 contract for the construction of phase one of a wastewater treatment plant.

1.2.2. Sources of FDI

The share of the top 10 investors (table 1.5) dropped from 75 per cent in 2017 to 64 per cent in 2018, suggesting increasing diversification of FDI sources.

Despite a 3 per cent drop, *intra-ASEAN investment* ($25 billion) was still the largest source of FDI, accounting for 16 per cent of inflows (section 1.3). Singapore remained the overwhelmingly largest regional investor and Indonesia the largest recipient of intraregional investment. Not all intraregional investment from Singapore is indigenous, as foreign subsidiaries based in Singapore (e.g. holding companies and regional headquarters functions) also invest through their Singapore operations in other ASEAN Member States (*AIR 2016, 2017; WIR 2019*).

FDI from the *European Union (EU)* rose by 45 per cent to $22 billion, led by increases in investment from Luxembourg, Denmark, France and the United Kingdom. More than 80 per cent of FDI from the EU went to or through Singapore (primarily from the Netherlands and the United Kingdom). Despite the decline in FDI inflows, the Netherlands is the largest EU investor in the region – a position it also held in 2017.

FDI from *Japan* increased by 30 per cent to $21 billion; it was concentrated in Thailand, Singapore, Indonesia and Viet Nam.[6] FDI from Japan to these four Member States rose in 2018, and they accounted for more than 91 per cent of Japanese investment in the region last year (box 1.1).

FDI from *Hong Kong (China)* increased by 83 per cent to $10 billion in 2018, making the economy the fourth largest investor in ASEAN. Three Member States (Singapore, Thailand and Malaysia) received nearly 60 per cent of that investment.

The *Republic of Korea* is an important investor in the region. In 2018, ASEAN remained a significant destination for Korean OFDI (box 1.2). The majority of these flows continued to concentrate in Viet Nam and Singapore. Flows to Cambodia, Indonesia, Myanmar and Thailand also rose last year.

Table 1.5. Top 10 investors in ASEAN, 2017–2018 (Billions of dollars and per cent)

	2017			2018	
Economy/region	**Value**	**Share (%)**	**Economy/region**	**Value**	**Share (%)**
Intra-ASEAN	25	17	Intra-ASEAN	25	16
United States	25	17	Japan	21	14
Japan	16	11	China	10	7
China	14	9	Hong Kong, China	10	7
Netherlands	10	7	United States	8	5
Hong Kong, China	6	4	Netherlands	8	5
Republic of Korea	5	3	Republic of Korea	7	4
Germany	3	2	Luxembourg	4	3
Switzerland	3	2	United Kingdom	4	2
United Kingdom	3	2	Germany	2	1
Total Top 10	**110**	**75**	**Total Top 10**	**98**	**64**
Other	**37**	**25**	**Other**	**56**	**36**
Total ASEAN	**147**	**100**	**Total ASEAN**	**155**	**100**

Source: ASEAN Secretariat, ASEAN FDI database.

Box 1.1. Japan: outward FDI flows to ASEAN in 2018

Based on outward FDI (OFDI) statistics, outward flows from Japan to ASEAN in 2018 rose by 26 per cent from 2017, to $25 billion. Services remained the largest destination, while manufacturing remained active with different host countries attracting different types of manufacturing activities (box table 1.1.1). Singapore was the largest recipient of manufacturing investment from Japan last year, followed by Thailand and Indonesia.

Box table 1.1.1. Japanese OFDI flows to ASEAN, 2018 (Millions of dollars)

	ASEAN total	Singapore	Thailand	Indonesia	Viet Nam	Philippines	Malaysia	Other ASEAN Member States
Manufacturing	**10,084**	**3,864**	**2,530**	**1,445**	**948**	**646**	**567**	**84**
Food	3,492	2,998	90	78	50	167	38	70
Transportation equipment	2,131	190	748	624	277	159	134	0
Electric machinery	1,155	44	540	128	154	263	37	-12
Chemicals and pharmaceuticals	799	106	198	181	134	41	139	-0
General machinery	796	47	356	147	165	17	62	0
Iron, non-ferrous, and metals	659	74	261	152	104	16	50	0
Precision machinery	237	-1	81	38	75	-7	52	0
Glass and ceramics	219	71	137	49	35	-1	-73	0
Textile	130	..	20	30	51	..	14	14
Lumber and pulp	121	0	24	-53	95	-3	57	0
Rubber and leather	-38	..	15	-12	-341	-12	9	3
Petroleum	-48	..	..	..	-22	0	0	0
Non-Manufacturing	**15,066**	**8,714**	**2,897**	**1,768**	**883**	**326**	**158**	**320**
Finance and insurance	9,665	5,119	2,483	1,337	326	83	263	54
Wholesale and retail	1,463	653	283	203	165	67	59	25
Real estate	1,157	573	125	138	157	13	16	135
Services	681	1,308	-256	29	99	37	-562	25
Transportation	451	291	47	25	41	4	24	20
Mining	448	-2	..	75	..	23	343	0
Construction	394	242	101	-7	41	1	14	1
Communications	373	273	30	-15	8	6	40	30
Fishery and marine products	-1	0	..	0	..	0	0	0
Farming and forestry	-3	..	..	..	-1	..	..	0
Total	**25,149**	**12,578**	**5,427**	**3,213**	**1,831**	**972**	**725**	**404**

Source: Ministry of Finance and Bank of Japan.

More than 77 per cent of manufacturing investments in Singapore were in the food industry. Thailand and Indonesia received the most investment in transport equipment, while Thailand and the Philippines received the most in electric machinery. The vibrant automotive industry and clusters in Thailand and Indonesia continued to attract Japanese automotive OFDI (box table 1.1.2). Strong Japanese investment, particularly in automotive and electrical and electronics, is strengthening regional production networks involving intra- and interfirm arrangements. For instance, engines produced by Mazda Powertrain Manufacturing (Thailand) will be supplied to manufacturing facilities in Malaysia, Thailand and Viet Nam. Toyota, which has already established a network of operations in ASEAN, is collaborating with Grab (Singapore), a leading Southeast Asian online-to-offline mobile

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Box 1.1. Japan: outward FDI flows to ASEAN in 2018 (Concluded)

platform, to further expand its range of business activities. Other major Japanese automotive manufacturers and component suppliers have further expanded their activities in ASEAN, forming and strengthening regional production networks involving original equipment manufacturers, contractors and suppliers.

Box table 1.1.2. Japanese automobile manufacturers: new major investments in ASEAN in 2018-2019 (Selected cases)

Indonesia	Mitsubishi	Mitsubishi Motors is increasing production capacity at its manufacturing facility in Bekasi, Indonesia, to meet growing local demand and for export.
	Nissan	Nissan Motor built a new cylinder head and crankshaft factory alongside an existing Datsun assembly plant.
Philippines	Toyota	Toyota Aisin Philippines is establishing an automatic transmission component production line.
		Toyota Motor Philippines opened a new vehicle logistics centre in Santa Rosa.
Singapore	Toyota	Toyota announced plans to invest $1 billion in Grab (Singapore), with the aim of strengthening collaboration and accelerating development of new mobility technologies. The partnership will expand mobility options for consumers throughout Southeast Asia.
Thailand	Mazda	Mazda opened an engine machining factory at its powertrain plant in Chonburi, investing $200 million to increase engine production capacity.
	Mitsubishi Fuso	Mitsubishi Fuso Truck and Bus Corp started construction of a complete knock-down assembly plant in Thailand.
Viet Nam	Mitsubishi	Mitsubishi opened a new training centre in Binh Duong Province, similar to facilities already established in Thailand and the Philippines.

Source: Japan Automobile Manufacturers Association and company press releases.
Note: As of May 2019.

Japanese companies in other industries are also expanding in ASEAN. For instance, Toyo Seikan is constructing an $81 million plant for can manufacturing in Thailand, Kyocera Document Solutions has announced plans to build a $51 million third plant in Viet Nam and Nippon Shokubai is expanding its capacity with a $200 million acrylic acid plant in Indonesia. Oji Holdings (Oji Paper) is building a $36 million factory in Indonesia through a joint venture, Mitsui Chemicals is expanding production of alpha-methylstyrene in Singapore with a $125 million facility and Marubeni is establishing a $57 million containerboard manufacturing facility and packaging materials sales company. Hoya is building a $272 million facility for fabricating 3.5-inch hard disk drive substrates in the Lao People's Democratic Republic.

Investment from Japan to other sectors in ASEAN is growing, attracted by the region's large and expanding market. Japanese companies also see ASEAN as a competitive manufacturing base. Japanese MNEs are expanding or investing in finance, wholesale and retail, and real estate.

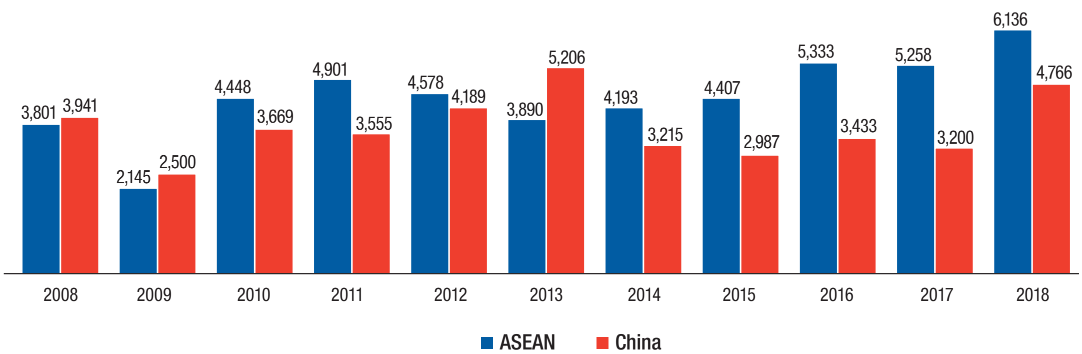
Source: JETRO.

FDI from *China* fell by 26 per cent to $10 billion but remained at a high level. The decline was mainly due to a significant drop in investment in Singapore and Malaysia. Singapore and Indonesia were the two largest recipients of Chinese FDI, and they accounted for nearly 60 per cent of all Chinese investment into ASEAN in 2018. The overall decline mirrors the global fall in Chinese OFDI flows in 2018 as well as China's policy of curbing Chinese OFDI in industries such as real estate, entertainment and sports (*WIR 2019*). China continued to be the largest investor in the Lao People's Democratic Republic and Cambodia.

Box 1.2. Korean outward FDI flows to ASEAN, 2018

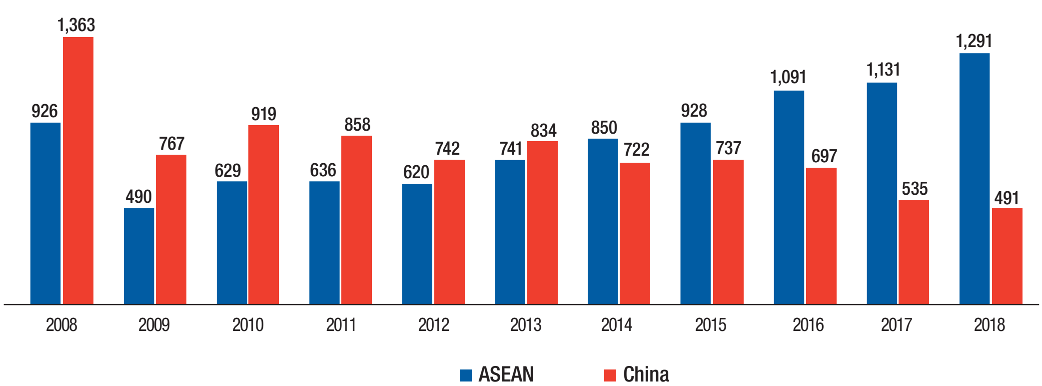
OFDI statistics show that Korean investments to ASEAN rose by 17 per cent in 2018, to $6.1 billion, and remain concentrated in manufacturing. The number of new Korean investors in the region grew by 14 per cent to 1,291. Both figures are the highest since 1980. Korean OFDI flows to ASEAN have exceeded those to China in all but one year since 2010. The gap between such flows to ASEAN and flows to China has been widening (box figure 1.2.1). The United States–China trade tensions and the Korean government's New Southern Policy have encouraged many Korean firms to shift investments from China to ASEAN.[a] There were significant differences between the two investment destinations in 2018. The share of Korean firms investing in ASEAN rose by 3 per cent to 36 per cent, while the share investing in China declined by 2 per cent to 14 per cent (box figure 1.2.2).

Box figure 1.2.1. Korean OFDI flows in ASEAN and China, 2008–2018 (Millions of dollars)



Source: Korea Eximbank FDI database.

Box figure 1.2.2. New Korean enterprises investing in ASEAN and China, 2008–2018 (Number of enterprises)



Source: Korea Eximbank FDI database.

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Box 1.2. Korean outward FDI flows to ASEAN, 2018 (Concluded)

The industrial distribution of Korean OFDI flows to ASEAN differs by countries. For instance, Viet Nam attracted 80 per cent of manufacturing-related investments, Singapore received 60 per cent of FDI in finance and Indonesia received more than 70 per cent of OFDI in agriculture and forestry. Korean companies continued to expand their footprint in the region for market-seeking and efficiency-seeking reasons (box table 1.2.1).

FDI by large enterprises accounted for two-thirds of all Korean investments in ASEAN, whereas FDI by small- and medium-sized enterprises (SMEs) accounted for only 26 per cent. The share of FDI by SMEs doubled between 2010 and 2018.

Box table 1.2.1. Korean investment in ASEAN, 2018–2019 (Selected cases) (Millions of dollars)

Investing firms	Host country	Activity	Value
		Manufacturing sector	
Hyundai Motor	Indonesia	Construction of electric vehicle plant	2,800
Hyundai Kefico	Viet Nam	Manufacturing components and accessories for motor vehicles	120
Hyosung Group	Viet Nam	Construction of polypropylene manufacturing plant	1,200
LG Innotek	Viet Nam	Camera module production	501
Hyundai Heavy Industries	Indonesia	Construction of power stations	46
		Finance and insurance sector	
KB Kookmin Bank	Indonesia	Acquired 22 per cent stake in Indonesia's Bank Bukopin	-
Mirae Asset Global Investments	Viet Nam	Acquired Tin Phat Management Fund	-
Korea Trade Insurance Corp	Malaysia	Invested in an oil refinery and petrochemical plant	380
Samsung Engineering & Samsung C&T	Malaysia	Won a contract to build production facilities for linear low-density polyethylene and ethylene glycol	900
99 Korean SMEs	ASEAN	Supply equipment to the Samsung consortium	80
KB Financial Group	ASEAN/ Singapore	Provides financial support for ASEAN start-ups	190
Korea Investment Partners	ASEAN/ Singapore	Partners with Golden Equator Capital (Singapore) to support ASEAN start-ups and Korean firms	88
Hanwha Asset Management	Singapore	Partners with Golden Gate Ventures (Singapore) to support ASEAN start-ups	200
		Other services	
Hyundai and Kia	Singapore	Invest in Grab (Singapore), an online-to-offline mobile platform	250
Naver	Singapore	Jointly invest with Mirae Asset Financial Group (Republic of Korea) in Grab (Singapore)	150
Lotte Group	Viet Nam Indonesia	Supports digital transformation of retail business and construction of new shopping malls	11,000
		Infrastructure development	
LS Cable & System	Indonesia	Established joint venture with a local partner to construct an electric cable manufacturing factory	40

Source: Media and company websites.

Source: ASEAN Investment Report 2019 research.

[a] Bloomberg, "Southeast Asia has an investment boom, thanks to the trade war", 22 October 2018; Korea Herald, "New southern policy at heart of Moon's diplomatic diversification", 17 December 2018; and Vietnamnet, "Korean investment flows set to rise further in Vietnam", 9 April 2018.

[b] Maeil Business News Korea, "Korean manufacturers' FDI rises in Vietnam, drops in China", 22 November 2018. .

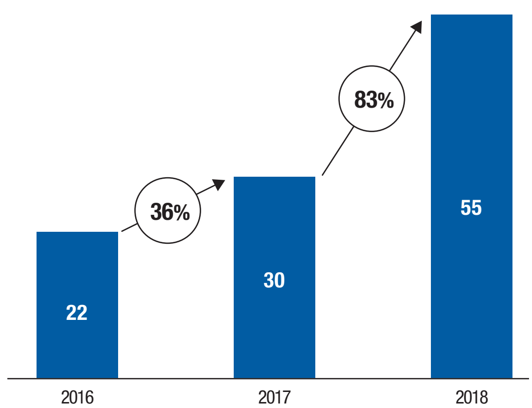
FDI from the *United States* plummeted to just $8 billion in 2018, from $25 billion in 2017. This fall in United States investment was global. The tax reforms introduced in late 2017 encouraged many American MNEs to move profits retained in their foreign subsidiaries, holding companies or regional headquarters back to the home country (UNCTAD 2018, *WIR 2019*). In Singapore, the drop in United States FDI was significant, from $28 billion in 2017 to just $4 billion last year. United States MNEs in financial services divested -$11 billion in 2018 (from $24 billion in 2017). However, United States investment in manufacturing increased, especially in Indonesia, Singapore and Thailand.

1.2.3. FDI by sector and industry

Strong FDI into the manufacturing sector (figure 1.10a) and three major services industries (finance, wholesale and retail trade, and real estate) (figure 1.10b) contributed to the record inflows in 2018 (annex table 1.1). They together received $130 billion in investment or some 85 per cent of total inflows in the region.

There were important changes in the industrial investment pattern in 2018. FDI in the manufacturing sector rose significantly, while investment in the three major services industries (finance, wholesale and retail, and real estate) was mixed.

Figure 1.10a. ASEAN: FDI flows in manufacturing, 2016–2018 (Billions of dollars and per cent)



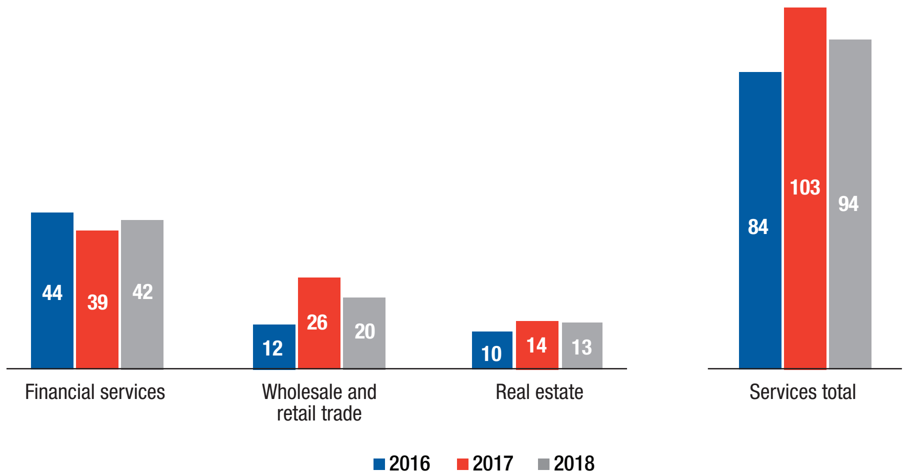
Source: ASEAN Secretariat, ASEAN FDI database.

Primary sector

Agriculture

FDI in agriculture fell by 6 per cent to $4 billion. ASEAN companies remained the largest investor in agriculture activities. Some 84 per cent of FDI flows into agriculture was intraregional. Indonesia is the principal recipient, receiving more than 80 per cent of the agriculture FDI. Malaysian and Singaporean companies are active investors in Indonesia (sections 1.3 and 1.4).

Figure 1.10b. ASEAN: FDI flows in services and the three major industries, 2016–2018 (Billions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

Extractive industries

FDI in the extractive industries fell significantly, from $2 billion in 2017 to a divestment of -$6 billion, largely due to divestments (sales of assets to local firms) from the EU (-$3.4 billion) and the United States (-$0.9 billion). MNEs from ASEAN also divested (-$836 million). Most of the divestment took place in Indonesia. For instance, PT Indonesia Asahan Aluminium (Indonesia) acquired a 40 per cent stake in Grasberg Mine from Rio Tinto (United Kingdom) for $3.5 billion and PTT Exploration & Production (Thailand) acquired a 22 per cent stake from Shell (Netherlands) for the Bongkot offshore gas field in Thailand, a joint project of the two companies, for $750 million.

Manufacturing sector

The manufacturing sector witnessed a significant jump in FDI, with inflows rising from $30 billion in 2017 to a record level of $55 billion in 2018. Manufacturing FDI accounted for 35 per cent of total inflows in the region, which contrasted with only 21 per cent in 2017. Most ASEAN Member States saw an increase in manufacturing FDI; much of it went to Singapore, Indonesia, Viet Nam and Thailand.

The United States ($12 billion), Japan ($10 billion), intra-ASEAN investment ($8 billion), the EU ($7 billion), Hong Kong (China) ($3 billion) and the Republic of Korea ($2 billion) were the six largest sources of manufacturing FDI in 2018. All made larger investments in manufacturing activities than in 2017. Investment from these source economies and intra-ASEAN investment accounted for more than 76 per cent of manufacturing FDI in the region. MNEs were particularly active in automotive and electronics activities (section 1.4).

The increase in manufacturing FDI in ASEAN is due in part to a longer-term gradual shift of production capacity from China and elsewhere to ASEAN (see box 1.2, and in particular box figure 1.2.2). The structural driver is the steady increase in relative labour costs in China, and now that shift has accelerated as a result of the effect of the United States-China trade tensions. The main beneficiaries in terms of manufacturing FDI include Indonesia, Thailand and the CLMV countries.

There has been an increase in cases of foreign and Chinese companies establishing or shifting operations from China to ASEAN because of these reasons,[7] with more firms planning to follow suit.[8] More than one-third of the 430 United States companies in China surveyed by the American Chamber of Commerce China and the American Chamber of Commerce Shanghai have moved or are considering moving production bases elsewhere to mitigate the effects of the higher tariffs, with 18.5 per cent planning to move to Southeast Asia (AmCham China and AmCham Shanghai 2018).

Tech companies have already made such moves. For example, Nintendo (Japan) has announced its intention to move video console manufacturing to Viet Nam.[9] Apple (United States) is considering moving 15 to 30 per cent of its Chinese production capacity to Southeast Asia and has already begun trial manufacturing of its AirPods in Viet Nam.[10] Hewlett-Packard and Dell (both United States) plan to move some of their operations for personal computers to ASEAN.[11] Furniture company Man Wah Holdings (Hong Kong, China) has expanded with a facility in Viet Nam. Another furniture company, UE Furniture (China) and Strategic Sports (China), a helmet production company, are planning to move part of their operations to Viet Nam to avoid the tariffs imposed on China.[12] Electronics company Ricoh (Japan) moved its manufacturing to Thailand from China,[13] and Kyocera (Japan) moved its manufacturing from China to Viet Nam, both to avoid tariffs. United States companies have also made such moves. Harley Davidson set up operations in Thailand to serve the ASEAN[14] and China markets, and shoe company Brooks Sports (United States) moved its production to Viet Nam from China.

Services sector

FDI in finance reversed the drop seen in 2016–2017 with a rise from $39 billion in 2017 to $42 billion in 2018. The EU, Japan and ASEAN were the major investors (chapter 2). More than 80 per cent of FDI in finance in ASEAN last year went to Singapore. A significant part of that investment may be used to fund FDI activities throughout the region, given the importance of regional headquarters functions in Singapore.

FDI in the wholesale and retail industry in ASEAN fell by more than $6 billion to $20 billion in 2018, despite increased investments from Japanese, Chinese and ASEAN MNEs (chapter 2). The fall was due to a -$9 billion divestment by United States firms (mostly funds repatriation), which had invested $4 billion in 2017. There was also a significant fall in FDI from EU firms, which invested $8 billion in 2017 but just $292 million in 2018.

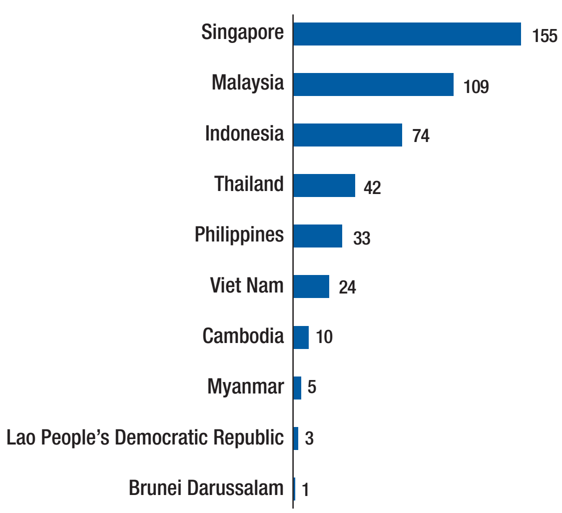
FDI in real estate was flat at $13 billion. MNEs from three major economies (China, Hong Kong (China) and ASEAN) invested a combined $7 billion, which accounted for about 50 per cent of total FDI inflows in this industry in 2018. The rise in real estate FDI from Hong Kong (China), Japan and the United States made up for the decline in intraregional investment and in investment from China. Malaysia witnessed the largest drop in FDI in real estate, from $3 billion in 2017 to less than $1 billion in 2018. Real estate investment in Indonesia and Singapore also fell.

1.2.4. Cross-border M&As in ASEAN

Cross-border net M&A sales in ASEAN rose by 6 per cent to $18 billion in 2018, contributing to the rise in FDI in the region (table 1.6). Companies from developed countries acquired considerably less assets last year. M&As from developed countries fell by 78 per cent to $2 billion in 2018, which contrasted with 2017, when companies from developed countries made nearly $10 billion in acquisitions and contributed to 58 per cent of total net M&A sales.

However, a 126 per cent rise in M&A activities from developing economies, to $15 billion, pushed up the total value of deals in the region. This growth was due to a single megadeal by a Chinese company, which accounted for 65 per cent of total net M&A sales in ASEAN in 2018. Nesta Investment Holdings (China) acquired Global Logistic Properties (Singapore), the largest warehouse operator in Asia, for $11.6 billion. Aside from M&As by Chinese companies, intra-ASEAN M&As rose (section 1.3) and transactions by Korean companies doubled, from $316 million in 2017 to $630 million.

Figure 1.11. Cross-border M&A sales in ASEAN, 2018 (Number of deals)



Source: UNCTAD M&A database.
Note: Number of deals including divestments.

The total number of deals fell from 496 in 2017 to 456 in 2018. MNEs from Japan and Singapore made the largest number of deals (76 each) followed by Malaysia (41), the United States (38) and China (34). Singapore and Malaysia accounted for nearly 60 per cent of the number of deals in 2018 because of their relatively more mature M&A environment (figure 1.11). Indonesia and Thailand were the next most active locations for M&A activities last year.

The number of megadeals exceeding $500 million was the same as in 2017 (i.e. 16 megadeals) (annex table 1.2). The megadeals explain that despite fewer transactions in 2018 than in 2017, cross-border M&A values rose. The $11.6 billion transaction by Nesta Investment Holdings (China) in Singapore was the main reason. In 2018, the 16 megadeals contributed to a total value of $30 billion, while the total value of megadeals in 2017 contributed $22 billion worth of transaction values.

Table 1.6. Cross-border M&A sales in ASEAN, by region/economy of acquirer, 2015–2018 (Millions of dollars)

	2015	2016	2017	2018
World excluding Caribbean financial centres	**10,309**	**7,476**	**16,741**	**17,661**
Developed economies	**1,718**	**-4,159**	**9,677**	**2,149**
European Union	875	-6,539	496	-3,181
Canada	51	327	-720	-392
United States	-1,136	-100	2,914	4,264
Australia	-304	624	1,374	-1,421
Japan	2,220	1,506	5,902	2,880
Developing economies excluding Caribbean financial centres	**8,191**	**11,494**	**6,773**	**15,337**
Asia	**8,191**	**11,057**	**6,618**	**16,052**
China	1,647	4,778	3,644	13,447
Hong Kong, China	839	-509	1,192	996
Korea, Republic of	98	254	316	630
Intra-ASEAN	**4,667**	**2,783**	**825**	**992**

Source: UNCTAD, M&A database.
Note: On net basis.

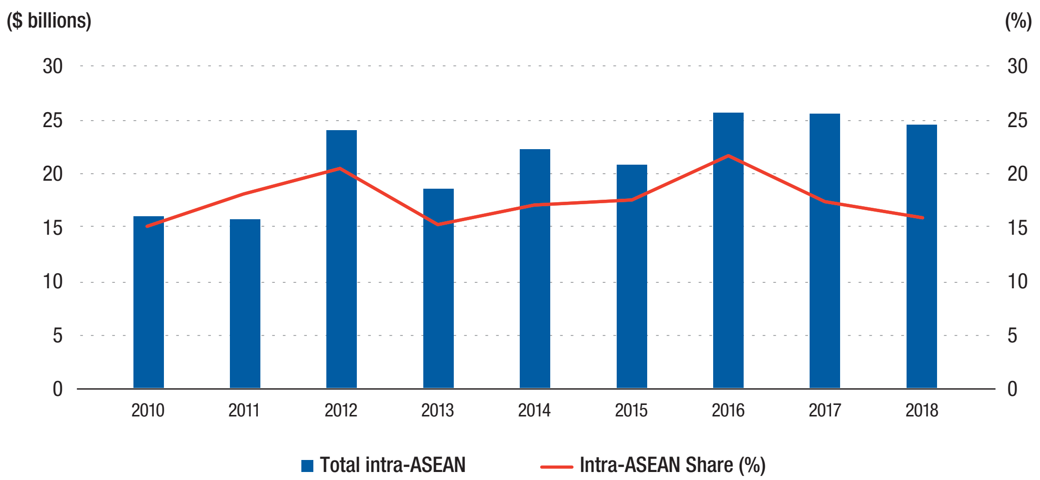
1.3. INTRA-ASEAN INVESTMENT AND ENTERPRISE REGIONALISATION

Intra-ASEAN investment declined by 3 per cent in 2018, to $25 billion, and the intra-ASEAN share of total FDI in the region dropped by 1 per cent to 16 per cent (figure 1.12). Despite the decline, intraregional investment remained at a high level compared with the historical trend and is still the largest source of investment for the region. In addition to Indonesia, the CLMV countries continued to receive increasing attention from ASEAN companies.

Regional integration, investment opportunities and the expansion of corporate activities continued to drive the growth of intra-ASEAN investments. Some large ASEAN companies continued to expand regionally with investment into multiple ASEAN Member States in 2018 and 2019. They include Axiata, Maybank and Leong Hup International (all Malaysia); Ayala, Pilmico Foods Corporation, San Miguel and Jollibee (all Philippines); Central Group, CP Foods, Gogoprint and Siam Cement (all Thailand); and Golden Agri-Resources, Grab, Keppel and Wilmar (all Singapore). ASEAN start-ups are also contributing to intra-ASEAN investments through their internationalization and success in fundraising to expand in the region.

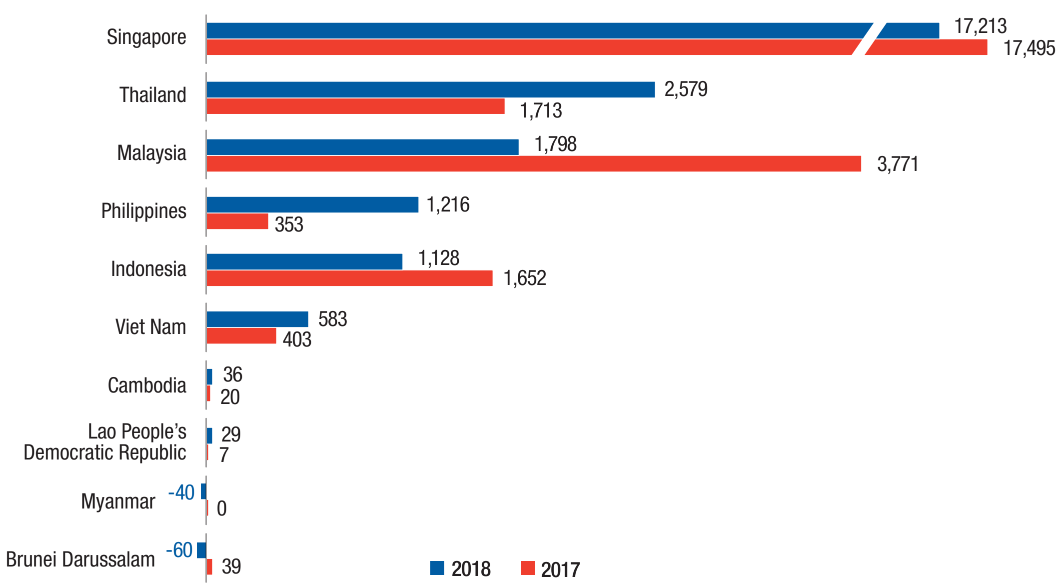
Intra-ASEAN investment is inflated by investments originating from outside the region channelled through Singapore. Excluding such conduit flows, the share of intra-regional stock drops by about one fifth (*WIR 2019*). In 2018, total investment from Singapore into other ASEAN Member States remained flat, at $17 billion (figure 1.13), with some 61 per cent going to Indonesia. Investment from Thailand (the second largest investor) rose and Malaysia (the third largest) dropped. These three countries accounted for 88 per cent of outward intra-ASEAN investment last year (Singapore alone accounted for 70 per cent).

Figure 1.12. Intra-ASEAN investment, 2010 to 2018 (Billions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 1.13. Intra-ASEAN investment, by source country, 2017–2018 (Millions of dollars)



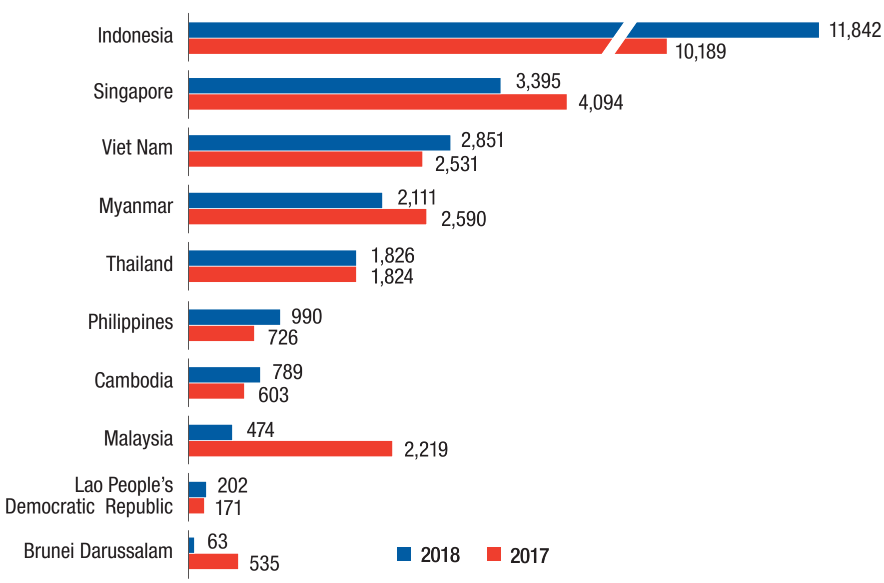
Source: ASEAN Secretariat, ASEAN FDI database.

In 2018, Indonesia remained the largest recipient of intraregional investment, receiving more than 48 per cent of all intra-ASEAN investments. ASEAN investments into Indonesia rose by 15.7 per cent to $12 billion in 2018 (figure 1.14), driven by a 11.6 per cent rise in investment from Singapore to $10.5 billion. Intra-ASEAN FDI contributes to 54 per cent of all FDI into Indonesia. ASEAN investment in Singapore, the second largest recipient of intraregional investments, dropped from $4 billion in 2017 to $3.4 billion in 2018, while investment in the CLMV countries (except Myanmar) rose. ASEAN companies continued to invest and expand operations in the CLMV countries mostly for efficiency-seeking and market-seeking reasons. Emerging opportunities have also attracted them to these countries.

Intraregional investment by Thai companies recovered to $3 billion in 2018, after the fall to $2 billion in 2017. Companies from the Philippines have been actively investing, with an increase from $353 million in 2017 to more than $1 billion in 2018. That increase was also attributable to some large M&A deals. Malaysian companies invested less in the region, with investment falling by 52 per cent, from $4 billion in 2017 to just $2 billion.

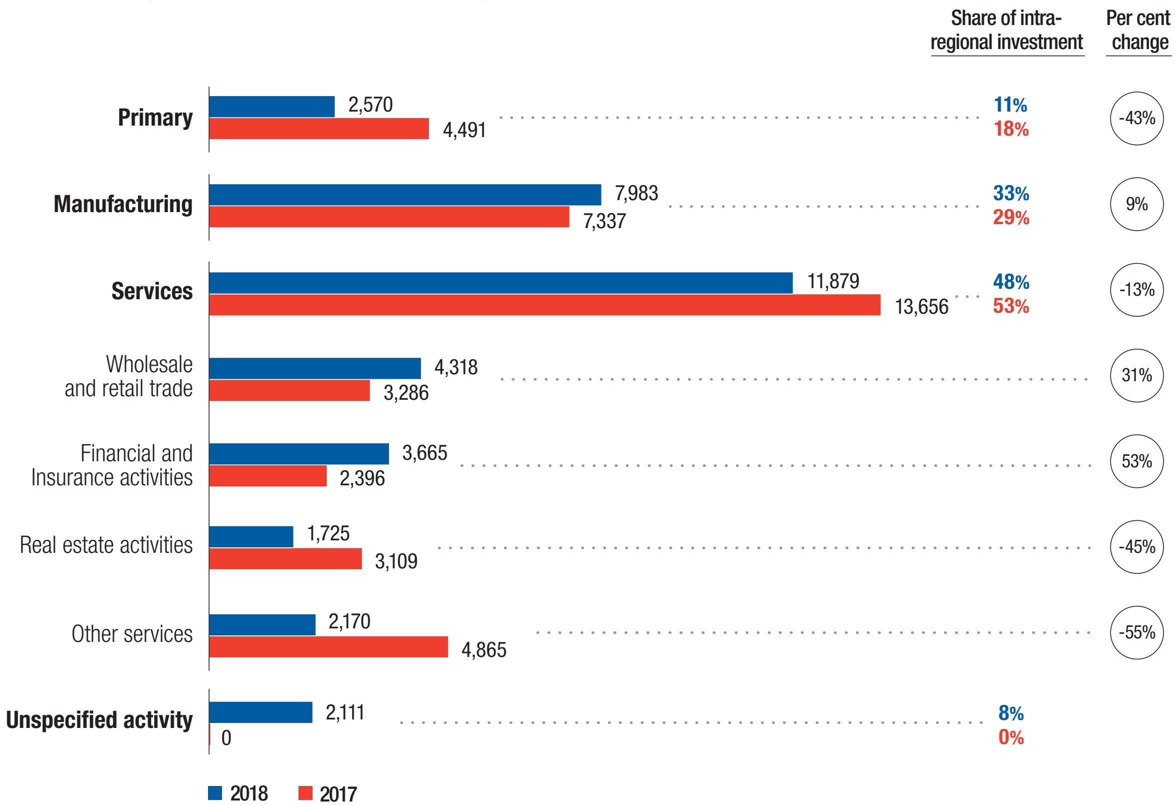
As in 2017, ASEAN investors in 2018 were active in manufacturing and two major services industries (finance, and wholesale and retail trade) (figure 1.15). Despite the 13 per cent decline, services remained the largest recipient, accounting for 48 per cent of intraregional investment. However, the share of manufacturing investment in total intra-ASEAN investment rose by 4 per cent to 33 per cent.

Figure 1.14. Intra-ASEAN investment, by host country, 2017–2018 (Millions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 1.15. Intra-ASEAN investment, by economic sector and industry, 2017-2018
(Millions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

Agriculture

In 2018, ASEAN companies invested $3.4 billion in agriculture and forestry, 11 per cent less than in 2017. Almost all of that investment (94 per cent) came from companies based in Singapore. Olam Group (Singapore) expanded in Viet Nam in 2018 by acquiring a 30 per cent stake in Viet Nam's second largest cashew processor (Long Son Joint Stock Company) for $20 million. Musim Mas (Singapore) expanded into Viet Nam through the establishment of a $71 million vegetable oil plant. Bumitama Agri (Singapore) expanded its plantations in Indonesia, and Golden Agri-Resources (Singapore) also expanded, in Indonesia as well as Malaysia. Wilmar (Singapore) expanded its downstream capacities in Indonesia and started construction of processing facilities (including an oils and grains complex) in Myanmar in 2018. In 2019, it acquired a 51 per cent interest in Assar Refinery (Malaysia) and a 70 per cent interest in Greenfarm Food Industries (Malaysia). In 2019, Olam Group expanded into Indonesia by acquiring an 85 per cent equity interest in YTS Holdings (Singapore), which owns Indonesia's largest cocoa processor, for $90 million. Also in 2019, Kuala Lumpur Kepong (Malaysia) acquired a 95 per cent stake in PT Putra Bongan Jaya (Indonesia), an oil palm company, for $80 million. It also plans to invest in the Philippines.

Manufacturing

Intra-ASEAN manufacturing investment rose from $7.3 billion in 2017 to $8 billion, suggesting an increasing industrial connectivity among ASEAN Member States through ASEAN MNEs.

Investments from three countries in the region rose in 2018. Companies based in Singapore were the largest manufacturing investors (accounting for more than 80 per cent of intraregional investment in this industry), followed by companies from Malaysia and Thailand.

In the food processing industry, Wilmar (Singapore) started building a manufacturing complex in Indonesia, which will have a refinery, flour mills and bio-diesel and other plants. In Viet Nam, three of Wilmar's new factories became fully operational in 2018 – a rice mill, a grains value added processing plant and a sauce and condiment plant. In Myanmar, Wilmar started construction of an oil and grains complex. In 2018, Leong Hup International (Malaysia) opened its fourth feed mill there, estimated to have cost $20 million, and CP Group (Thailand) opened another animal feed plant. Pilmico Foods Corporation (Philippines), a flour milling company that also owns hog, poultry and aqua feed operations, expanded operations across ASEAN in 2018 by acquiring a 75 per cent stake in one of the largest agribusiness MNEs in ASEAN (Gold Coin Management Holdings (British Virgin Islands) for $334 million. The acquisition provided Pilmico with immediate access to 20 livestock and aqua feed mills across 11 economies in Asia. In 2019, CP Foods (Thailand) invested in an export hub for its poultry and pork business based in Viet Nam. Leong Hup International (Malaysia) announced plans to expand further in Viet Nam.

Semiconductor company UTAC Group (Singapore) expanded operations in Thailand in 2018. Venture Corporation (Singapore), a high-tech design and manufacture firm, acquired a new facility in Malaysia in 2019. Fraser & Neave (headquartered in Singapore) opened a new subsidiary in Malaysia and made additional investments in that host country. It also acquired more equity interest stakes in Vinamilk (Viet Nam), raising them to 20 per cent.

In other industries, Sime Darby (Malaysia) expanded its manufacturing activities in both Indonesia and Thailand. Though a joint venture with Komatsu Heavy Equipment (Japan), UMW Holdings (Malaysia) increased its technical support operations in Brunei Darussalam, Malaysia, Myanmar and Singapore. In 2019, Top Glove (Malaysia) acquired surgical glove maker Aspion (Singapore) for $335 million. It began constructing factories in Thailand and Viet Nam. In 2018, through a joint venture with Chip Mong Group (Cambodia), Siam Cement (Thailand) expanded operations in Cambodia with a $262 million cement factory. In the same year, Siam Cement Group (Thailand) through its subsidiary (SCG Chemicals (Thailand)), increased its stake by 29 per cent in Binh Minh Plastics (Viet Nam) for about $101 million. It also acquired a 50 per cent stake in PT Nusantara Polymer Solutions (Indonesia) and set up the SCG Roofing Centre in the Lao People's Democratic Republic.

In addition to the three major source countries (Malaysia, Singapore and Thailand), companies from Viet Nam also contributed to intra-ASEAN investment. They include Vietnam Rubber Group, which opened a rubber latex processing plant in Cambodia in 2018. Eurowindow, which supplies doors and facades, is investing $120 million to expand in Myanmar with two factories, to serve local and regional markets.

Services

ASEAN companies stepped up investments in finance and insurance activities in 2018 (chapter 2). Phillip Life Assurance (Singapore) opened an office in Cambodia; Oversea-Chinese Banking Corporation (Singapore) established a private banking unit in Indonesia, an addition to its existing wealth management services; and Maybank (Malaysia) expanded in Brunei Darussalam. The Malaysian bank also expanded operations in Singapore and diversified its services in Thailand by offering advisory and derivative businesses. United Overseas Bank (Singapore) expanded in Malaysia and established a subsidiary in Viet Nam, and Kasikornbank (Thailand), expanded its operations in that country and in Indonesia. Asia Credit Bureau Holding Company (Singapore) expanded into Myanmar in a joint venture with the Myanmar Bank Association.

In 2019, some ASEAN finance and insurance companies continued to show increased interest in investing in the region. Insurance company Etiqa (Malaysia) expanded into Cambodia, and the Export-Import Bank of Thailand opened a representative office in Cambodia. United Overseas Bank (Singapore) also expanded its services in Viet Nam, by offering life insurance products through a partnership agreement with Prudential Financial (United States), and Public Bank (Malaysia) opened six new branches in the country. CIMB Bank (Malaysia) entered the Philippines with a wholly owned subsidiary and also expanded in that host country through partnerships with CIS Bayad Centre (Philippines) and FINTQnologies (Philippines).

ASEAN companies in other services industries also continued to make investments in the region. They include Jollibee Foods (Philippines), which opened more stores in Brunei Darussalam, Indonesia, Malaysia, Singapore and Viet Nam in 2018 and 2019. QAF (Singapore) expanded its bread production and distribution business in the Philippines in 2018. OUE Lippo Healthcare (Singapore) expanded operation in Myanmar through a combined $19.5 million acquisition in a 40 per cent and 35 per cent stake in two hospitals owned by Waluya Graha Loka (Indonesia) in 2018. In the same year, co-working company Chain Toong (Viet Nam) expanded into Cambodia and the Lao People's Democratic Republic, Kino International (Indonesia) expanded in Cambodia through a joint venture with VSCP Investment (Cambodia) and Inthanin Coffee (Thailand) opened a store each in Cambodia and the Lao People's Democratic Republic.

IT and digital economy

ASEAN IT and digital companies continued to expand regionally (*AIR 2018*). In 2018, digital advertising company Innity (Malaysia) expanded into Cambodia to follow or to be close to clients (e.g. Angkor Beer, Canadian International School, Samsung and Toyota). In the same year, Aetins (Malaysia) and IG Tech (Cambodia) formed a joint venture for digitized insurance solutions, Fortesys Distribution (Malaysia) partnered with Plover Bay Technologies (Indonesia) to establish a network solutions business in Indonesia and retail technology company Pomelo (Thailand) expanded in Singapore. Keppel Data Centres (Singapore) and Salim Group (Indonesia) formed a joint venture in 2018 to develop and operate a data centre in Indonesia to be operational in 2020. Hotel and accommodation booking start-ups expanded in the region.

RedDoorz (Singapore) started operations in Indonesia, and startup99.co (Singapore) acquired that country's largest property portal (UrbanIndo (Indonesia)). Gogoprint (Thailand) expanded operations in Indonesia, Malaysia and Singapore, and Tribe Theory (Singapore) expanded to Indonesia.

MyEG (Malaysia) expanded into the Philippines in electronic government service, through a joint venture with I-Pay Commerce Ventures (Philippines) and an agent of Western Union (United States). In other e-commerce activities, Carro (Singapore) an automotive marketplace and car financing company with operations in Indonesia and Thailand, expanded further in those two countries. Fundnel (Singapore), a private investment platform, expanded into Malaysia to provide small businesses an additional option for raising capital, and Grab (Singapore) further expanded across ASEAN through the acquisition of Uber's (United States) Southeast Asia operations.

In 2019, web hosting and cloud service provider Exabytes Capital Group (Malaysia) acquired Master Web Network (Indonesia), and GrabFood (Singapore) signed four partnership deals with Indonesian food and beverage chains, and cab hailing company Go-Jek (Indonesia) expanded into Singapore, Thailand and Viet Nam. AdAsia Holdings (Singapore) expanded into Cambodia, two months after its expansion into Viet Nam. Meal Temple (Cambodia), a tech food delivery service, expanded into the Lao People's Democratic Republic. Validus Capital (Singapore), an SME lending platform, expanded into Indonesia, and Passpod (Indonesia), a traveltech start-up, expanded into the Philippines through a joint venture agreement with payment service provider Weepay Payment Processing Corp (Philippines).

Infrastructure

Intra-ASEAN investment in infrastructure, in particular in power generation, declined in 2018. Nevertheless, there were some significant intraregional investment activities in power generation in 2018–2019.

AC Energy (Philippines) acquired a 25 per cent stake in Blue Circle (Singapore), which is to jointly develop, own and operate several 1,500 MW wind power projects across Southeast Asia. It is also investing $40 million in a joint venture with other local partners to develop solar plants in Viet Nam in 2019. Rotary Engineering (Singapore) secured an engineering contract in Myanmar and won a construction contract in Malaysia and Thailand in 2018. In the same year, it further expanded in Indonesia with another investment in a geothermal project with Star Energy (Indonesia).

In 2019, B Grimm (Thailand) opened a solar energy facility in Viet Nam and Sembcorp Industries (Singapore) opened a $310 million 225 MW power plant in Myanmar. In 2019, Petronas (Malaysia) acquired a solar energy company Amplus Energy Solutions (Singapore). Oxley Holdings Company (Singapore), together with Sumitomo Corporation (Japan) and a local partner, secured a redevelopment project in Myanmar. Super Energy Corporation (Thailand) acquired two wind power plants in Viet Nam for $18 million. Ayala Corporation (Philippines) partnered with a local company to develop a 300 MW solar power plant in Viet Nam.

Intra-ASEAN M&As

Intra-ASEAN M&A activities rose slightly, from $825 million in 2017 to $992 million in 2018, which is still short of the levels witnessed in 2015 and 2016 (table 1.7). However, the number of intra-ASEAN M&A deals rose from 41 in 2016 to 56 in 2017 and 95 in 2018. These numbers explain the increase in intra-ASEAN corporate activities and intraregional investment.

Singapore companies were the most active acquirers of assets in ASEAN, with more than 50 per cent of intra-ASEAN M&A deals in 2018. Malaysian companies (25 per cent) were the second most active acquirers, followed by companies from the Philippines (11 per cent). Nearly 80 per cent of all intra-ASEAN M&A activities were in the services industry, and 30 of the 95 intraregional deals were acquisition made in Malaysian operations, followed by 26 in Singapore and 14 in Indonesia.

The largest intraregional M&A deal in 2018 was the acquisition by Aboitiz Equity Ventures (Philippines) of a 75 per cent stake in Gold Coin Management Holdings (Singapore), Asia's largest privately owned agribusiness company, for $334 million (table 1.8). In 2019, Aboitiz Equity Ventures acquired the remaining 25 per cent of the company for $120 million. Manila Water (Philippines) acquisition of a 19 per cent stake in Eastern Water Resources Development and Management (Thailand) for $167 million gave Manila Water immediate access to the Thai market, which aligned with its internationalization strategy to expand in Southeast Asia. Ayala Corporation, another major MNE from the Philippines, also made significant acquisitions in Malaysia.

Table 1.7. Intra-ASEAN M&A sales, by industry, 2015–2018 (Millions of dollars)

	Net Sales			
Target industry	**2015**	**2016**	**2017**	**2018**
Total	**4,667**	**2,783**	**825**	**992**
Primary	**4,475**	**132**	**12**	**28**
Mining, quarrying and petroleum	4,445	8	11	..
Manufacturing	**241**	**-376**	**1,000**	**124**
Food, beverages and tobacco	-35	-359	818	397
Manufacture of food products	-35	-359	126	421
Manufacture of paper and paper products	92	..	14	141
Manufacture of rubber and plastics products	..	..	-3	-344
Tertiary	**-49**	**3,027**	**-187**	**839**
Electricity, gas, water and waste management	..	-2	99	219
Trade (wholesale and retail trade)	20	1,864	-115	106
Accommodation and food service	147	52	90	70
Transportation and storage	-53	79	100	87
Information and communication	1	922	23	51
Financial and insurance	-162	36	-1,116	24
Real estate	-21	19	736	324

Source: UNCTAD M&A database.

Table 1.8. Intra-ASEAN M&A deals, 2018 (Selected cases) (Millions of dollars and per cent)

Ultimate acquiring company	Ultimate acquiring economy	Target company	Target economy	Target industry	Value ($ million)	Shares acquired (%)
Aboitiz Equity Ventures	Philippines	Gold Coin Management Holdings	Singapore	Prepared animal feeds, except for dogs and cats	334	75
Hong Leong	Malaysia	Casa Meyfort Condominium	Singapore	Operators of apartment buildings	236	100
Manila Water	Philippines	Eastern Water Resources Development & Management	Thailand	Water supply	167	19
The Siam Cement	Thailand	Binh Minh Plastics	Viet Nam	Plastics pipe	102	29
Ratchaburi Electricity Generating	Thailand	Fareast Renewable Development	Singapore	Business services	82	50
Kuala Lumpur Kepong	Malaysia	Putra Bongan Jaya	Indonesia	Vegetable oil mills, nec	80	95
Ayala Corporation	Philippines	MCT	Malaysia	Packaging paper and plastics film, coated and laminated	64	22
Serba Dinamik Holdings	Malaysia	CSE Global	Singapore	Computer integrated systems design	44	25
Entrp Investment Holdings	Philippines	Tuan Loc Water Resources Investment	Viet Nam	Water supply	38	49
Siam Cement	Thailand	Interpress Printers	Malaysia	Packaging paper and plastics film, coated and laminated	27	68
Memories Group	Myanmar	SM Asset Holdings	Singapore	Investors, nec	22	100
Tamarind Resources	Malaysia	Nido Petroleum-Galoc Oil Field	Philippines	Crude petroleum and natural gas	20	56
Vinamilk	Viet Nam	Lao - Jagro Development Xiengkhowang	Lao People's Democratic Republic	Dairy farms	20	51
Yoma Strategic Holdings	Singapore	Digital Wave Money Myanmar	Myanmar	Adjustment and collection services	19	34
Oxley Holdings	Singapore	Aspen (Group) Holdings	Malaysia	Land subdividers and developers	18	10
Kuok (Singapore)	Singapore	Hillcrest Gardens	Malaysia	Land subdividers and developers	15	17
Gulf Energy Development	Thailand	TTC Energy Development	Viet Nam	Electric services	12	49
Keppel Corporation	Singapore	Jencity	Viet Nam	Investors, nec	11	10
Hatten Land	Singapore	Velvet Valley	Malaysia	Land subdividers and developers	11	100
Mewah International	Singapore	PT Angso Duo Sawit	Indonesia	Vegetable oil mills, nec	11	95
Investor Group	Indonesia	Phnom Penh SEZ	Cambodia	Land subdividers and developers	10	19
Rich Capital Holdings	Singapore	Oxley Batam	Indonesia	Nonresidential building construction, nec	8	80
United Malacca	Malaysia	Clifton Cove	Singapore	Forest nurseries and gathering of forest products	7	100
MayBank	Malaysia	Singapore Unit Trusts	Singapore	Investment advice	4	100
Clearbridge Health	Singapore	Pt Tirta Medika Jaya	Indonesia	Orthopedic, prosthetic and surgical supplies	4	49
BTS Group Holdings	Thailand	Puncak Berlian	Malaysia	Advertising agencies	3	25
LBC Development Corporation	Philippines	LBC Express Airfreight	Singapore	Arrangement of transportation of freight and cargo	2	100
Minor International	Thailand	The Food Theory Group	Singapore	Eating places	2	50
Cloudaron Group	Singapore	DACS Network Solutions	Malaysia	Radiotelephone communications	2	100
Wilmar International	Singapore	PT Lumbung Padi Indonesia	Indonesia	Rice milling	2	51
Clearbridge Health	Singapore	Marzan Health Care	Philippines	Medical laboratories	1	65
Style City	Singapore	DPO Plantations	Malaysia	Forest nurseries and gathering of forest products	1	100
Ultimate Horizon	Singapore	Rel-Ion Sterilization Services	Indonesia	X-ray apparatus and tubes and other irradiation equipment	1	22
Barito Pacific	Indonesia	Star Energy Group Holdings	Singapore	Cogeneration, alternative energy sources	1	67
Manila Water	Philippines	PT Sarana Tirta Ungaran	Indonesia	Water supply	1	20

Source: UNCTAD M&A database.

1.4. MNE ACTIVITIES AND OPERATIONS IN ASEAN

MNEs continued to invest in and expand their activities across industries in ASEAN. Their investment activities are in different industries and cover different business functions from manufacturing, R&D and holding companies to regional headquarters. Some MNEs have also shifted their production from China to ASEAN Member States because of rising costs in China, and the trade tensions (section 1.2.2).

Agriculture

In 2018, ASEAN MNEs, particularly from Malaysia, were active investors in agriculture activities in the region. Malaysian companies United Plantations, Kuala Lumpur Kepong and Felda Global Ventures Holdings acquired plantations in other ASEAN Member States. Singapore companies also made significant agriculture investments in Indonesia (section 1.3). European companies were also active. Sipef (Belgian) acquired oil palm land in Indonesia, and AAK (Sweden-Denmark) opened a coconut oil plant in the Philippines. LG International Corporation (Republic of Korea) acquired a 95 per cent stake in two palm plantations in Indonesia for $68 million.

In 2019, Cargill (United States) purchased a 30 per cent stake in Cargill Tropical Palm Holdings held by Temasek (Singapore), which owns plantations in Indonesia. CJ CheilJedang (Republic of Korea) expanded its plant in Indonesia.

Manufacturing

MNEs from Asia, including ASEAN, as well as from the EU and the United States established more manufacturing activities in 2018. The key industries were electronics, automotive, chemicals, and food and beverages.

Food manufacturing

Tate & Lyle (United Kingdom), a provider of speciality food ingredients and solutions, completed the expansion of its laboratory in Singapore in 2018. Nestle (Switzerland) started building an $89 million plant in Malaysia for export to 20 countries. Mengniu (China), a manufacturing and distribution company of dairy products, opened its first Southeast Asia manufacturing plant in Indonesia. Stern-Wywiol (Germany) opened a food ingredients production facility in Malaysia. NH Foods (Japan), a food processing company, opened a food manufacturing plant in Malaysia through a joint venture with Lay Hong (Malaysia). Rokko Butter (Japan), in a joint venture with Mitsubishi Corporation (Japan), established a processed cheese factory in Indonesia. Lactalis Group (France), a dairy products company, expanded into Malaysia by acquiring Nestle’s Malaysia dairy business.

In 2019, Nestle opened a new factory in the Philippines while Sojitz (Japan) opened a bread factory in that country after it expanded in Viet Nam two years ago. Kaneka Corporation (Japan), in a joint venture with Mitsubishi Corporation (Japan), started construction of a $46 million processed oil products factory in Indonesia.

Automotive

Some major global automotive MNEs further expanded in the region, with investments concentrated in Thailand and Indonesia (table 1.9). Some have also expanded in Malaysia, the Philippines, Singapore and Viet Nam (section 1.3 and 1.4).

The growing regional market, rising number of middle-class consumers, cost competitiveness and steady economic growth in the region have contributed to an increase in the activities of automotive MNEs. Regional integration has facilitated easier sourcing and more efficient intra- and interfirm activities, which has contributed to a more conducive investment environment for automotive activities.

In 2018, Mazda (Japan) opened an engine factory at its Thai powertrain plant to increase production capacity, NEC Platforms (Japan) opened a plant for advanced in-car devices and Daido (Japan) established a manufacturing subsidiary for aluminum die-casting products in the same host country. Honda and Panasonic (both Japan) started joint research on a detachable battery in Indonesia, and Mitsubishi Motors Corporation (Japan) signed an agreement with De La Salle University for a joint study on electric vehicles in the Philippines. In 2019, Volvo Buses (Sweden) and Nanyang Technological University (Singapore) signed an agreement on R&D for autonomous electric buses in Singapore. Toyota (Japan) opened a hybrid battery plant and expanded its production lines with advanced mechanical technologies to enhance production and quality control. Michelin (France) acquired an 80 per cent stake in tire manufacturer PT Multistrada Arah Sarana (Indonesia) for $439 million.

Electronics

In 2018, Infineon (Germany) established a learning centre in Thailand, and NEC (Japan) established a plant for the production of communications equipment. Delta Electronics (Taiwan Province of China) also expanded in Thailand. Furukawa Electric (Japan) expanded in the Philippines. Micron Technology (United States) built a flash memory fabrication plant in Singapore that also undertakes R&D activities. Plexus (United States) expanded in Malaysia with a $40 million acquisition of a new facility. Pegatron (Taiwan Province of China), a manufacturer for Apple (United States), moved its manufacturing to Indonesia to avoid tariff tensions between China and the United States.[15] HP (United States) opened an $84 million digital manufacturing lab in Singapore in partnership with Singapore National Research Lab and Nanyang Technological University. In the Philippines, Cal-Comp Technology (Taiwan Province of China) expanded operations and Murata (Japan), an electronic components maker, opened its largest production site in Asia and its second factory in the country.

In 2019, PerkinElmer (United States), a diagnostic, environmental, food, life sciences and industrial testing company, opened a medical technology facility in Singapore, using it as a base to expand into other ASEAN Member States. Longi (China) started construction of a $125 million 1 GW mono solar cell plant in Malaysia. Nidec-Shimpo Corporation (United States), a precision-gearing solution for robotics and industrial automation, opened a manufacturing plant in the Philippines. Iljin Materials (Republic of Korea) invested $400 million to expand battery production in Malaysia.

Table 1.9. Automotive part and component manufacturers with new or expansion plants in ASEAN, 2018–2019 (Selected cases)

Company	Headquarters	Host country	Investment activity	Year
Daido	Japan	Thailand	Established a new manufacturing facility for die-casting products	2018
Mazda	Japan	Thailand	Opened an engine machining factory	2018
Anca Manufacturing	Australia	Thailand	Expanded and upgraded its production facility	2018
Mercedes-Benz	Germany	Thailand	Opened a battery factory	2018
BMW	Germany	Thailand	Expanded with a production facility	2018
BorgWarner	United States	Thailand	Opened a new production facility	2018
Fujitsu Limited and FOMM Corporation	Japan	Thailand	Established an electric vehicle battery cloud service	2018
Murata	Japan	Philippines	Constructed a second plant in the country	2018
Mercedes-Benz	Germany	Thailand	Building a new production facility with local partner Thonburi Automotive Assembly Plant	2018
Ogura Clutch	Japan	Philippines	Acquired operations to enter into electromagnetic coil business	2018
Delta Electronics	Taiwan Province of China	Thailand	Expanded manufacturing of electronic parts for electric vehicles	2018
BMW	Germany	Malaysia	Sime Darby (Malaysia) and BMW Malaysia opened the Sime Darby Auto Engineering engine assembly facility	2018
Mitsubishi Motors Corporation	Japan	Philippines	Signed an agreement with De La Salle University for a joint study on electric vehicles	2018
Furukawa Electric	Japan	Philippines	Expanded production capacity	2018
Continental	Germany	Singapore	Opened a third R&D building in Singapore	2018
Mitsubishi Chemical Corporation	Japan	Indonesia	Expanded into Indonesia through acquisition of an Indonesian PVC manufacturer	2018
Honda and Panasonic	Japan	Indonesia	Started joint research on a detachable battery	2018
Nippon Steel & Sumitomo Metal Corporation	Japan	Indonesia	Opened a joint-venture manufacturing plant	2018
Mitsubishi Motors	Japan	Indonesia	Increased production capacity in car plant	2018
Advanex	Japan	Thailand	Opened a new plant	2018
Dyson	United Kingdom	Singapore	Started production of electric vehicles	2018
Nippon Fruehauf	Japan	Philippines	Started manufacturing and assembling trucks and parts in cooperation with Centro Manufacturing	2018
AKWEL Group	France	Thailand	Opened an automotive equipment manufacturing plant	2018
BMW and Draexlmaier	Germany	Thailand	Opened a battery production facility	2018
Michelin	France	Indonesia	Opened a synthetic rubber factory through a joint venture with a local partner	2018
Volvo Group	Sweden	Singapore	Undertaking an autonomous electric bus project with NTU Singapore	2019
Hyundai	Republic of Korea	Indonesia	Starting construction of a car assembly plant	2019
Michelin	France	Indonesia	Acquired an Indonesian tire manufacturer Multistrada	2019
Mercedes-Benz	Germany	Thailand	Opened a new parts distribution center	2019
Scania AB	Sweden	Thailand	Opened a new plant	2019
Continental	Germany	Thailand	Opened an auto tire plant	2019
Thyssenkrupp	Germany	Singapore	Opened an additive manufacturing technology center	2019
Prinx Chengshan Tire	China	Thailand	Started construction of an auto tire production facility	2019
Foton	China	Thailand	Established a joint venture with CP Group (Thailand)	2019
Toyota	Japan	Thailand	Opened a hybrid battery plant	2019
Mitsui Chemicals	Japan	Thailand	Expanded production capacity	2019

Source: Media, company websites and Marklines.

Chemicals

In 2018 in Indonesia, Mitsubishi Chemical (Japan) expanded its polymers business; Clariant (Switzerland), a chemicals company, opened a phthalic anhydride plant; and Haldor Topsoe (Denmark), a catalysis and process technology chemical processing company, opened an office. In Thailand, SFR (India) opened a $60 million facility to increase production capacity, adhesives producer Jowat (Germany) opened a new subsidiary and Dow (United States) opened a sixth production plant. Royal Dutch Shell (Netherlands) opened a lubricants plant in Singapore for export across Asia. In Malaysia, Synthomer (United Kingdom) expanded with a $63 million latex production facility and BASF (Germany) expanded its production capacity for acrylic dispersions for export to other ASEAN Member States.

In 2019, in Singapore, ExxonMobil (United States) opened two performance derivative chemical plants and Evonik (Germany) opened a $556 million plant to produce essential additives for animal feed. Baerlocher (Germany), an additives manufacturer, invested more than $10 million to expand its production in Malaysia and BeAM (France), an additive solutions manufacturer, opened an office in Singapore. In Thailand, LyondellBasell (Netherlands), a plastics, chemicals and refining company, opened a manufacturing facility. Synergy Flavours (Ireland) doubled its production capacity for flavour solutions.

Pharmaceuticals

In 2018, in Singapore, Johnson & Johnson (United States) expanded by opening a design laboratory (chapter 3). Chugai Pharma (Japan) started investment of $220 million to be spread to 2021 in biopharmaceuticals research. In addition, Nalpropion Pharmaceuticals (United States) established a subsidiary to carry out commercialization activities, WuXi Biologics (China) started construction of a $60 million facility and Clinuvel Pharmaceuticals (Australia) added a laboratory facility. Takeda (Japan) opened a centre of excellence for vaccine process optimization in the country.

In 2019, GlaxoSmithKline (United Kingdom) completed a $95 million investment agreement to open two manufacturing facilities in Singapore. Sumitomo Dainippon Pharma (Japan) expanded its operation in Singapore and established a new sale subsidiary in Thailand. Pfizer (United States), in partnership with Medochemie (Cyprus), started manufacturing drugs in Viet Nam. Mitsubishi Tanabe Pharma Corporation (Japan) established a marketing subsidiary in Malaysia and opened a representative office in Viet Nam.

Services

MNE activities in different services subsectors differ. Some witnessed an increase in investment in 2018 while others saw a decline. For instance, MNE activities in wholesale and retail trade fell, but those in finance and insurance rose. There were also manufacturing-related services activities. The prospect of a stronger digital economy in ASEAN has also attracted significant investment from digital and technology companies in e-commerce in the region (*AIR 2018*).

Wholesale and retail

Retail MNEs expanded in ASEAN in 2018 and also into 2019. In 2018, Uniqlo (Japan), Chanel (France), jewellery retailer Luk Fook (Hong Kong, China) and shoe company United Nude (United Kingdom) all opened stores in the Philippines. In addition, Pacsafe (Hong Kong, China) expanded its presence with its fourth store, while coffee retailer Tim Hortons (Canada) and shoe retailer Bata (Switzerland) also opened stores. Ikea (Sweden) is building its first store in the Philippines, which will open in 2020; it opened its second store in Thailand in 2018. Uniqlo (Japan) also opened a store in Thailand. In Malaysia, Luk Fook (Hong Kong, China) opened its third store, Ray-Ban (Italy) opened its first store and Lush (United Kingdom) is opening a store. ChromaDex (United States) and Watsons (Hong Kong, China) formed a partnership to launch retail stores in Singapore, and Sabon (Israel) opened a flagship boutique there, its first in Southeast Asia. In Indonesia, Carrefour (France) signed an agreement with the Mosque Council (Indonesia) to open a target of 300 mini-supermarkets, and Time International (United States) expanded by opening a boutique shop.

In 2019, the Cheesecake Factory (United States), on-demand laundry start-up Mr Jeff (Spain) and Emma Dessert (Japan) opened their first overseas outlets in Singapore. Tesco (United Kingdom) further expanded in Thailand.

Manufacturing MNEs are also undertaking market-seeking activities in ASEAN by opening retail operations to extend their regional value chains. LG Electronics (Republic of Korea) expanded its retail presence in Malaysia in 2018 and Royal DSM (Netherlands), a nutrition and health company, opened an office in Thailand in 2019. Amano Enzyme (Japan), a manufacturer and supplier of microbial enzymes, opened a new office in Thailand in 2019 for market-seeking reasons. In the same year, Alexander Dennis (United Kingdom), a bus manufacturing company, opened a new office in Singapore to support its Asia-Pacific parts distribution and training activities.

IT, digital economy and e-commerce

IT and digital MNEs also expanded in ASEAN in 2018. Telstra (Australia) and its joint venture partner Telekomunikasi (Indonesia) added cloud services in Indonesia. Megaport (Australia) and NTT Data (Japan) also expanded in cloud connectivity solutions in Indonesia. Alibaba Group (China) invested in cloud services in Indonesia, Malaysia and Singapore, and extended its e-commerce activities concurrently in Indonesia, Malaysia, the Philippines, Singapore and Thailand. Huawei (China) expanded in Thailand, and Alphabet (United States) opened its first operations centre in the Philippines.

Also in 2018, OYO Hotels (India) expanded into Indonesia. In Singapore, fitness start-up ClassPass (United States) was launched, online recruitment agency Indeed (United States) established its Southeast Asia technology hub and innovation digital solutions company Thales Digital Factory (France) opened an office. ABB (Switzerland-Sweden) expanded its digital presence by opening a Customer Innovation Center, price management software company Price Edge (Sweden) opened an office and Bestmile (Switzerland), an automotive tech start-up, expanded. Goxip (Hong Kong, China), a fashion e-commerce site, is making further investments in Malaysia.

In 2019, Salesforce (United States) opened an artificial intelligence research centre in Singapore, which will link with local universities. Youth career platform Oliv (United Arab Emirates), fintech start-up Jitta (Thailand) and ClauseMatch (United Kingdom) all expanded into Singapore. Eventbrite (United States), a global ticketing and event technology platform, and BSO (United Kingdom), a network and data centre company, each opened an office in that country. Coca-Cola (United States) expanded its venture capital platform to Indonesia, where fintech firm Raiz Invest (Australia) also expanded its operations. Amazon (United States) opened a new office in Thailand to provide resources and training to Thai merchants selling products abroad. Accelerator programs have also been branching into ASEAN. The corporate innovation firm RISE (Thailand) expanded its artificial intelligence accelerator program to Singapore with support from Enterprise Singapore.

Finance and banking

In 2018, HSBC (United Kingdom) expanded in Malaysia and Indonesia. Standard Chartered (United Kingdom), through a partnership with G4S (United Kingdom), added to its cash deposit machine business in Indonesia, and Bank of Tokyo-Mitsubishi UFJ (Japan) acquired a majority stake in Bank Danamon (Indonesia) to expand its presence in Indonesia. Crédit Agricole CIB (France), an investment bank, opened a representative office in Indonesia. In Singapore, Allianz (Germany) opened another insurance branch, car insurance company Kwiksure (Hong Kong, China) established an office and Pictet Group (Switzerland) and VP Bank AG (Liechtenstein) expanded operations. Pacific Prime (Hong Kong, China) opened an office in Thailand for its insurance brokerage services, targeting locals, expatriates and multinational businesses. McLarens (United States), encouraged by increased local demand and market opportunity, opened a new office in Malaysia.

In 2019, LGT (Liechtenstein) opened a wealth management office in Thailand, offering investment and wealth management services to high-net -worth individuals and corporates in the country. Munich Re (Germany) opened a representative office in Thailand. Several financial companies expanded into Singapore in 2019, including insurance company Allianz (Germany), bank Morgan Stanley (United States), investment management firm Carret Private (Hong Kong, China) and private bank Pictet Group (Switzerland). Several fintech companies also expanded into Singapore. They include Personetics (Israel) and insurtech BOXX Insurance (Canada).

Other services

In 2018, ASL Global (Hong Kong, China), an advertising and marketing consulting company, opened a new office in Thailand, and recruitment consultancy company Pure (United Kingdom) expanded operations in Singapore. In Thailand, consumer credit reporting company Experian (Ireland), global management consulting firm Infinite Sum (United States), co-working space company WeWork (United States), logistics companies ERNI Group (Switzerland) and Mitsui Fudosan (Japan) all expanded their business operations in 2019. In Indonesia, advertising company M&C Saatchi (United Kingdom), Ecolab (United States) – a water, hygiene and energy technologies and services company, Kawasaki Heavy Industries (Japan) and SM Entertainment (Republic of Korea) all opened offices. In addition, professional services company KPMG (Netherlands) started offering legal services in Indonesia. In Singapore, legal and communications company Baker McKenzie (United States), Templar Advisors (United Kingdom), global insights and strategy firm National Research Group (United States) and recruitment consultancy IMD International Search Group (Switzerland) expanded in 2019. In the same year, GE Aviation (United States) made an $80 million investment in GE Engine Services Malaysia and established a global IT service desk in Malaysia.

Infrastructure

Engineering and infrastructure MNEs continued to expand their activities in the region through investment and non-equity forms of involvement. In 2018, Hyundai Engineering (Republic of Korea) won a $273 million EPC contract from Bangchak Corporation (Thailand) for a refinery expansion in Thailand and Samsung Engineering (Republic of Korea) was awarded a $790 million EPC contract from PTT Global Chemical (Thailand). In Malaysia, Jacobs Engineering Group (United States) won two contracts from Hyundai Engineering (Republic of Korea) to upgrade an oil refinery. Poyry (Finland) won a biomass project in the Philippines, and Hochtief (Germany) won a $100 million contract for construction of an expressway in that country. In Viet Nam, Siemens (Germany) won a contract to supply equipment for a 258 MW solar plant, and Samsung Engineering (Republic of Korea) won a $500 million polyolefins contract from Long Son Petrochemical (Viet Nam). General Electric (United States) signed an agreement to provide equipment for the construction of a 1,440 MW combined-cycle power plant in Malaysia. In the same year, Mitsubishi Hitachi Power Systems (Japan) completed the construction of an 880 MW plant in Indonesia, and ABB (Switzerland) won a contract to supply a compact gas-insulated switchgear to PLN (Indonesia) power plant.

In transportation, Egis (France) with Team Consult (Thailand) was awarded a $1.7 billion three-year contract for the Bangkok subway's Pink Line, and Thales ETCS (France) won a contract to increase rail capacity for the subway's Red Line. Nippon Signal (Japan) won a contract for signalling and automatic fare collection systems for the Red Line, while other Japanese MNEs (Mitsubishi Heavy Industries, Hitachi and Sumitomo) secured a $1.1 billion contract to build the Red Line.

In 2019, Acciona (Spain), in partnership with Jardine Electric Control Philippines and Frey Fil (Philippines), opened a drinking water treatment plant in the Philippines. In the same year, Hebei Iron (China) and Steel Group (China) started construction of an integrated iron and steel plant in the same host country. Multiconsult (Norway), an engineering and design consulting firm, expanded to Thailand.

Research and development

Many MNEs continued to undertake research and knowledge-based activities in the region across many industries, from automotive and consumer products to chemicals and pharmaceuticals. Favourable investment and innovation policies that encourage and facilitate R&D activities in ASEAN Member States played a role in these investments. In some countries, such as Malaysia, Singapore and Thailand, a skilled workforce, well-developed ecosystems and dedicated science parks also contributed to attracting R&D investments (*AIR 2017*).

In 2018, Mondelez International (United States) opened a $65 million R&D facility in Singapore to develop innovative products, and Continental (Germany) opened a third R&D centre in Singapore. Philips (Netherlands), in partnership with Singapore Institute of Advanced Medicine Holdings, opened a regional oncology centre. Other MNEs also invested in R&D activities in Singapore. They include chemical company Evonik (Germany), food company Archer Daniels Midland (United States), Hoya Surgical Optics (United States) and Agilent Technologies (United States). In 2019, medical technology company PerkinElmer (United States) opened a life science lab instruments and diagnostics manufacturing facility.

Although many MNEs in the past focused mainly on Singapore for such activities, other ASEAN member states are also attracting R&D-related FDI. In 2018, Kerry Group (Ireland) expanded its regional development and application centre in Thailand. Cargill (United States) opened an aquaculture innovation centre in Indonesia, and Daewoong Pharmaceutical (Republic of Korea) opened a biotechnology research centre in partnership with Universitas Indonesia to develop biosimilar products. SGS (Switzerland) expanded its testing laboratory facilities in Indonesia. GKN Aerospace (United Kingdom) opened a research facility in Malaysia. FrieslandCampina Kievit (Netherlands) opened an innovation and R&D facility in the Philippines. Düllberg Konzentra (Germany), a fragrance company, opened an R&D centre in Indonesia, and UACJ Corporation (Japan) opened an R&D centre for aluminium materials in Thailand.

Collins Aerospace Systems (United States) announced that it is opening an aerospace innovation hub, and Cargill (United States) opened an innovation centre to undertake research on food products and safety. Amano Enzyme (Japan), a medical equipment and devices company, opened a subsidiary in Thailand to carry out R&D.

Regional strategies and headquarters

Traditionally most of these activities have operated out of Singapore, but other ASEAN Member States are now also attracting headquarters and shared services activities. In 2018, Alibaba (China) invested in Thailand to use that country as a logistics base for e-commerce, covering also the neighbouring CLMV countries. Delaware Consulting (Belgium) established a regional headquarters in the Philippines, and Swiss Re (Switzerland), Kone (Finland) and Schneider Electric (France) each established a regional headquarters in Singapore. Porex (United States) expanded its polymer fibre line and customer support capabilities for Asia-Pacific in Malaysia. Sandvik also opened its Asia-Pacific headquarters for oil and gas in Malaysia. Nissan opened its Asia and Oceania headquarters in Thailand.

In 2019, Peak Scientific (United Kingdom), a gas generation specialist company, expanded operations in Singapore to oversee its operations covering the Asian markets. Other MNEs established similar headquarters operations in Singapore this year. They include Freshworks

(United States), a cloud-based business software company, which used Singapore as the company's regional ASEAN hub. Dyson (United Kingdom) moved its corporate headquarters from the United Kingdom to Singapore, and cosmetics company Givaudan (Switzerland) opened a fragrance encapsulation centre to be a hub for expansion into the Asia-Pacific market. Software company Vault Intelligence (Australia) entered Singapore to expand into Southeast Asia. Bombardier (Canada) expanded its Singapore service center to meet the growing demand in the Asia-Pacific region. Software start-up FareHarbor (United States) expanded into Singapore to manage the growth of its Asia-Pacific business. Asahi Kasei (Japan), a chemicals and materials science company, opened its ASEAN regional headquarters in Thailand, and Environics Oy (Finland), a security and industrial safety solutions company, opened a regional office in Malaysia.

1.5. INVESTMENT IN FOURTH INDUSTRIAL REVOLUTION TECHNOLOGIES

Investment by MNEs and local companies in fourth industrial revolution (4IR) technologies (e.g. industrial and collaborative robots, artificial intelligence, data analytics, additive manufacturing technologies) is expected to grow in ASEAN due to increasing demand, ongoing industrial and business transformation, and the continuous efforts of ASEAN Member States to attract such investment. Governments in the region are encouraging the adoption and production of these technologies in industries and promoting investment by start-ups as well as producers of such technologies.

The 4IR technologies are being applied and developed in the region through public-private partnerships such as in the development of smart cities, where MNEs provide technologies and participate in such activities. Companies involved in the development and adoption of 4IR technologies cover a wide range of industries (figure 1.16), including in the digital economy (*AIR 2018*).

The increasing demand for 4IR technologies by industries is translating into more capital investment for upgrading of industrial facilities and new business activities. New investors in 4IR technologies are emerging, such MNEs or ASEAN companies associated with robotic service centres, cloud technologies, data centres, R&D and collaboration with governments in the region for the development of industries and smart cities. Private equity and venture capital firms are also playing an important role through funding ASEAN start-ups that are developing and operating these technologies (section 1.6, *AIR 2018*).

Developing a conducive environment and a competitive ecosystem to support and facilitate more investment in 4IR technology and industries is important. In preparing for the 4IR transformation, it is crucial that countries in the region also prepare for the disruption implications for industries and traditional businesses as well as the social implications for employment and new skills requirements, among others.

Figure 1.16. 4IR technology solutions and MNEs in ASEAN

Technology	Description	Examples of business and industrial implication	Adopters and producers of 4IR technology
Artificial intelligence	Simulation of human intelligence in machines so that they carry out complex tasks without human intervention	• Understanding medical data and reaching the right diagnosis • Analysing and predicting customers' behaviours in e-commmerce • Assessing credit-worthiness of clients in banking • Tele-health and telemedicine	Denso (Japan) uses artificial intelligence to boost efficiency in its plant in Thailand. Startup Advance.ai (Singapore) uses big data and artificial intelligence for credit scoring for multinationals. DocDoc (Singapore), with operations in other ASEAN countries, develops its telemedicine platform and facility using AI.
Big data analytics	Analysis of large datasets to reveal patterns, trends, and associations, especially relating to human behaviour and interactions	• Personalized medicine and prescriptive analytics • Evaluation of drugs and treatment, including analysing electronic medical records • Product quality and defects tracking in manufacturing • Advertising and market targeting • Use by businesses such as in insurance, finance and internet economy to examine large amount of data • Predictive tool use in various types of businesses	Samsung (Republic of Korea) manufacturing plant in Viet Nam uses big data to improve manufacturing efficiency. Siemens (Germany) has a digitalization hub in Singapore, which undertakes big data analytics solutions. General Electric (Untied States) has partnered with local Singaporean companies and institutions to provide big data solutions.
Cloud computing	Delivery of processing resources and data to computers and other devices on demand through a network of remote servers hosted on the Internet	• Substituting for on-site data centres, providing infrastructure, platform or software • Businesses in many industries are using cloud technologies	Alibaba (China), Amazon (United States), Google (United States) and Microsoft (United States) have data centers in ASEAN to offer cloud solutions for local companies and MNEs. The cloud technology has allowed ASEAN start-ups to expand rapidly, such as Near (Singapore) and TradeGecko (Singapore).
Autonomous and collaborative robots	Robots with autonomously acting components and systems, possibly interacting with one another or with humans	• Robots for spraying, weeding, fruit harvesting in agriculture • Surgical robots in health care • Warehousing robots in logistics • Unmanned autonomous vehicles • Industrial robots	ABB (Switzerland) has a Robotics Technical and Service Center in Viet Nam. Delphi (United Kingdom) conducted advanced development of autonomous (driverless) cars in Singapore. Dyson is establishing manufacturing base for electric vehicles in Singapore.
Human-machine interface	Advanced components or methods through which people interact with machines, e.g. augmented reality (AR) and virtual reality (VR) technologies	• Augmented reality inventory management • Augmented reality simplified ,manufacturing assembly instructions • Augmented reality equipment maintenance • Virtual reality design and engineering reviews in manufacturing • Virtual reality training of medical professionals	Key suppliers of automotive human machine interface technology that operate in ASEAN include Bosch (Germany),Denso (Japan) and Panasonic (Japan).
Internet of Things	A network of devices that are connected through the Internet to share data and interact both with one another and with more centralized controllers.	• Smart grid • Predictive maintenance • Connecting and monitoring remote assets • Sharing knowledge across plants in manufacturing	Accenture (Ireland) has an Internet of Things Centre of Excellence in Singapore and NTT Corporation (Japan) established an innovation lab focused on IoT in Thailand.
Additive manufacturing (3D printing)	Creating a three-dimensional object from digital 3D design data, by successively adding material layer by layer	• Prototyping • Replacement parts • 3D printed prosthetics in health care and model of organs to study by surgeons before a complex surgery	Materialise (Belgium), an additive manufacturing and 3D printing solutions MNE specializing in the medical and industrial sector, has a center for 3D printing development and research in Malaysia. Pirate3D (Singapore) a start-up is disrupting the 3D printing space by opening it to the mass market.

4IR technologies in all industries

These technologies are being applied across all sectors in the region, with some more prominent than others. In the extractive industries, new digital technologies are used to monitor and maintain offshore platforms. Smart farming is taking place, applying digital technologies to optimize complex farming systems. For example, CI-Agriculture (Indonesia) uses drones and sensors to collect data to enable smart farming. In services, 4IR technologies are used in advancing the health care industry (chapters 3 and 4), in reaching out to the underserved segment of the banking community (chapter 2, *AIR 2018*), and in increasing the efficiency of logistics business. 4IR technologies are being applied to the concept of smart cities, which involves using the Internet of Things and other digital technologies to improve efficiency in the provision of services in urban settings, such as transport systems, public administration and business regulation. A number of ASEAN Member States are pursuing the development of smart cities with local and foreign suppliers of such technologies. In manufacturing, industrial and collaborative robots are being used in more factories in the region. Some MNEs have also established centres and facilities to support the development of autonomous vehicles (e.g. R&D and test centres in Singapore).

MNEs with 4IR technology solutions

Digital MNEs and other 4IR technology companies are already present in ASEAN. In some cases these MNEs work in partnership with governments in the region in the application of 4IR technologies. For instance, the city of Hanoi has signed cooperation agreements with Microsoft (United States) and Dell Technology (United States) for building e-government and smart city applications. Singapore Power, which provides electricity to 1.4 million homes and businesses in the country, has partnered with Silver Spring (United States) to develop a digital data and Internet of Things platform to improve operational efficiencies. Silver Spring has deployed its platform throughout the country to enable customers to choose from a variety of retail energy providers and purchase electricity at wholesale market prices.

In response to growing demand, digital and technology MNEs have been investing in research centres and services centres and partnering with local firms to establish supplier networks in ASEAN. In 2018, ABB (Switzerland) inaugurated its Robotics Technical and Service Center in Viet Nam, with the aim of serving both MNEs and local manufacturers operating in the country. Viet Nam is estimated to need a million robots in 2020.[16] In the same year, Universal Robots (Denmark), a collaborative robotics company, partnered with Malaysian firms to establish a presence in Malaysia. Bizit Systems (Singapore) and Servo Dynamics (United States) have also strengthened their business networks in that host country. In the Philippines, Universal Robots (Denmark) formed a distributor partnership in 2016 with Elixir Industrial Equipment (Philippines) and expanded its distribution network in 2018 by partnering with Asia Integrated Machine (Philippines).

In December 2017, HP (United States) opened a Smart Manufacturing Applications and Research Centre in Singapore, which aims to advance digital manufacturing technologies, such as 3D printing, artificial intelligence, machine learning, cyber security and product customization. NTT Corporation (Japan) established an innovation laboratory in Thailand focused on the Internet of Things. Materialise (Belgium), an additive manufacturing and 3D printing solutions MNE specializing in the medical and industrial industries, has a centre for R&D in 3D printing in Malaysia. Other MNEs such as Samsung (Republic of Korea) uses big data to improve its manufacturing operation in Viet Nam. that host country and Accenture (Ireland) has established an Internet of Things Centre of Excellence in Singapore.

Major global MNEs have also established data centres in the region, which support cloud technologies. They include Alibaba Cloud (China) and Amazon Web Service, Equinix, Facebook and Alphabet (all United States). Alibaba Cloud (China) opened an internet data centre in Malaysia in 2018. Alphabet added its third data centre in Singapore in 2018, with an $850 million investment to serve not only the Singaporean market but other ASEAN Member States too, in response to continued growth in the region.

ASEAN start-ups offering 4IR technology solutions

Many ASEAN start-ups have also ventured into businesses involving 4IR technologies, strengthening the ecosystem. They have helped transform the industrial landscape such as through the internet economy (e.g. e-commerce, fintech, transportation, digital media) (*AIR 2018*). Tookitaki (Singapore) through artificial intelligence and machine learning, produces predictive analysis to maximize efficiency and reduce risks in compliance processes. DYNO (Viet Nam) uses big data to detect fraud in customer data for financial institutions and for recruitment, and has developed a system to match the best candidates and employers. Pirate3D (Singapore) is disrupting the 3D printing space by opening it to the mass market. Garuda Robotics (Singapore) offers smart farming solutions using drones equipped with sensors. Aerial data are used to help palm oil plantations gain useful knowledge about a large swath of land such as its topographic profile, moisture level, fertilizer needs, crop health and weed/pest problems. eFishery (Indonesia) is a provider of an Internet of Things solution and data platform for fish and shrimp farming businesses. The start-up's device enables smart automatic feeding, making it easier for farmers to monitor and schedule feeding times using a smartphone app. MimosaTEK (Viet Nam) offers precision farming solutions to farmers by providing data, decision support and remote-control capabilities through sensors and a cloud platform. Its Internet of Things platform monitors and analyses data on farms by means of sensors (to measure soil moisture, rain, wind, light and other parameters) to recommend to farmers a precise irrigation schedule in real time.

Table 1.10 presents a list of companies that invest in and offer 4IR technology solutions to both domestic and foreign firms based in the region. ASEAN start-ups are also offering solutions to both foreign and domestic firms. For instance, ABIVIN (Viet Nam) uses artificial Intelligence to optimize supply chain solutions for enterprises, with international clients such as A.O. Smith, Mesa Group and Highland Group (all United States). Neurosensum (Indonesia), a neuroscience and artificial intelligence company, uses neuroscience tools to understand consumers' subconscious responses and works with MNEs such as Danone (France). Both ABIVIN and Neurosensum have expanded with offices in Singapore.

Table 1.10. ASEAN start-ups producing or developing 4IR technology solutions and linkages with MNEs, 2019 (Selected cases)

Comp any	Home country	4IR technology	Description	Linkages with MNEs	Presence in ASEAN
Advance.ai	Singapore	Artificial intelligence and data analytics	Uses artificial intelligence for identity recognition, face comparison, face search and identity verification. The technology helps improve business efficiency.	Works with MNEs in telecommunication and financial services	Indonesia Philippines Viet Nam
Antworks	Singapore	Artificial intelligence	Global artificial intelligence and intelligent automation that automates complex data for enterprises	Works with MNEs from various sectors such as Indecomm Global Services (United States)	Philippines
Active.ai	Singapore	Artificial intelligence	Artificial intelligence services for financial services	Clients are insurance and banking MNEs such as CIMB Bank (Malaysia) and HDFC Securities (India)	Offers services across ASEAN; no offices
Neurosensum	Indonesia	Artificial intelligence	Uses neuroscience tools to understand consumers' subconscious response	Works with MNEs such as Danone (France)	Singapore
Senti.ai	Philippines	Artificial intelligence	Integrates artificial intelligence tools to machine learning, natural language, processing knowledge, virtualization, digital virtual agents for enterprises	Works with MNEs such as Nestle (Switzerland) and McKinsey and Company (United States)	Singapore
ABIVIN	Viet Nam	Artificial intelligence	Artificial intelligence-powered supply chain optimization solutions for enterprises	A.O. Smith (United States), Mesa Group (United States), Highland Group (United States)	Singapore
N'osairis	Malaysia	Internet of Things	A provider of Internet of Things solutions that offers sensors, connectivity and business intelligence in a single platform	Works with MNEs operating in banking, gaming, telecommunication, transportation and utilities; e.g. BT Redcare (United Kingdom)	Indonesia Philippines
DF Automation and Robotics	Malaysia	Robotics	Automated guided vehicle solution for businesses to reduce costs and improve efficiency	HP (United States), Yamaha (Japan), Suzuki (Japan), Sony (Japan), Thales Group (France)	Offers services across ASEAN; no offices
GreyOrange	Singapore	Robotics	Provides hardware and software products for the warehousing industry	XPO Logistics (United States), Kerry Logistics (Hong Kong, China), Mahindra (India)	Has fulfilment installations across ASEAN but no offices
HG Robotics	Thailand	Robotics	Developed an information and motion management platform for unmanned systems	Works with international and foreign firms in the agricultural and industrial sectors	Offers services across ASEAN; no offices

/...

Table 1.10. ASEAN start-ups producing or developing 4IR technology solutions and linkages with MNEs, 2019 (Selected cases) (Concluded)

Comp any	Home country	4IR technology	Description	Linkages with MNEs	Presence in ASEAN
SkyEye Analytics	Philippines	Robotics	Uses drones for mapping services and in-depth analysis	Works with MNEs for project audits, crop health analysis and watershed management; clients include Del Monte Foods (United States)	Offers services across ASEAN; no offices
DRVR	Thailand	Big data	Connects vehicle fleets through an analytics platform	Logistics customers such as Canon (Japan), Carlsberg (Denmark), and Mazda (Japan)	Indonesia, Myanmar and Philippines
Ebizu	Malaysia	Big data	Retail and advertising technology provider. Helps clients target and connect with consumers.	Clients are domestic and foreign retailers	Indonesia Singapore
Robot 3T	Viet Nam	Robotics	Build industrial-grade robots	Bindee Automation (Thailand), TT Machine Corporation (United States), Phoenix CNC Engineering (United Kingdom)	Offers services across ASEAN; no offices
Crayon	Singapore	Artificial intelligence and big data	Uses artificial intelligence and big data to personalise consumer experience	Clients include MNEs in United States, Europe and Asia	Indonesia Myanmar
Lynx Analytics	Singapore	Big data	Predictive analytics to help enterprises understand, retain, and sell to customers	Clients are MNEs in the telecommunications and financial services industries	Offers services across ASEAN; no offices
Snapcart	Indonesia	Big data	Extracts big data to develop real-time, targeted engagements	Nestle (Switzerland), Unilever (United Kingdom), L'Oréal (France), P&G (United States), Johnson and Johnson (United States)	Philippines
XOPA AI	Singapore	Artificial intelligence	Uses artificial intelligence to source, score and rank talent to identify best-fitting candidates for an organization's need	Microsoft (United States), Hewlett Packard (United States), Tech Mahindra (India)	Offer services across ASEAN; no offices
H3 Dynamics Holdings	Singapore	Artificial intelligence	Global maintenance inspection and security automation company	Airbus (Netherlands), Naval Group (France), Thales Group (France)	Offer services across ASEAN; no offices
Aureus Analytics	Singapore	Artificial intelligence/ machine learning	Service for insurance companies to enhance customer retention, loyalty and lifetime value	Allianz (Germany), Aegon life (India), Kotak (India)	Offer services across ASEAN; no offices

Source: Crunchbase and company websites.

1.6. PRIVATE EQUITY AND VENTURE CAPITAL INVESTMENTS IN ASEAN

Private equity and venture capital firms are playing a significant and growing role in FDI in ASEAN. Private equity and venture capital markets are channelling foreign funds to ASEAN based companies. In addition, ASEAN based private equity and venture capital firms are also playing a role themselves in funding start-ups across the region – contributing to intraregional investment and building ASEAN MNEs.

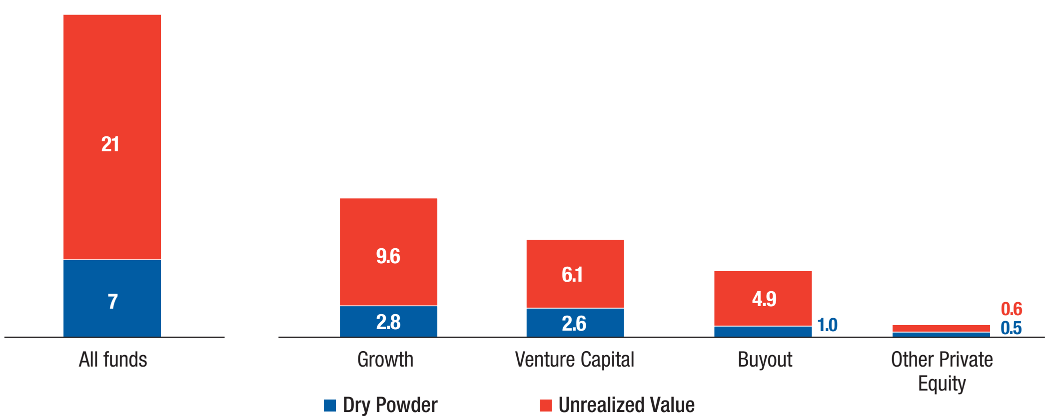
Venture capital funds have not been alone in helping ASEAN-based businesses to scale up. Growth capital (which supports expansion of relatively mature companies) and buyout funds also play a vital role in financing the growth of ASEAN companies and start-ups, such as in digital technology, business support services and health care activities (chapter 3).

Assets under management

Combined private equity and venture capital assets under management[17] in the region rose by 8.6 per cent, from $26 billion in 2017 to $28 billion in 2018. This includes capital already invested as well as funds still available for investment. Of the assets under management, growth funds (for expansion or restructuring purposes by relatively mature companies) accounted for the largest share ($12.4 billion) followed by venture capital ($8.7 billion), buyout ($5.9 billion) and other types of private equity funds[18] ($1.1 billion) (figure 1.17). Each of these funds is an important source of capital for ASEAN start-ups and relatively mature companies looking for capital to expand.

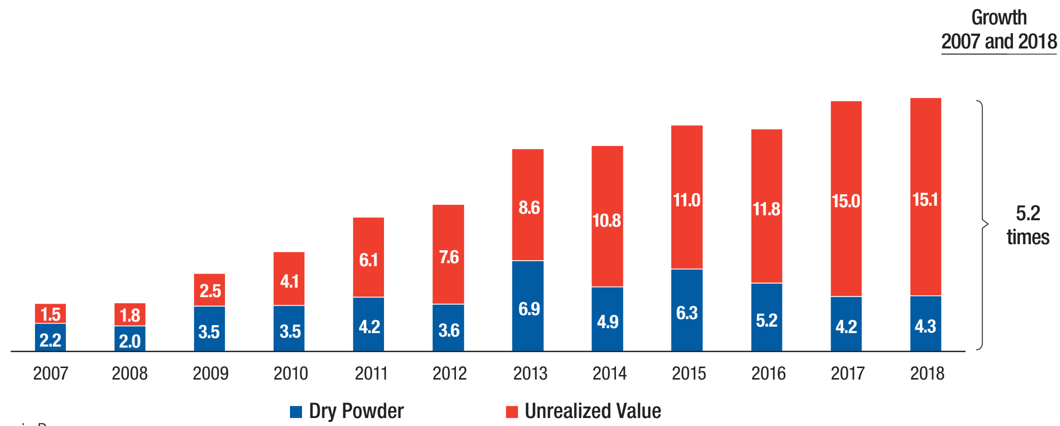
There has been a marked rise in assets under management held by private equity and venture capital fund managers. For instance, private equity assets under management grew by 5.2 times, from $3.7 billion in 2007 to $19.4 billion in 2018 (figure 1.18) while venture capital assets under management increased by 4.8 times in the same period (figure 1.19).

Figure 1.17. ASEAN-based private equity and venture capital assets under management, by fund type, as at December 2018 (Billions of dollars)



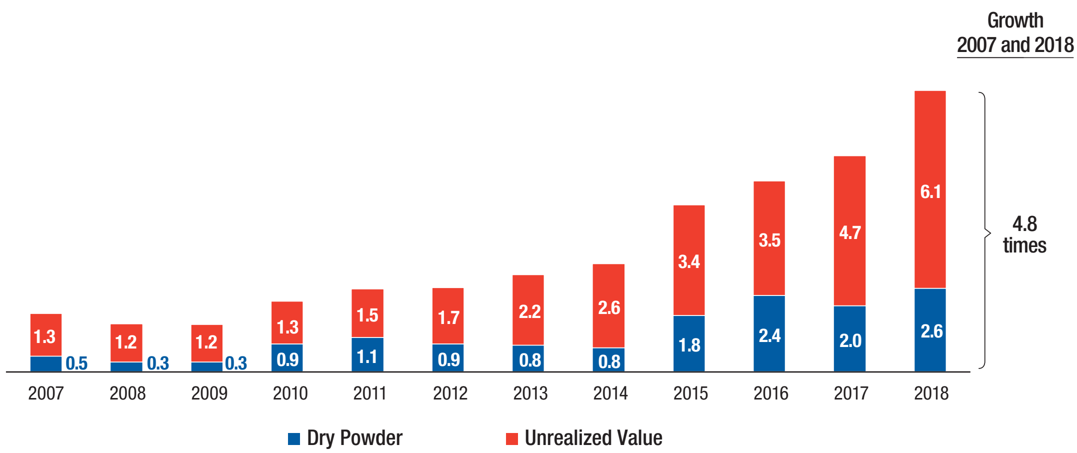
Source: Preqin Pro.
Note: Other private equity includes balanced funds, co-investment funds, co-investment multi-manager funds and otther funds.

Figure 1.18. ASEAN-based private equity assets under management, 2007–2018 (Billions of dollars)



Source: Preqin Pro.

Figure 1.19. ASEAN-based venture capital assets under management, 2007–2018 (Billions of dollars)



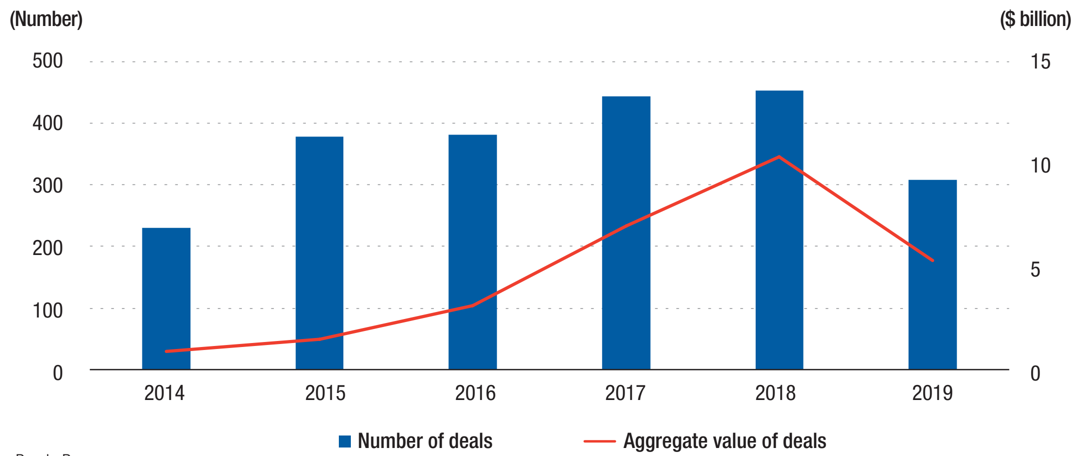
Source: Preqin Pro.

Deals

There has been steady growth in the number and aggregate value of ASEAN-based venture capital deals over the past five years (figure 1.20). In 2018, there were 453 venture deals, almost double the number in 2014. In addition, in 2018 the total deal value reached a record level of $10 billion, more than 11 times the deal value reported in 2014.

Most of the venture deals in recent years were concentrated in Singapore and Indonesia. Other key destinations include Malaysia, Viet Nam and Thailand. Recent large venture deals include Indonesia-based beauty and personal care e-commerce company Social Bella, which raised $40 million in September 2019. Another significant deal was in Singapore-based high-tech security and surveillance solutions provider Oneberry Technologies ($30 million), also in September 2019.

Figure 1.20. Venture capital deals in ASEAN, 2014–2019 (Number and billions of dollars)



Source: Preqin Pro.
Note: As of June 2019.

The region has produced some high-profile unicorns (table 1.11). Aside from Grab (Singapore) and Gojek (Indonesia), other unicorns include Indonesian e-commerce start-up, Tokopedia; Viet Nam-based internet company VNG and Philippines-based prefabricated property supplier Revolution Precrafted.

Investors

Private equity and venture capital markets channel both foreign funds as well as intra-regional investments to companies based in ASEAN. The region is attracting a growing number of

Table 1.11. Largest unicorns in Southeast Asia, 2019 (Billions of dollars)

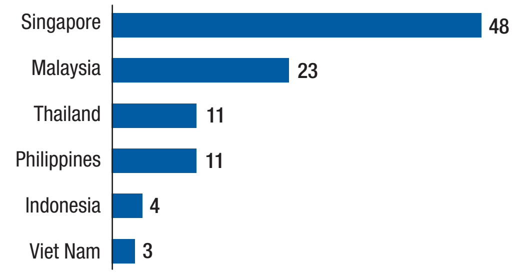
Company	Location	Current valuation ($ billion)	Latest funding year	Primary industry	Verticals
Grab	Singapore	14.0	06/2019	Transportation services	Mobile apps
Gojek	Indonesia	9.5	07/2019	Transportation services	Mobile apps
Tokopedia	Indonesia	7.0	11/2018	Internet	E-commerce
Traveloka	Indonesia	4.1	04/2019	Travel & leisure	E-commerce
Lazada	Singapore	3.2	03/2018	Internet	E-commerce
VNG	Viet Nam	1.6	03/2019	Software	E-commerce, processing and payment Infrastructure, cloud computing
Bukalapak	Indonesia	1.0	01/2019	Internet	E-commerce, mobile apps
Revolution Precrafted	Philippines	1.0	10/2017	Commercial property	..

Source: Preqin Pro.
Notes: a. Data as of July 2019.
b. Unicorns are venture-backed companies with a valuation of $1 billion and greater.
c. Sea Limited was removed from the list as it is now a listed company.

global investors. More than 230 global institutional investors are targeting the ASEAN region, with the vast majority aiming to invest in venture capital funds, growth funds and buyout funds.

Intraregional investment accounts for 24 per cent of total investments into ASEAN-focused venture capital funds. Singapore is the largest source (48 per cent), followed by Malaysia, Thailand and the Philippines (figure 1.21). In terms of industry focus, the top three sectors most favoured by investors are technology (83 per cent of investors), health care (65 per cent) and consumer services (62 per cent).

Figure 1.21. ASEAN-based investors targeting ASEAN-focused venture capital funds, by location, as of August 2019 (Per cent)



Source: Preqin Pro.

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Governments across ASEAN are integral to the rise of the private equity and venture capital industry in the region. They have introduced initiatives to support the growth of start-ups and foster investment in collaborative environments. For example, Singapore's Startup SG initiative offers co-investment opportunities and tax incentives to encourage private sector funding. Indonesia launched the NextICorn Foundation to showcase the government's commitment to facilitate start-ups in its domestic digital ecosystem. These two countries are home to six unicorns between them, the most in ASEAN. The Malaysian government established the Malaysia Innovation Policy Council to support digital tech initiatives in the private sector. SiHub, launched by Viet Nam's Ho Chi Minh City Conservation Centre, provides facilities for start-ups and looks to promote integration between its domestic start-ups and the global start-up community. These initiatives in ASEAN are a step forward in promoting a healthy ecosystem in which future unicorns can flourish.

1.7. PROSPECTS AND CONCLUDING REMARKS

MNEs and ASEAN companies continued to invest and expand in the region in a broad range of industries in 2018. Their investment and expansion activities helped push up FDI flows in ASEAN to an all-time high. A significant jump in manufacturing FDI and strong investment flows to financial services contributed to the rise. Active M&A activities in the region by MNEs and ASEAN companies have also help pushed up FDI flows last year.

Even before the recent trade tensions and the shift in production, MNEs had been investing and expanding in the region to meet growing demand, upgrade in value chains (e.g. into R&D and retailing functions to support manufacturing) and join regional production networks (*AIR 2014*). MNEs from within and outside the ASEAN region will remain active investors, driven by their growing interest to strengthen regional footholds, take advantage of emerging regional opportunities and encouraged by regional integration. Their operations are contributing to increasing regional connectivity through intra- and interfirm activities.

Investment into ASEAN is expected to continue its upward trend, driven by dynamic industrial development with new growth opportunities from production links with and shifts from China, and the improving regional investment environment. MNEs (e.g. from Australia, the EU, Japan and the United States) and ASEAN companies are expected to invest or further expand their operations in the region. This sentiment is corroborated by various recent investment and business surveys (table 1.12).

Many United States corporate executives with business in ASEAN expect their companies to increase investment in the region in the next five years (Amcham Singapore and United States Chamber of Commerce 2018). ASEAN is increasingly seen as an important market for United States MNEs in terms of worldwide revenue (Amcham Singapore and United States Chamber of Commerce 2019). Similarly, many European companies are also planning to expand their operations in ASEAN over the next five years (EU-ASEAN Business Council 2018). Japanese and Australian companies also have expansion plans in the region (JETRO 2018; Australia-ASEAN Chamber of Commerce 2019).

MNEs surveyed in these and other studies perceive ASEAN as a region with high potential and an attractive location for investment. The factors include the rapid growth of the middle class, an integrating region of more than 650 million people, an improving investment environment, with commitment to infrastructure development and complementary location advantages that support regional value chain activities. The region is also witnessing rapid growth in several key industries, such as the automotive, electronics and retail businesses, and in the digital economy. Indeed, 85 per cent of European firms responding to the EU-ASEAN 2018 business survey see further ASEAN economic integration as an important consideration in their business success in the region.

Manufacturing activities and the three major services industries (finance, wholesale and retail, and real estate) will continue to receive significant share of FDI flows – similar to the pattern witnessed in 2018. However, the Chinese government's policy in curbing outward OFDI in real estate will have implications for Chinese real estate investment in ASEAN in 2019. Chinese companies are significant investors in real estate in the region.

The rise in e-commerce and other digital-related activities in the region will motivate more firms and start-ups to operate in the digital space, also attracting other service providers to ASEAN (e.g. logistics, packaging and fintech start-ups). Many start-ups in the region have scaled up or are planning to scale up their operations to neighbouring countries – further strengthening intra-ASEAN investment. Private equity and venture capital investments play an important role in funding the expansion of these start-ups. Such investments are rising in ASEAN with an increasing volume of assets under management, numbers of deals and numbers of investors as well as more ASEAN-focused funds. Investment in 4IR technologies in the region is growing because of increasing demand and the continuous efforts of governments in the region to attract and promote FDI in these industries.

Table 1.12. Prospect for global investments and business in ASEAN, 2018–2019

Study	Findings
EU-ASEAN Business Sentiment Survey 2018	A survey by the EU-ASEAN Business Council of more than 330 executives from European companies in Southeast Asia (EU-ASEAN Business Council 2018). Executives were asked about their experiences and plans in the region. Some key findings: • 72 per cent of European businesses expect an increase in ASEAN profits for 2018. • 70 per cent said ASEAN has become more important in terms of global revenues over the last two years. • 99 per cent plan to expand or maintain their current levels of operations in the region. • 75 per cent expect their level of trade and investment in ASEAN to increase over the next five years. • 85 per cent see further ASEAN economic integration as an important consideration in their business success in the region.
ASEAN Business Outlook Survey 2018	A report coordinated by the American Chamber of Commerce in Singapore and the United States Chamber of Commerce on experiences of American MNEs and their plans in the region (AmCham Singapore and United States Chamber of Commerce 2018). Some key findings: • 48 per cent regard ASEAN as more important for their company in terms of worldwide revenue over the past two years. • 58 per cent project ASEAN will increase in importance in terms of worldwide revenue over the next two years. • 62 per cent expect increased levels of trade and investment in ASEAN over the next two years. • 80 per cent plan to increase their level of trade and investment in ASEAN over the next five years. • Key investment drivers in the region in the next two years include economic growth, the rise in the middle or consumer class, and regional integration. • 56 per cent expect higher profits in 2017 than in 2016, with 74 per cent expecting profits to be higher in 2018 than in 2016.
ASEAN Business Outlook Survey 2019	A report by the American Chamber of Singapore and the United States Chamber of Commerce. Some key findings: • The importance of ASEAN markets for United States MNEs in terms of worldwide revenue for the next two years has risen, from 58 per cent in 2017 to 61 per cent in 2018. • Key reasons include the availability of raw materials (70 per cent), openness on business and land ownership (60 per cent), regional integration (59 per cent) and competitiveness of production costs (50 per cent). • For United States MNEs based in Singapore, regional integration (76 per cent) and improvement of infrastructure regionally (74 per cent) were their leading factors in this survey.
2018 JETRO Survey on Business Conditions of Japanese Companies in Asia and Oceania	A regular survey done by the Japanese External Trade Organization (JETRO) to understand the current business activities of Japanese-affiliated companies operating in Asia and Oceania (JETRO 2018). Key findings with regard to ASEAN: • 65 per cent forecasted profit in 2018. • Large percentages plan to expand operations in many ASEAN Member States in the next one to two years: Myanmar (72 per cent), Viet Nam (70 per cent), the Lao People's Democratic Republic (55 per cent), Malaysia (54 per cent), Cambodia (53 per cent), the Philippines (52 per cent), Thailand (52 per cent), Singapore (50 per cent) and Indonesia (49 per cent).
Australian Business in ASEAN Survey 2019	A survey by the Australian-ASEAN Chamber of Commerce of Australian businesses in ASEAN. Key findings: • 60 per cent of respondents have expanded operations in ASEAN over the past two years. • 82 per cent are planning to expand trade and investment in the ASEAN region over the next five years. • The top reasons given for expansion: the growth in middle-class consumers, improvement in infrastructure and infrastructure development, and the availability of skilled labour. • 45 per cent of respondents believe that ASEAN integration is important for doing business in the region.
Asia Business Outlook Survey 2019	A survey by The Economist Corporate Network of 235 senior executives in Asia in the end of 2018 found the following: • 83 per cent of respondents expect revenue growth in ASEAN in 2019. The ASEAN marketplace is expected to have the strongest growth in Asia in 2019. • Firms plan to expand operations in ASEAN Member States in 2019, as follows: Indonesia (48 per cent), Viet Nam (40 per cent), Thailand (39 per cent), Singapore (39 per cent), Malaysia (34 per cent), the Philippines (32 per cent) and Myanmar (22.5 per cent).

Source: Survey reports.

NOTES

[1] Brunei Darussalam, Cambodia, Indonesia, Singapore, Thailand and Viet Nam.

[2] Khmer Times, "Laos suspends new dam projects", 16 August 2018.

[3] Myanmar Times, "New round of oil and gas exploration bids to be called soon", 24 February 2019.

[4] The Spokesman Review, "Key Tronic will open Vietnam factory as hedge in US-Chinese trade war", 30 August 2019.

[5] ABB, press release, "ABB opens Robotics Technical and Service Center in Vietnam", 12 May 2018.

[6] Based on inward FDI statistics from the ASEAN Secretariat, ASEAN FDI database.

[7] Nikkei Asian Review, "China scrambles to stem manufacturing exodus as 50 companies leave", 18 July 2019; The Economist, "The trouble with putting tariffs on Chinese goods", 16 May 2019; and ING, "Trade tensions accelerate move of China's factories", 19 May 2019.

[8] Financial Times, "China's factories eye Southeast Asia to avoid US tariff threat", 20 July 2018; and Reuters, "To dodge US tariffs, Chinese exporters shift production to low-cost nations", 26 June 2019.

[9] Business Insider, "Nintendo is moving production of its hit Nintendo switch game console to Vietnam amid trade tensions between China and the US", 9 July 2019.

[10] Nikkei Asian Review, "Apple tests AirPods production in Vietnam as it cuts China reliance", 17 July 2019.

[11] Washington Post, "More than 50 major companies, from Google to Nintendo, pull production from China because of the trade war", 19 July 2019.

[12] Politico, "How U.S. and Chinese firms are outmaneuvering Trump in trade war", 29 November 2018.

[13] Nikkei Asian Review, "Ricoh moves output to Thailand as China tariffs extend to printers", 16 May 2019.

[14] Reuters, "Sales to emerging markets a bright spot for Harley Davidson", 23 July 2019.

[15] South China Morning Post, "Apple supplier sets up shop in Indonesia as island of Batam profits from US-China trade war", 27 June 2019.

[16] ABB, press release, "ABB opens Robotics Technical and Service Center in Vietnam", 5 December 2018.

[17] Assets under management is the combination of dry powder (the amount of capital committed to a private capital fund minus the amount that has been called by the general partner for investment) and the unrealized value of assets.

[18] Other private equity includes balanced funds, co-investment funds, co-investment multi-manager funds, direct secondaries and turnaround funds.

CHAPTER 2

FDI in Services

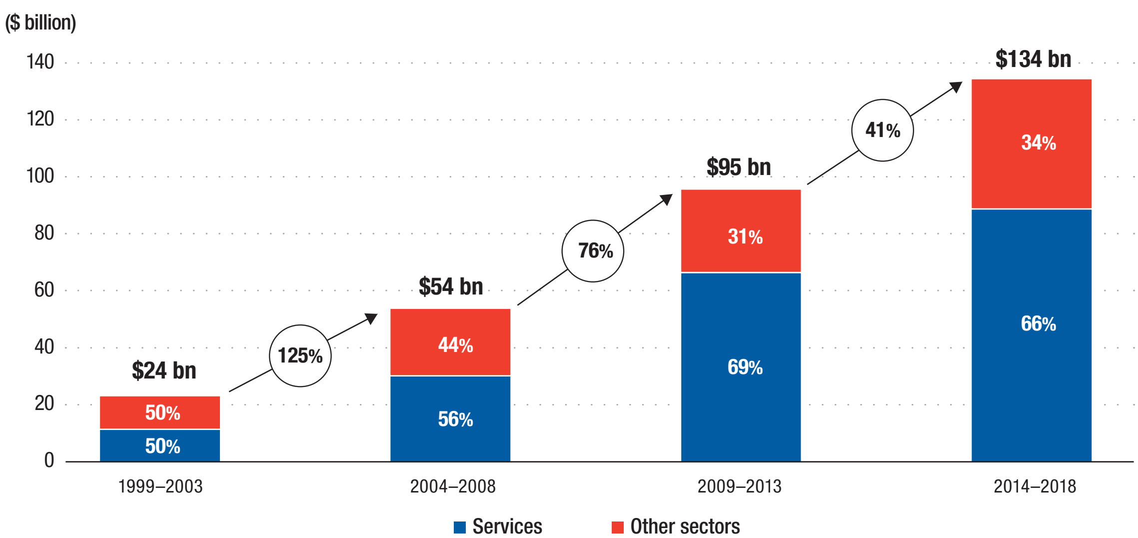
2.1. INTRODUCTION

The services sector is the largest recipient of FDI in ASEAN and FDI in services in the region is rising. Building on *AIR 2018* on the digital economy, this chapter looks at those services industries that are important for digital development (e.g. fintech, payment systems, e-readiness).

2.2. FDI IN SERVICES

FDI in services rose from an annual average of $12 billion in 1999–2003 to $88 billion in 2014–2018. The sector accounted for two-thirds of FDI flows in ASEAN in 2014–2018 (figure 2.1), in line with the global average, but much higher than the share of services in regional GDP (50 per cent).

Figure 2.1. ASEAN: Rising FDI in services, annual average, 1999–2003, 2004–2008, 2009–2013 and 2014–2018 (Billions of dollars and per cent)



Source: ASEAN Secretariat, ASEAN FDI database.

FDI in services in ASEAN is mostly in three key industries (financial services, wholesale and retail trade, and real estate), which accounted for 78 per cent of services investment in 2012–2018 (table 2.1). The financial services industry is the largest recipient of services FDI (42 per cent), followed by wholesale and retail trade (24 per cent) and real estate (12 per cent).

Table 2.1. FDI flows in ASEAN, by industry, 2012–2018 (Billions of dollars and per cent)

								Cumulative value	Share of services FDI
	2012	2013	2014	2015	2016	2017	2018	2012–2018	2012–2018
Services	115	67	87	74	84	103	94	624	100
Financial and insurance	40	22	44	32	45	39	42	265	42
Wholesale and retail trade	38	17	22	11	13	26	20	147	24
Real estate	11	9	10	9	11	14	13	76	12
Information and communication	2	2	2	2	2	2	1	14	2
Electricity, gas, steam	0	1	0	2	1	7	2	13	2
Construction	0	1	1	0	1	2	2	7	1
Others and unspecified	23	14	7	19	13	13	13	102	16
Total FDI flows	**117**	**121**	**130**	**119**	**119**	**147**	**155**	**907**	

Source: ASEAN Secretariat, ASEAN FDI database.

Financial services

FDI flows in this industry are mainly in Singapore, which alone accounted for 89 per cent of financial services FDI in the region. Many financial MNEs, in particular banks, and foreign affiliates of MNEs carrying out financial activities that are classified as financial services FDI, have established a presence in Singapore to coordinate operations across ASEAN and to provide financial services to clients based in the region. Many of the international banks from North America, Europe and Asia have had operations in the region for a few decades (section 2.4). Some have expanded by moving into new segments of the banking value chain (chapter 1) and into other ASEAN Member States.

Wholesale and retail

FDI flows in wholesale and retail activities are also highly concentrated in ASEAN. Singapore received 69 per cent, Indonesia 18 per cent, and Viet Nam and Thailand 4 per cent each of FDI flows to this industry in 2014–2018. In more recent years, Asian retailers (from Japan and the Republic of Korea, and intra-ASEAN) have been actively expanding and opening more stores across the region because of rising demand (section 2.5). In the e-commerce segment, key players are MNEs from Asia (particularly ASEAN and China) and the United States.

Real estate and construction

Strong industrial activity, steady economic growth, infrastructure demand and other factors contributed to the increase in investment in construction and real estate development of hotels, residential properties, and commercial and office buildings. ASEAN and Chinese companies are major investors in this services industry. FDI in real estate is widespread in the region although Singapore accounted for 45 per cent of the total. Other major recipients were Thailand (15 per cent), Viet Nam (13 per cent) and Malaysia (11 per cent).

2.2.1. Major services investors

The leading sources of investment in services in ASEAN are the European Union, the United States, intra-ASEAN investment, Japan and China (table 2.2). These sources accounted for 66 per cent of total FDI in services in 2014–2018.

Table 2.2. FDI flows in services, major investor economy, annual average 2014–2018 (Billions of dollars)

	European Union	United States	Intra-ASEAN	Japan	China	Hong Kong (China)	Republic of Korea	Australia	Other economies	Total
FDI in all services	16.8	14.8	11.6	7.6	7.6	5.3	2.7	2.0	20.2	**88.5**
Wholesale and retail trade	3.1	2.4	2.4	2.3	1.9	0.9	1.0	0.4	4.0	**18.3**
Financial services	4.9	11.6	3.8	3.1	1.9	2.3	0.6	0.8	11.6	**40.6**
Real estate	0.6	0.6	3.2	0.6	2.5	1.3	0.4	0.1	1.8	**11.2**

Source: ASEAN Secretariat, ASEAN FDI database.

Taken together, the EU economies contributed an annual average of $17 billion in FDI in services or 19 per cent of all FDI in services in ASEAN in 2014–2018. Almost 30 per cent of services FDI from the EU was in financial activities. The second largest recipient of EU services FDI was wholesale and retail activities, and the EU was the largest source of investment in the wholesale and retail industry.

MNEs from the United States invested an annual average of $15 billion in 2014–2018, or 17 per cent of services FDI in the region. More than 78 per cent of United States services FDI was in financial services. The United States was the second largest investor in wholesale and retail activities in ASEAN during this period.

Intra-ASEAN investment in services over this period was significant. The annual average of intraregional services investment was $12 billion, which accounted for 13 per cent of services FDI. Of the three key services industries, intra-ASEAN investment in real estate stood out prominently, accounting for 29 per cent of FDI in this industry. ASEAN companies were the largest investor in real estate development in the region.

Chinese firms accounted for 9 per cent of services FDI in ASEAN. The industry composition of Chinese FDI is different from that of developed economies. In particular, real estate and construction together accounted for 39 per cent of services FDI from China. Wholesale and retail trade and financial services each accounted for 25 per cent.

Investment in ASEAN from Japanese firms contributed 9 per cent of FDI in services. More than 40 per cent of Japanese services FDI in 2014–2018 went to financial services and another 30 per cent went to wholesale and retail activities.

2.2.2. FDI in services by destination

The composition of services FDI in 2014–2018 varies widely across ASEAN. Singapore remained the largest recipient of services FDI throughout the period, with more than 70 per cent share (table 2.3). The high share of services FDI in Singapore is due to its role as a regional investment hub and its hosting of many holding companies, back-office activities, regional headquarters activities and distribution functions, which are classified as services FDI (UNCTAD 2017). Much of this investment flows through Singapore and is subsequently invested elsewhere in the region, including in industrial (non-services) activities. Indonesia, Malaysia and Viet Nam accounted for 6 per cent each and Thailand for 5 per cent. The following subsections detail pertinent investment in each ASEAN Member State over the 2014–2018 period.

Table 2.3. FDI flows in ASEAN, by country and selected services industries, cumulative 2014–2018 (Millions of dollars)

	Brunei Darussalam	Cambodia	Indonesia	Lao People's Democratic Republic	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam	Total
Electricity, gas, steam and air conditioning supply	–	–	1,077	2,460	367	1,165	1,449	–	-490	5,623	11,652
Construction	532	477	922	1,447	1,998	3	316	-508	-388	2,117	6,915
Wholesale and retail trade	-30	–	16,578	91	2,732	65	579	63,683	3,784	4,000	91,482
Transportation and storage	8	–	2,075	2	406	3,680	152	-3,894	-357	933	3,005
Information and communication	-13	–	4,842	1	1,726	1,198	79	–	1,023	611	9,467
Financial and Insurance activities	-60	3,490	-9,734	436	10,805	104	3,005	181,284	13,131	376	202,836
Real estate activities	0	1,114	5,704	80	6,322	733	958	25,276	8,232	7,399	55,817
Professional, scientific and technical activities	11	–	–	62	216	5	60	–	1,731	2,072	4,156
Other services industries/ activities	68	3,029	3,934	135	682	1,351	1,104	48,902	-5,139	3,122	57,187
Services total	**516**	**8,110**	**25,399**	**4,714**	**25,254**	**8,304**	**7,701**	**314,743**	**21,526**	**26,253**	**442,519**

Source: ASEAN Secretariat, ASEAN FDI database.

Brunei Darussalam

FDI in services in 2014–2018 was mostly accounted for by inflows into the construction industry. A number of major projects started construction during this period. They include the $1.6 billion 30-kilometer cross-sea Temburong bridge, which started construction in 2014 and is expected to open in 2020. Investors in the project include China State Construction Engineering Corporation and Daelim (Republic of Korea). The ongoing construction of a major crude oil refinery and petrochemical plant, which started in 2017, is another major activity.

This FDI project is a joint venture between Hengyi Industries (China) and the Government of Brunei Darussalam.

Cambodia

A series of investment activities in banking boosted services FDI in 2016 and 2017. They include the acquisition of an additional equity stake in Prasac Microfinance Institution by a foreign investor group, the acquisition of a 40 per cent stake in Phnom Penh Commercial Bank by Jeonbuk Bank (Republic of Korea) and the acquisition of an additional equity stake in Advanced Bank of Asia by National Bank of Canada. The rapid growth of the Cambodian economy has also attracted considerable real estate activities in recent years. Real estate companies from Asia, including from ASEAN Member States, were major investors.

Indonesia

Retail and infrastructure-related industries (including real estate) were the main recipients of services FDI in 2014–2018. Asian retailers such as Lotte (Republic of Korea) and FamilyMart (Japan) and Central (Thailand) have been expanding in Indonesia. FDI to the financial industry fluctuated, recording large net divestments due to local companies acquiring foreign entities. The Indonesian tax amnesty programme between July 2016 and March 2017 contributed to the increase in local companies' investment through such acquisitions (*AIR 2017*). Investment in real estate, such as the development of residential, commercial and office buildings, accounted for more than 20 per cent of services FDI.

In infrastructure-related activities, foreign MNEs have invested especially in power generation. The Cirebon power station, for instance, was developed by a joint venture between four companies: Marubeni Corporation (Japan), Korea Midland Power (Republic of Korea), Samtan (Republic of Korea) and PT Indika Energy (Indonesia). In 2018, Power Construction Corporation (China) signed an agreement to develop five hydropower facilities in North Kalimantan, with an estimated investment of $17.8 billion. Power projects in the country have also attracted foreign MNEs, to provide engineering, procurement and construction services.

Lao People's Democratic Republic

Electricity is the country's major export, and FDI has played a major role in power generation in the country. Foreign investors have been actively involved in generating power for sale to the host country and for export to their home or neighbouring markets (section 1.3). For example, Ratch Group (Thailand) and Banpu Power (Thailand) have equity stakes in Hongsa Power Company, which operates a coal-fired power station in Xaignabouri. In 2017, Mega First Corporation (Malaysia) participated in the construction of the 260 MW Don Sahong hydropower plant. In 2018, Norinco International Cooperation (China) commissioned the 86 MW Nam Phay hydropower plant. It owns 85 per cent, and the remaining 15 per cent is owned by Électricité du Lao (Lao People's Democratic Republic). Impact Energy Asia (Thailand) is developing Monsoon Wind Power, a $1.3 billion 600 MW wind farm project, the largest in ASEAN. Commercial operation is expected to start in 2021.

Tourism is another key target industry for FDI in the country. In 2018, Rosewood Hotels and Resorts, a subsidiary of New World Development Company (Hong Kong, China), opened a hotel in Luang Prabang. Minor International (Thailand) also opened a hotel in the same province.

Malaysia

FDI in financial services accounted for 43 per cent of all services FDI in the country in 2014–2018. Foreign banks have a large presence. Of 26 locally incorporated conventional lenders, 18 are foreign-owned banks.[1] Major foreign-owned commercial banks include United Overseas Bank (Singapore), OCBC Bank (Singapore), HSBC Bank (United Kingdom), Citibank (United States) and Standard Chartered (United Kingdom) (section 2.4). The ASEAN Banking Integration Framework, once fully implemented, is expected to increase the presence of qualified ASEAN banks in Malaysia. The insurance and takaful industry has also attracted foreign investors' interest. Metlife International (United States) acquired a 50 per cent stake in AmLife Insurance and in AmFamily Takaful in 2014. In 2016, Zurich Insurance (Switzerland) acquired MAA Takaful for $135 million, and in 2019 FWD Group (Hong Kong, China) completed the acquisition of a 49 per cent interest in HSBC Amanah Takaful.

FDI in real estate was significant in 2014–2018, especially in the earlier part of the period. Lend Lease (Australia), a property development company, formed a joint venture with TRX City, a wholly owned subsidiary of the Ministry of Finance, in 2014 to undertake an urban regeneration project in Kuala Lumpur. The project is expected to be completed by 2021. Chinese MNEs have also invested in the development of real estate in Johor. Chinese companies such as Guangzhou R&F Properties and Greenland Group have investment in the development of residential and commercial real estate, and hotels.

Myanmar

The bulk of services FDI was accounted for by infrastructure activities. Over the 2014–2018 period, transportation and storage received $3.7 billion and information and communication received $1.2 billion. These industries together accounted for more than 50 per cent of services FDI in Myanmar. The government commitment to improving the country's infrastructure and the increase in industrial activities are attracting infrastructure-related investments, including in power generation.

Philippines

Financial activities, power projects and real estate were major recipients of services FDI during the period. Nearly 40 per cent of services FDI in 2014–2018 was in financial activities. Foreign banks were expanding in the country, including through mergers and acquisitions (M&As). Capital One Financial Corporation (United States) opened a business process outsourcing (BPO) subsidiary in the Philippines in 2016. In 2018, CIMB Bank (Malaysia) expanded into the Philippines through a partnership agreement with CIS Bayad Center (Philippines) and FINTQnologies Corporation (Philippines). In 2019, ING Bank (Netherlands) diversified into consumer banking in the country and Credit Suisse (Switzerland) established a representative office for its wealth management business. M&As in financial services included the acquisitions of a 22 per cent stake in Rizal Commercial Banking Corporation by Cathay Life Insurance (Taiwan Province of China) in 2015 and a 20 per cent stake in Security Bank by Bank of Tokyo-Mitsubishi (Japan) in 2016.

Singapore

Financial activities accounted for 58 per cent of total services FDI flows in 2014–2018. Many foreign banks, holding companies and insurance MNEs have established a strong presence in the country (section 2.4). Singapore serves as a regional centre for financial activities, cross-border insurance and fund management. Of the 132 banks in operation in Singapore in 2019, 128 were foreign owned.[2]

Wholesale and retail activities received some 20 per cent of services FDI. The rise in e-commerce activity and the number of start-ups also contributed to the considerable share of FDI flows in this services industry (section 2.5).

MNEs also use Singapore as a regional logistics hub. In addition to establishing greenfield logistic facilities and warehouses such as those of DHL Logistics, MNEs have been making acquisitions to gain quick access to logistical networks and facilities. Nesta Investment (China) acquired the Global Logistic Properties for $12 billion in 2018. In 2015, Kintetsu World Express (Japan) acquired APL Logistics from the Singapore-based provider of marine cargo handling services Neptune Orient Lines for $1.2 billion. Neptune Orient was acquired by CMA (France) for $2.4 billion in 2016.

Singapore has also attracted many R&D activities of MNEs. MNEs such as Vice (United States), Mann+Hummel Group (Germany), 20th Century Fox (United States), TransferWise (United Kingdom) and Qualtrics (United States) have established regional headquarters there in recent years. In 2019, home appliance maker Dyson moved its global headquarters from the United Kingdom to Singapore. Google (United States) is building a third data centre, to be ready by 2020, and Facebook (United States) is constructing a $1 billion data centre, which is expected to open in 2022.[3] In 2018, Philips (Netherlands), in partnership with Singapore Institute of Advanced Medicine Holdings, opened a regional oncology centre. Other R&D facilities have been opened recently by MNEs such as Agilent Technologies (United States), Archer Daniels Midland (United States), Continental (Germany), Evonik (Germany) and Mondelez International (United States).

Thailand

Finance and banking was the largest recipient of services FDI. The banking industry has attracted FDI from various countries such as Japan, China and other economies in ASEAN. Bank of Tokyo-Mitsubishi UFJ (Japan) acquired a 72 per cent equity stake in Bank of Ayudhya for $5.3 billion in 2013, one of the largest M&A deals in the country. Foreign banks with locally incorporated subsidiaries include United Overseas Bank (Singapore), CIMB Bank (Malaysia), Standard Chartered (United Kingdom), the Industrial and Commercial Bank of China and Bank of China. In the insurance industry, the presence of MNEs has been growing as restrictions on ownership have gradually been loosened. Since 2017, local insurance companies have been able to apply for permission from the Minister of Finance to have 100 per cent foreign ownership.[4]

Real estate was the second largest recipient of services FDI during the period, partly because of Thailand's economic growth. Wholesale and retail activities were the third largest. Foreign MNEs have also invested in the telecommunication industry. Singapore Telecommunications owns 21 per cent of InTouch, which owns stakes in Thailand's largest mobile phone network, Advanced Info Service, and in satellite operator Thaicom. In 2014, China Mobile International Holdings (Hong Kong, China) acquired a 23 per cent stake in the communications conglomerate, True Corp, for $882 million.

Viet Nam

In 2014–2018, real estate received the most services FDI (28 per cent). As in other Member States, strong economic growth continues to drive FDI in this industry. In 2015, the government opened up the retail industry to allow wholly owned foreign subsidiaries.[5] The market opening and the vibrant economy have attracted many retail MNEs to set up operations. Lotte Group (Republic of Korea), E-Mart (Republic of Korea) and ASEAN retailers have established networks of stores and supermarkets in the country. Some of these retailers are expanding in the country with more stores to meet growing demand.

2.2.3. M&As in services

M&As are a more significant mode of entry in services than in other industries. Nearly three-quarters of total M&A values in ASEAN in 2014–2018 were in services activities (table 2.4). It is a preferred channel for gaining immediate access to strategic assets, markets, networks and distribution channels. The growth is due in part to the relatively late opening-up of some services industries, given the strategic or sensitive nature of the services sector.

Table 2.4. ASEAN: Net cross-border M&As in services industries, 1999–2018 (Billions of dollars and per cent)

	Cumulative			
	1999–2003	2004–2008	2009–2013	2014–2018
Services sector	16	46	26	43
Electricity, gas, water and waste management	1	7	6	7
Transportation and storage	3	4	-2	8
Information and communication	4	12	0.2	2
Financial services	5	12	16	7
Business activities	1	6	3	17
Total M&As	**25**	**58**	**57**	**58**
Share of services in total M&As (%)	**65**	**79**	**46**	**74**

Source: UNCTAD, M&As database.

Cross-border M&As in services rose to $43 billion in 2014–2018, from just $16 billion in 2009–2013. Financial services were the main target. Business activities emerged as the single largest services industry for M&A activities (40 per cent), largely due to a single deal (the $12 billion acquisition of Global Logistic Properties (Singapore) by Nesta Investment (China) in 2018). The value of M&As in transport and storage (logistics) was subdued in 2009–2013 due to divestments (acquisitions of foreign-owned assets by indigenous companies) but rose markedly in 2014–2018, to $8.2 billion. Large deals such as the acquisition of Neptune Orient (Singapore) by CMA (France) for $2.4 billion in 2016 pushed up M&A sales in this industry.

In information and communication, major developments occurred in earlier periods, especially in 2004–2008. Cross-border M&A activity in this industry peaked in 2007–2008. Some significant M&A transactions in this period include the acquisition of a 25 per cent stake in Binariang GSM (Malaysia), an investment holding company of mobile telephony assets, by Saudi Telecommunications for $3.1 billion in 2007; and the acquisition of a 41 per cent stake in Indosat (Indonesia) by Qatar Telecom for $1.8 billion in 2008. Since then, there has been a saturation of players and industry consolidation.

ASEAN companies in services industries have also been acquiring foreign-owned assets in their home countries. Such divestments by foreign MNEs contributed to the fluctuation of investment flows and in some years to negative FDI flows. For instance, CP (Thailand) acquired a 64 per cent interest in supermarket operator Siam Makro (Thailand) from SHV Holdings (Netherlands) for $4.2 billion in 2013. Casino (France) divested from hypermarket chain owner Big C Supercenter in Thailand, by selling its 59 per cent stake to CP (Thailand) for $3.4 billion in 2016. CapitaLand Commercial Trust (Singapore) acquired the entire share capital of investment services provider MVKimi (Singapore) from BlackRock for $1.6 billion in 2017 and Oversea-Chinese Banking Corp (Singapore) acquired ING Asia Private Bank in Singapore from ING (Netherlands) for $1.5 billion in 2010.

2.3. DETERMINANTS AND MOTIVATIONS OF FDI IN SERVICES

FDI by MNEs in services industries can be influenced by different determinants and economic considerations (table 2.5). A majority of FDI in services is motivated by market-seeking factors (e.g. market size, the growing number of middle-income consumers, economic growth and the benefits of regional integration) (Dunning 2003; Wadhwa and Reddy 2011; Zheng and Ismail 2019). These factors have been cited by services MNEs as reasons for investing in the region (*AIR 2018*, chapter 1).

FDI in services may be driven by efficiency-seeking considerations (to lower costs of labour, overhead and administration) such as in information technology and business process outsourcing (IT-BPO). Some services MNEs have also expanded in ASEAN for a combination of efficiency-seeking and strategic reasons, such as to establish regional headquarters and to conduct R&D. The former aims to coordinate and oversee operation of a portfolio of subsidiaries and to provide consolidated regional support so to increase efficiency in

Table 2.5. Motivations of FDI in services, by selected industries and MNEs

Industry	Key motivation	MNEs in ASEAN (Selected cases)	Examples of MNEs diversifying and/or expanding in ASEAN
Finance and banking	Market seeking	AXA Insurance (France); Zurich Insurance Group (Switzerland); Prudential (United States); China Taping Insurance (China); Aviva (United Kingdom); AIA Group (Hong Kong, China); HSBC (United Kingdom); Morgan Stanley (United States)	Dai-ichi Life (Japan), which has a presence in other ASEAN countries, expanded operations in Cambodia in 2019. Credit Suisse (Switzerland) diversified its operations in Thailand by establishing a wealth management division to tap the country's increasing number of upper-income earners. EXIM Thailand (Thailand) in 2018-2019 expanded its operations in Cambodia, the Lao People's Democratic Republic, Myanmar and Viet Nam.
	Efficiency seeking	Back-office processing in the Philippines: Bank of America (United States), Citi Group (United States), HSBC (United Kingdom), Morgan Stanley (United States), Mitsubishi UFJ Financial Group (Japan)	Citigroup started a business process solution centre in the Philippines to improve efficiency in serving operations in the region and in North America. Citibank also established a regional headquarters in the Philippines with the following operations: shared services Asia, a global financial and management reporting centre and global payment and employee services centre, which support over 60 countries in Asia, Europe, Middle East and Africa.
Retail	Market seeking	7-Eleven (Japan), Aeon (Japan), Coles (Australia), Family Mart (Japan), E-Mart (Japan), Central (Thailand), Parkson (Malaysia)	Some retailers and supermarket chains continued to expand in the region. Major e-commerce companies in ASEAN include Alibaba (China), Amazon (United States), JD.com (China), Lazada (China), N-Squared (Thailand) and Shopee (Singapore), which expanded into multiple ASEAN countries in the last three years.
Logistics	Market seeking	C.H. Robinson (United States), DHL (Germany), Kintetsu World Express (Japan), CEVA Logistic (Switzerland), Dachser Group (Germany), Panalpina (Switzerland)	Logistics companies have been expanding in ASEAN, particularly in the CLMV countries, because of the increase in commerce and trade activity . Investment opportunities for the logistics business have also played a role. Companies that have recently invested in those countries include DHL (Germany), Nittsu Logistics (Japan) and Yusen Logistics (Japan).
Real estate	Market seeking	CapitaLand (Singapore), Ayala Land (Philippines), Robinsons Land (Philippines), Cromwell Property Group (Australia), Goodman Group (Australia), Stockland (Australia)	Economic growth and increasing demand for office buildings, residential properties and industrial estates have led to a rise in investment in real estate in most ASEAN countries. Although real estate investment tends to concentrate in capitals and main cities, there has been an increase in investment into "second cities".
IT and technology	Market seeking	Accenture (Ireland), Capgemini (France), Cognizant (United States), Infosys Consulting (India), Tata Consultancy (India)	Many of these companies expanded abroad to follow existing clients, that have a presence in ASEAN countries.
	Efficiency seeking	Concentrix (United States), Fusion BPO Services (United States), Ubiquity Global Services (United States), Telus International (Canada), Wipro Limited (India)	BPO companies have established operations in the Philippines for efficiency reasons.
	Strategic asset seeking	DataRobot (United States), Salesforce (United States), Huawei (China)	Strategic-asset-seeking FDI by technology companies tends to be focused on Singapore. Examples include Salesforce, which set up an artificial intelligence laboratory there; DataRobot, an artificial intelligence company, which set up a regional headquarters and a $15 million R&D centre; and Huawei, which opened a cloud facility and a critical intelligence innovation laboratory.

Source: *ASEAN Investment Report 2019* research.

administrative functions, logistics and marketing. The latter aims to access R&D facilities or knowledge ecosystems, including the talent pool of the host country.

Market-seeking FDI

The large market of 650 million people in ASEAN, with a combined GDP of $3 trillion in 2018, is a major determinant in MNEs' decisions to invest. ASEAN is today the seventh-largest economy in the world, and by 2030 it is expected to be the fourth largest after the EU, the United States and China. This growing market potential has encouraged many MNEs to expand their operations in ASEAN in a wide range of services industries such as finance, banking, retailing, and information and communication technology, as well as in the digital economy. ASEAN has also established free trade agreement arrangements with a number of partner economies, which include Australia, China, India and New Zealand – offering MNEs a larger market.

Regional integration has increasingly become an important factor for FDI in ASEAN. This is because it creates a bigger market, opens up services industries to foreign investment, and promotes liberalization and harmonization of standards and qualifications that facilitate cross-border operations. A key determinant is the ASEAN Economic Community (AEC), with its end goal of a single market and production base characterized by seamless movement of goods, services, investments, capital and skilled labour. Other barriers to trade, investment and services continue to be eliminated. Significant achievements in market liberalization and facilitation have been attained through the implementation of the AEC Blueprint 2015.

In 2015, ASEAN formally declared the establishment of the AEC. In moving forward, the region has continued to implement major economic agreements, more trade and investment liberalization and facilitation measures, and sectoral programmes to further strengthen integration so as to achieve the end goal of the AEC: a more closely connected ASEAN. Recognizing the achievements of AEC 2015, the Member States are implementing consolidated regional integration plans under the AEC Blueprint 2025 (covering 2016–2025), including through the ASEAN Trade in Services Agreement (ATISA) as the next milestone for integration of ASEAN services. ASEAN's regional integration has led to a progressive liberalization of services industries, improvements in the investment environment and increases in the transparency and efficiency of policies for businesses and FDI. Increasingly, MNEs and ASEAN companies have been adopting a regional strategy rather than independent country investment programmes (*AIR 2018*, chapter 1).

The economic growth in ASEAN has attracted new MNEs to invest in the region and existing ones to expand and diversify operations. Some banks have diversified their services or expanded the spectrum of the value chain to offer wealth management services to the growing upper-middle-class population. Many insurance companies with a long-standing presence in ASEAN have also diversified their services coverage, including their geographical reach in the region. Driven by the large market potential, many retail and logistics MNEs have also actively invested in the region (sections 2.5 and 2.6).

The digital or internet economy in the region is growing rapidly. It is expected to grow by at least three times between 2018 and 2025, from $72 billion to $240 billion (Google and Temasek 2018). The extensive use of the internet and the rapid growth of the digital economy have attracted many services MNEs and start-ups to operate in ASEAN (*AIR 2018*). For instance, e-commerce companies Alibaba (China) and Amazon (United States) have cited the large market size and growth potential as reasons for their investments in the region. Some of the start-ups have grown to be regional players that invest in the digital or e-commerce space in other ASEAN Member States. Some have scaled up and expanded their business activities along the value chain (e.g. from ride hailing to food delivery to health care and fintech) within their home countries and across ASEAN.

The ASEAN Member States are committed to investing, upgrading and improving infrastructure in telecommunication, transport and power. Infrastructure investment needs in ASEAN are huge, estimated to be at least $110 billion per year through 2025 (*AIR 2015*). Infrastructure development in ASEAN has attracted the participation of many Asian, European and United States MNEs. For example, Tokyo Electric Power (Japan) invested in Viet Hydro (Viet Nam) in 2018 to grow its overseas business in hydropower projects.[6] A partnership between China's Huaneng Hydrolancang International Energy (51 per cent), Cambodia's Royal Group (39 per cent) and Viet Nam's EVN International (10 per cent) began developing Cambodia's largest hydropower project.[7] China's General Nuclear Power Group acquired Malaysian energy company Edra Global Energy in 2016. Infrastructure development in power and transportation (including airports and ports) has attracted many related services companies to establish a presence in ASEAN to be near the centre of development and to win contracts.

Some services companies need to operate close to major customers such as those in power project development, mining, and oil and gas activities. Engineering, procurement and construction companies and other firms that provide services to power and other infrastructure MNEs need to have a physical presence close to prospective clients. Similarly, in extractive or resource-oriented operations, mining equipment, technology and services companies are providing services to mining MNEs in ASEAN. For instance, Banlaw (Australia) provides services to projects in Indonesia, the Philippines and Thailand, and Techenomics (Australia), an analyst of lubricants for mining machinery, has been contracted by companies undertaking projects in ASEAN.

Some services MNEs such as banks and professional business services (e.g. engineering and construction companies) have also followed clients to other ASEAN Member States. Thai banks have expanded into Cambodia and other neighbouring countries in recent years to serve Thai firms that have expanded to these locations. Similarly, Chinese, Japanese and Korean banks have all expanded across ASEAN to serve clients. The expansion of Samsung (Republic of Korea) in Viet Nam has encouraged many of its suppliers and service providers to follow the MNE to that country. The cluster of Korean companies in turn has encouraged Korean banks to establish a presence in Viet Nam to serve them.

Liberalization of a host economy's FDI policies constitutes a major "pull" factor. A study of 60 economies (including Indonesia, Malaysia, Myanmar, the Philippines and Viet Nam) found that reducing FDI restrictions by 10 per cent could increase bilateral FDI stocks by 2.1 per cent on average (Mistura and Roulet 2019).

In addition to regional liberalization measures, the ASEAN Member States have also undertaken unilateral reform or further opening-up of industries for FDI, including in the services sector. Some of these reforms include amendments of investment-related domestic legislation, with the objective of creating more coherent legal frameworks for investment. Foreign and domestic investment laws are now unified in Cambodia, Indonesia, the Lao People's Democratic Republic, Myanmar and Viet Nam (OECD 2019). Countries in the region have also further improved business procedures, enhanced transparency and reduced the time needed for registration by using digital means of registration (Box and Lopez-Gonzalez 2017). This allows investors to track the progress made in the establishment and registration of new businesses.

Efficiency-seeking FDI

Some services FDI aims to enhance efficiency and lower overhead costs. Access to low-cost skilled labour (with language skills) is necessary for investment in BPO and IT services. Some BPO companies have established operations in the Philippines to provide shared services for other companies within the group, while others have set up operations to serve third-party MNEs (*AIR 2018*). The BPO processes are usually standardized, which means that BPO MNEs can provide back-office support to other MNEs in ASEAN and around the world.

Because of the availability of language skills and low-cost skilled labour for IT-BPO operations, the Philippines has attracted many such MNEs. Australian IT-BPO companies have invested in the country to supply BPO services, including call centre operations (*AIR 2018).* American and European MNEs have also established IT-BPO operations in the Philippines. Some Australian firms, such as QBE Insurance Group and the BHP Group, have established subsidiaries in the country to serve clients in their group. Citibank (United States), JPMorgan (United States) and other large foreign banks have back-office operations in the Philippines. These companies are also moving up the value chain in the BPO business by shifting from voice operations (call centres) into more complex activities and data analysis.

Other countries in the region have also attracted BPO operations. In Malaysia, GlaxoSmithKline (United Kingdom) established a back-office operation, and Dell (United States) established its global business centre. ExxonMobil (United States) has its global business centre in Thailand. Shell (Netherlands) has business operations centres in Malaysia and the Philippines.

Some locations offer MNEs opportunities to gain operation efficiencies, not because of low-cost unskilled labour but because of their geographical advantages, infrastructure development, efficient business ecosystem, skilled workforce, policy environment and other locational benefits. Such advantages facilitate investment in activities such as regional headquarters, logistics hubs and R&D.

There has been an increase in FDI in R&D activities and IT services in the region attracted by the growth in the skilled-labour pool. Dyson (United Kingdom) opened an advanced R&D services facility in Singapore in 2017, while Motorola established its largest R&D facility outside the United States in Malaysia (*AIR 2018*). Samsung (Republic of Korea), which has a large presence in Viet Nam, is building a $300 million mobile R&D centre in that country.

Some MNEs establish R&D subsidiaries in a host country to tap the local talent and knowledge ecosystem. Engie (France) opened a lab in Singapore as a regional hub for energy innovation and technology in Southeast Asia because of that country's dynamic innovation ecosystem and regional connectivity. Yitu Technology (China), a facial-recognition software company, set up an R&D hub in Singapore to benefit from its well-developed artificial intelligence ecosystem and to strengthen the company's capability-building processes. Some Member States (e.g. Malaysia, Singapore and Thailand) have also attracted R&D in pharmaceuticals because of strong industrial clusters, supportive policies and improving ecosystems that facilitate such activity (chapter 3).

To coordinate business activities efficiently across ASEAN, many MNEs establish regional headquarters. These MNEs such as Alibaba (China), SK Group (Republic of Korea), Tata Consulting Services (India), Roche (Switzerland) and Pfizer (United States) have established regional headquarters for this purpose (mostly in Singapore). Synectics (United Kingdom), a provider of advanced surveillance technology and networked security systems, established a regional headquarters in Singapore to consolidate its Asia-Pacific operations. The company increases efficiency in serving customers in the region by bringing together all of its activities in one operational base.

Strategic-asset-seeking FDI

Most cross-border M&A activities are strategic-asset-seeking (sections 2.4.2 and 2.5.2). Strategic-asset-seeking FDI may be undertaken by acquiring target companies with strategic assets (e.g. reputation, brand name, knowledge advantage and laboratories) to aid in the development of the acquiring MNE's ownership advantages. The improving M&A environment in some ASEAN Member States is facilitating acquisitions of strategic assets by MNEs. For instance, the acquisition by Alibaba (China) of Lazada in Singapore supports expansion in ASEAN through immediate access to Lazada's market networks in the region. The acquisition by Mitsubishi UFG Financial Group (MUFG) (Japan) of a majority stake in Bank of Ayudhya (Thailand) provided immediate access to its networks and customers. Some Korean banks (e.g. Jeonbuk Bank and Shinhan Bank) have recently acquired banks in Cambodia and Viet Nam for strategic-asset-seeking reasons. Pilmico Foods Corporation (Philippines) acquired a 75 per cent stake in one of the largest agribusiness MNEs in ASEAN (Gold Coin Management Holdings (British Virgin Islands)), which provides Pilmico with immediate access to 20 livestock and aqua feed mills across 11 economies in Asia. In logistics, Kintetsu World Express (Japan) acquired APL Logistics in Singapore to gain access to its networks and regional facilities.

Resource-seeking FDI

FDI in services also involves resource-seeking motives such as backward integration or expansion of segments of the value chain. An example is electricity companies accessing resources (e.g. hydropower and coal) to generate electricity for sale to local markets or for export to their home market (e.g. a Thai electricity company generating electricity in another country for export to Thailand). Thai companies Ch.Kanchang, Electricity Generating, Natee Synergy and Bangkok Expressway are investors in a power plant in the Lao People's Democratic Republic that generates energy for export back to Thailand.

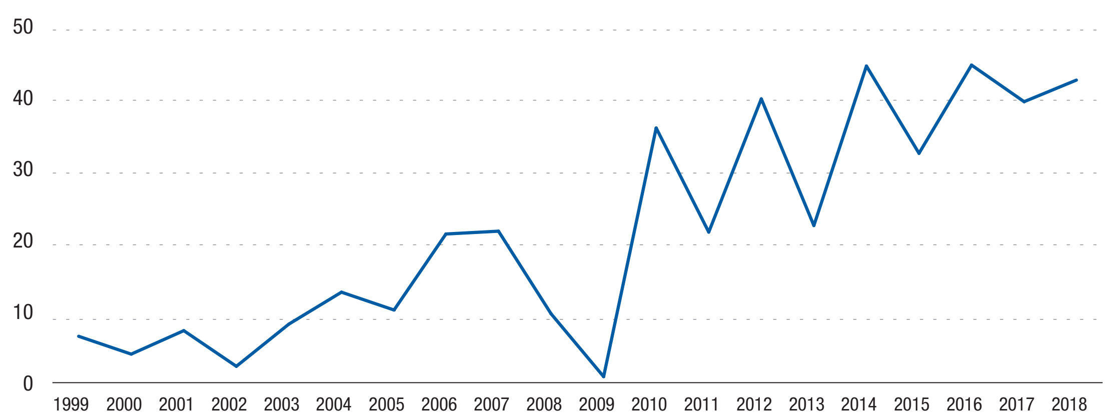
2.4. FDI AND MNEs IN FINANCIAL SERVICES

The financial industry plays an important role in the industrial development and services sector in ASEAN. Foreign and ASEAN banks are present and expanding in the region. Many foreign MNEs have established holding companies in the region (mostly in Singapore) to own, coordinate or manage subsidiaries in the Asia-Pacific region. Although these companies do not produce goods and services, their regional coordination and corporate ownership functions have a significant influence on FDI flows in the host countries.

2.4.1. FDI in financial services

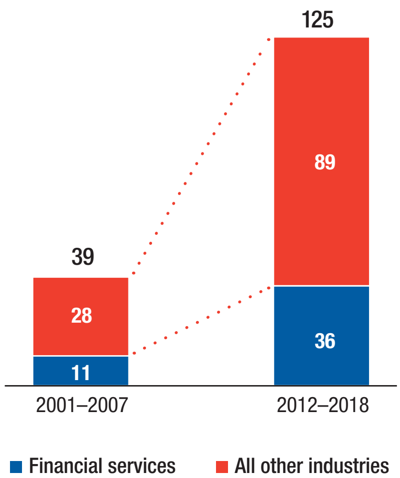
FDI in financial services in ASEAN has fluctuated over the past two decades but shown an upward trend (figure 2.2). The annual average FDI in the industry more than tripled during that period, from $11 billion in 2001–2007 to $36 billion in 2012–2018 (figure 2.3). However, the share of the industry in total FDI remained stable at 29 per cent in both periods.

Figure 2.2. FDI flows in ASEAN in financial services, 1999–2018 (Billions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 2.3. FDI in financial services, annual average, 2001–2007 and 2012–2018 (Billions of dollars)

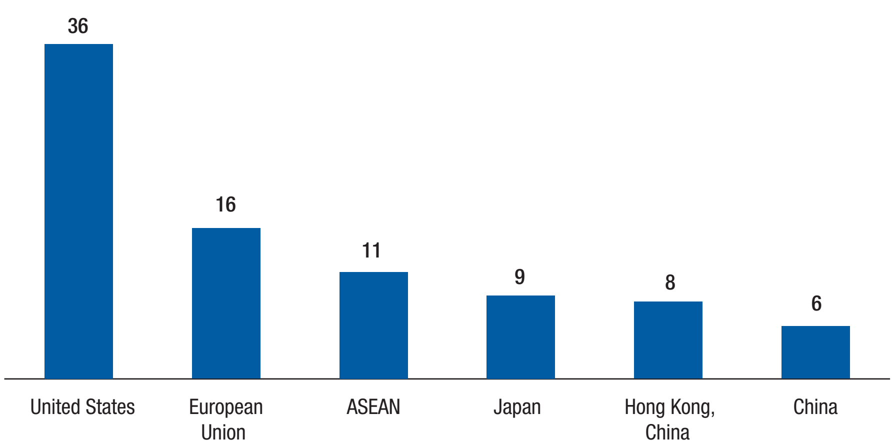


Source: ASEAN Secretariat, ASEAN FDI database.

Global economic and financial events contributed to the fluctuations in FDI over the decade. In 2009, following the 2007–2008 financial crisis, FDI in financial services plummeted to just $827 million – the lowest amount on record. Recovering from the European debt crisis in the early 2010s, FDI in financial services peaked in 2016 at $44 billion. In 2018, it fell marginally to $42 billion. M&A megadeals in some years (e.g. 2014 and 2018) also affected the trend because of the lumpiness of such transactions. Some foreign banks have divested assets, which were bought by local banks, also contributing to the fluctuating flows. This trend was consistent with the scaling down by many large EU and United States banks of operations abroad to restructure and manage risks after the 2007–2008 global financial crisis. Major Asian and ASEAN banks have demonstrated an opposite investment trend, as they have expanded in the region since the crisis.

MNEs from the United States were the largest investors in the industry in 2016–2018 (figure 2.4). MNEs from the United States contributed 28 per cent of FDI in financial services in this period overall. Financial MNEs from the EU were the second largest investors, followed by MNEs from ASEAN. About 50 per cent of FDI in financial services came from these three sources in 2016–2018.

Figure 2.4. Largest investors in financial services, by home economy, 2016–2018 (Billions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

2.4.2. M&As in financial services

Financial MNEs, in particular banks, are major acquirers of assets in ASEAN. In 2012–2018, the financial industry accounted for 30 per cent of M&As in the region and was the second largest target after business services (which consisted mostly of real estate). Given the strategic nature of financial and banking businesses, M&As are a preferred choice for market entry, especially for consumer banking activities, because they provide immediate access to established banking networks, branches and consumer bases.

M&As in financial activities spiked in 2013 because of megadeals by MUFG (Japan), which involved a $5.3 billion acquisition of a majority stake in Bank of Ayudhya in Thailand, and by Sumitomo Mitsui (Japan), with a $949 million acquisition of Bank Tabungan Pensiunan Nasional (Indonesia).

There were 16 mega-acquisitions (over $500 million) of banks in 2012–2018 (annex table 2.1). These megadeals contributed to the fluctuation of M&A values. Nine of the 16 came from Japanese banks. MUFG alone made five such acquisitions in the period, including its acquisition of a 20 per cent stake in the Philippines Security Bank in 2016 and a doubling of its stake in Indonesia's Bank Danamon to 40 per cent in 2018.

Home-grown banks are also acquiring the banking assets of foreign banks in ASEAN. In 2016, Oversea-Chinese Banking Corporation (Singapore) acquired the Singapore wealth and investment management business of Barclays Bank (United Kingdom) for $320 million. In 2014, DBS Group Holdings (Singapore) acquired the Singaporean wealth management services of Societé Générale (France) for $220 million. Malaysia Building Society (Malaysia) merged with the Asian Finance Bank (Malaysia), which is owned by Qatar Islamic Bank (Qatar) and Financial Assets Bahrain (Bahrain), for $153 million. DBS Bank (Singapore) acquired the wealth management and retail banking business of Australia & New Zealand Banking Group (Australia) in 2017 for $79 million.

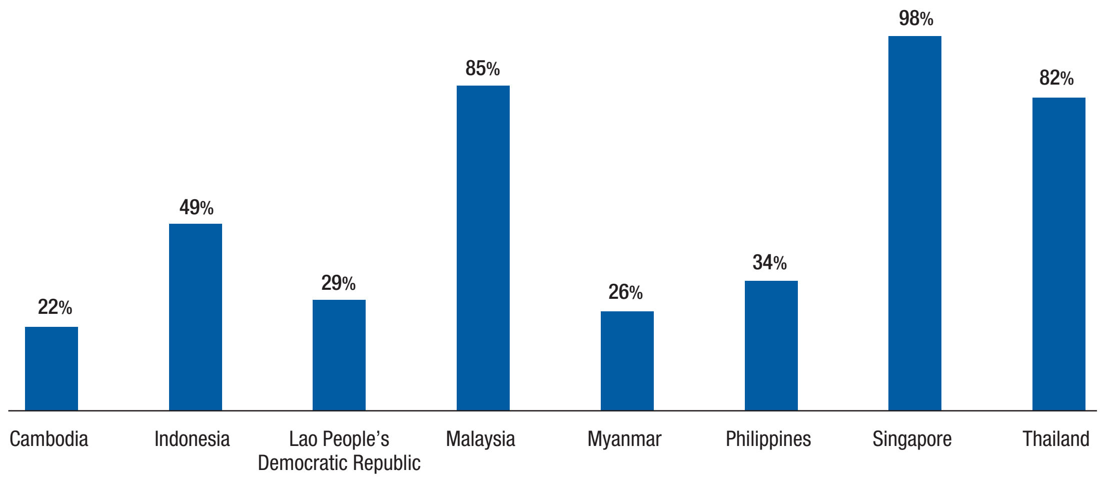
2.4.3. Banking industry specifics

Some key features of the banking industry in ASEAN merit highlighting because of their implications for investment.

Underserved population

ASEAN is still relatively underserved by banks (figure 2.5), especially in the CLMV countries. Some 73 per cent of the region’s population does not have a bank account (KPMG 2016). Consumers in Indonesia, the Philippines, Thailand and Viet Nam continue to rely on cash to pay for their goods. About 78 per cent of the adult population in Cambodia, 50 per cent in Indonesia, 66 per cent in the Philippines and 18 per cent in Thailand did not have a bank account in 2017. The size of the underserved banking segment suggests that there is scope for investment in banking, including the use of technology to reach the unserved in the region.

Figure 2.5. Share of ASEAN adult population with a bank account, 2017 (Per cent)



Source: Global Findex database (2017).
Note: Data for Brunei Darussalam were not available.

Mobile phone penetration

The region has a mobile phone penetration rate that is higher than the global average. It is over 100 per cent for Indonesia, the Philippines, Malaysia, Myanmar, Singapore, Thailand and Viet Nam, as some mobile phone users own more than one SIM card (Khidhir 2018). The scale of phone penetration also explains the increase in fintech investment in the region (section 2.4.5).

Fintech development

New types of service providers, particularly fintech companies, have emerged to compete with traditional service providers in offering financial services and solutions to customers, including payment solutions, loan applications, money transfers and remittances as well as robo-advisory and personal financial management services. Fintech companies can respond more quickly to changes in consumer demand and behaviour than traditional banks because they tend to focus on process rather than product innovation. Major banks and other corporations in the region are also investing in fintech by developing dedicated divisions and acquiring fintech companies or as corporate venture capital entities.

2.4.4. Multinational banks in ASEAN

Regional growth, investment opportunities and saturated home markets are driving foreign banks to invest in ASEAN. MNEs from Japan have been actively expanding in the region to counter the low demand for credit at home. The significant presence of Japanese manufacturing companies in ASEAN has also encouraged Japanese banks to expand in the region. Similarly, Korean banks are increasing their regional presence because of the region's market potential and the crowded market at home. For example, in 2016 Busan Bank opened a branch in Viet Nam and Jeonbuk Bank acquired Cambodia's PPC Bank to provide loan services to local retail customers and small- and medium-sized enterprises. In 2017, Shinhan Bank acquired ANZ Viet Nam's retail banking division. Hana Bank agreed to buy a 15 per cent stake in the Joint Stock Commercial Bank for Investment and Development of Vietnam for $850 million in 2019.[8] Chinese banks have been investing in the region for the same reasons, to provide financial services to the growing number of Chinese firms.

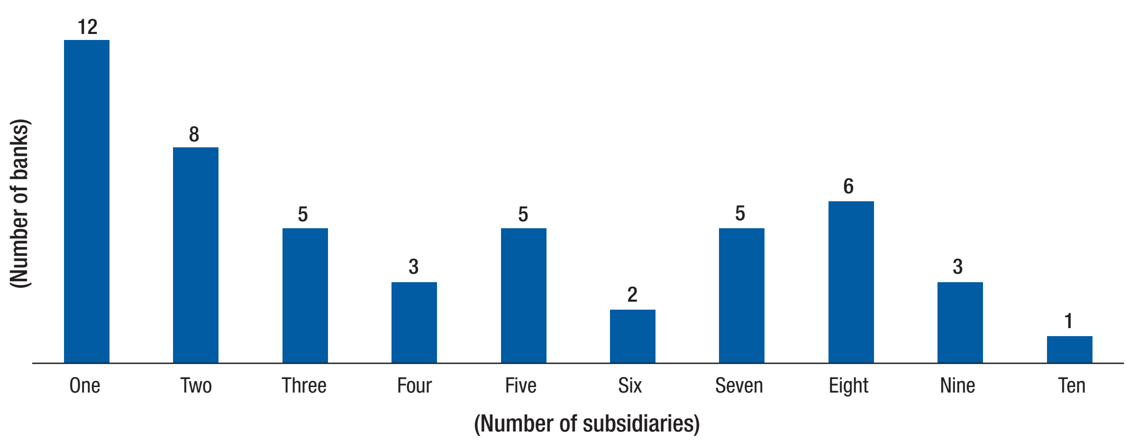
European and American banks were the earliest to establish a presence in the region. Banks from the United States, such as Citibank, have been in the region for over a century. HSBC (United Kingdom) has been present in Viet Nam since 1870. It was the first commercial bank in Thailand in 1888, entered Singapore in 1877, the Philippines in 1875, Indonesia in 1884, Malaysia in 1884 and Brunei Darussalam in 1947. As mentioned earlier, some American and European banks have scaled down or divested their operations in ASEAN since the 2007–2008 financial crisis. In recent years, European banks have been shifting their back-office processes or business process operations to ASEAN, with the Philippines being the main beneficiary.

50 largest multinational banks

The top 50 multinational banks are all present in ASEAN.[9] More than half of them have subsidiaries in at least four Member States (figure 2.6), with nearly all having a presence in Singapore (figure 2.7). Many of the top 50 have regional headquarters in that country. These banks include BNP Paribas (France), Deutsche Bank (Germany), ING (Netherlands), Société Générale (France) and UBS (Switzerland).

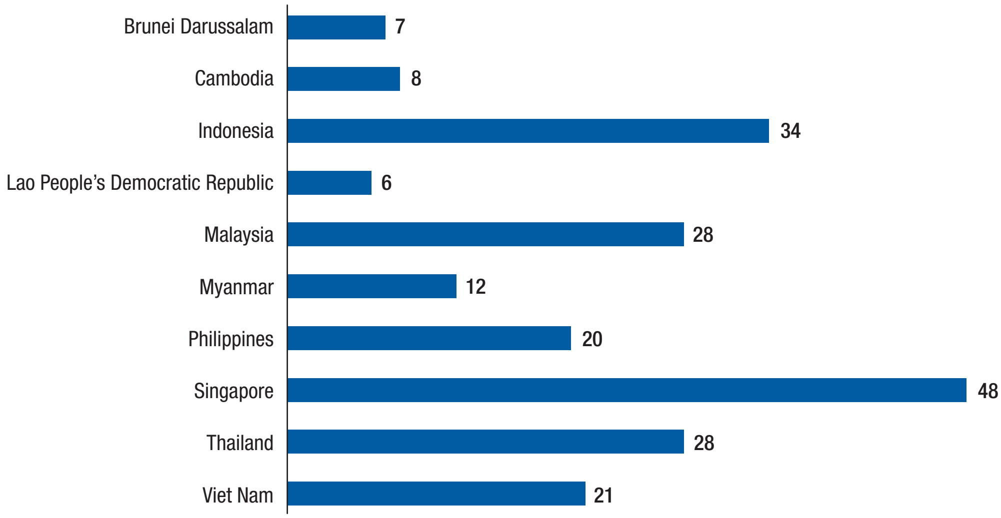
The activities carried out by these banks vary. Some of them undertake investment banking activities (e.g. Goldman Sachs and JPMorgan Chase), and some offer multiple banking-related services (chapter 1, *AIR 2018*). For example, Deutsche Bank (Germany) undertakes asset management, corporate banking, investment banking and private banking in ASEAN. Some banks are in ASEAN only to serve their domestic clients that operate in those countries.

Figure 2.6. Top 50 multinational banks by assets, number of subsidiaries in ASEAN, 2019 (Number)



Source: Based on annex table 2.2.

Figure 2.7. Top 50 multinational banks by assets, location of subsidiaries in ASEAN, 2019 (Number)



Source: Based on annex table 2.2.

For example, Lloyds Banking Group (United Kingdom) has a commercial banking operation in Singapore to provide support to British companies that have operations in Asia and to major Asian companies seeking to invest in the United Kingdom.[10]

ASEAN banks, although not in the top 50, are also expanding regionally. Most of the largest ASEAN banks have a presence in multiple ASEAN Member States. Of the 25 largest, 20 have a subsidiary in at least one other ASEAN Member State (table 2.6). These 20 banks have combined assets of $2.4 trillion, equivalent to 80 per cent of the entire ASEAN economy in 2018. They provide a wide range of banking and financial services to clients, including financing of small and medium-sized enterprises. These banks include Bangkok Bank (Thailand), CIMB (Malaysia), DBS (Singapore), Maybank (Malaysia) and UOB (Singapore), all of which are present in multiple locations in ASEAN. Although Thai banks are not as internationalized as Malaysian and Singaporean banks, recently many have expanded to other ASEAN Member States, predominantly to serve their home clients overseas.[11] Some banks, such as the UOB (Singapore), provide FDI advisory services to clients and are involved with fintech as well as venture capital funding for start-ups in the region (box 2.1).

Although some of these banks do not have subsidiaries in the rest of the ASEAN Member States, they nonetheless undertake services in those countries. Many have representative offices. For instance, Bangkok Bank has representative offices and branches in eight other ASEAN Member States, including the four CLMV countries, to serve Thai firms operating there (box 2.2). It has recently opened another representative office in Cambodia to meet increased demand from Thai companies.[12]

Table 2.6. Top 25 ASEAN banks, by assets, 2018 (Millions of dollars)

Company	Country	Total assets	Subsidiaries in ASEAN
DBS Bank	Singapore	403	Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, Viet Nam
OCBC Bank	Singapore	343	Indonesia, Malaysia, Viet Nam
United Overseas Bank	Singapore	284	Indonesia, Malaysia, Philippines, Thailand
Maybank	Malaysia	195	Cambodia, Indonesia, Philippines, Singapore, Thailand, Viet Nam
CIMB	Malaysia	129	Cambodia, Indonesia, Singapore, Thailand, Viet Nam
Public Bank	Malaysia	101	Cambodia, Viet Nam
Siam Commercial Bank	Thailand	98	Cambodia, Singapore
Kasikornbank	Thailand	97	Lao People's Democratic Republic
Bangkok Bank	Thailand	96	Malaysia
Bank Rakyat Indonesia	Indonesia	90	Malaysia, Philippines, Singapore, Viet Nam
Krung Thai Bank	Thailand	84	Cambodia
Bank Mandiri	Indonesia	83	Malaysia, Philippines, Singapore, Viet Nam
RHB Bank	Malaysia	59	Cambodia, Indonesia, Lao People's Democratic Republic, Thailand, Philippines, Singapore
Bank for Investment	Viet Nam	58	Cambodia, Lao People's Democratic Republic, Malaysia, Singapore
BDO Unibank	Philippines	57	None
Bank Central Asia	Indonesia	57	None
Bank Negara Indonesia	Indonesia	56	Malaysia, Philippines, Singapore, Viet Nam
Vietinbank	Viet Nam	51	Cambodia, Lao People's Democratic Republic, Malaysia, Singapore
Hong Leong Bank	Malaysia	50	Cambodia, Philippines, Singapore, Viet Nam
Vietcombank	Viet Nam	47	Cambodia, Lao People's Democratic Republic, Malaysia, Singapore
Metropolitan Bank and Trust Company	Philippines	43	None
Bank of the Philippine Islands	Philippines	39	Singapore, Viet Nam
AmBank	Malaysia	39	Singapore
Thanachart Bank	Thailand	32	None
TMB Bank	Thailand	24	None

Source: Orbis database.
Note: Many of these banks also have representative offices and branches in other ASEAN Member States, in addition to subsidiaries.

The trend of ASEAN banks entering wealth management services reflects a growing demand in this segment and shows that these financial institutions are diversifying the services they offer, partly in response to the growing number of high-net-worth individuals in the region. Many are also expanding their regional reach by digital means. For instance, Kasikornbank (Thailand) established a $30 million venture capital fund in 2017 to invest in fintech companies across Southeast Asia. Other banks such as UOB (Singapore), Maybank (Malaysia) and CIMB (Malaysia) are doing the same.

Box 2.1. United Overseas Bank

United Overseas Bank (UOB) (Singapore) is a leading bank in Asia, with a global network of more than 500 branches and offices in 19 countries and territories in the Asia-Pacific, Europe and North America. It is headquartered in Singapore and has subsidiaries in ASEAN (Indonesia, Malaysia, Thailand and Viet Nam) as well as branches and offices around the world (box table 2.1.1). The bank provides a wide range of financial services, which include personal financial services and private banking; commercial, corporate and investment banking; corporate finance; capital market activities; and treasury services. It also provides asset management, venture capital management and insurance services.

Internationalization

UOB has been actively expanding internationally since the early 1970s, when it acquired stakes in Chung Khiaw Bank and Lee Wah Bank in Malaysia. It expanded to other ASEAN Member States such as Thailand and Indonesia. In 2018, the group further expanded its regional footprint by establishing a subsidiary in Viet Nam. It also started construction of a head office building in Thailand.

Box table 2.1.1. UOB Group: Global network, December 2018

Countries and territories	Number of branches/ offices
ASEAN	
Brunei Darussalam	2
Indonesia	181
Malaysia	48
Myanmar	2
Philippines	1
Singapore	71
Thailand	155
Viet Nam	1
Rest of Asia	34
Australia	4
Europe	2
North America	6

Source: United Overseas Bank.

Investment motivation

Market factors (e.g. strong economic growth, market size, vibrant economies, rising incomes) and growing investment opportunities have played important roles in the group's overseas investment decisions. The UOB group has invested and expanded in ASEAN to follow customers as they sought new sources of growth, more efficient production bases and additional revenue streams in the region. Operating close to customers and better serving them overseas were important considerations. Regional integration and the AEC are important determinants in the group's investment activities in ASEAN.

Facilitating FDI into ASEAN

The bank established an FDI advisory service in 2011 – the first bank in Southeast Asia to do so – to facilitate clients' expansion across borders. The bank offers one-stop solutions through nine dedicated FDI advisory centres across Asia, with partners comprising local government investment agencies, industry bodies and professional service providers. The centres have supported more than 2,200 companies in their regional business expansion and investment. In April 2019, through a collaboration with the Singapore Exchange and the China Chamber of International Commerce, the bank increased its support to Chinese enterprises wishing to expand into ASEAN. The tripartite alliance builds on UOB's collaboration with the China Chamber to assist Chinese companies with their overseas ventures in the region. Through its FDI advisory services the bank is also assisting SMEs in seizing cross-border opportunities. UOB's financing specialists provide financial solutions to SMEs that need to make technology investments and expand overseas.

Impact investments in ASEAN

UOB Venture Management, a wholly owned subsidiary of UOB, manages private equity funds that invest in high-growth, privately held companies in Southeast Asia and China. In March 2019, UOB Venture Management led the Series B funding for Halodoc, an Indonesian health care start-up that aims to simplify health care by improving accessibility and enhancing the patient experience. Halodoc enables patients from across Indonesia, including underdeveloped regions, to connect to more than 20,000 licensed doctors through its

/...

Box 2.1. United Overseas Bank (Concluded)

mobile app and website. The Fund also invested in Lifetrack Medical Systems (Singapore), a healthtech start-up aiming to expand affordable access to medical imaging services in emerging markets.

Deepening digital capabilities

UOB has established technology and partnerships with fintech companies to improve efficiency in banking. The group continues to digitalize its banking processes. In 2018, it digitalized all its saving, card, home loan and car loan application processes in Singapore, reducing the turnaround time for customer applications from five days to just 15 minutes. In response to digital opportunities, UOB has designed a digital bank, TMRW, and has made strategic investments in fintech companies. These included setting up Avatec.ai, a joint venture with Chinese fintech firm Pintec; taking a stake in Personetics, a company offering artificial intelligence solutions; and partnering with Meniga, a software company specializing in advanced data enrichment and categorization. TMRW was launched in Thailand in March 2019 and will be introduced to other ASEAN markets.

The bank provides guidance, resources and mentorship to SMEs in Malaysia, Singapore and Thailand through an innovation accelerator, The FinLab, helping them to digitalize their operations and realize their growth potential. It collaborates with Tookitaki, a regulatory technology start-up, to create a machine learning solution to combat money laundering.

Source: United Overseas Bank.

Box 2.2. Bangkok Bank

Bangkok Bank (Thailand) has international and regional operations. It is present in nearly all ASEAN Member States (box table 2.2.1). Its services include syndicated loans, debt securities underwriting, trade finance, project finance, custodial services, SME and merchant services, and specialist industry advice. The internationalization of Bangkok Bank to ASEAN started in 1957.

Box table 2.2.1. Bangkok Bank: Operations in other ASEAN Member States, 2019

Country	Branches	Remarks
Cambodia	1	Opened in 2014. Also offers support to customers in pursuing growth and direct investment opportunities in Cambodia.
Indonesia	3	Established in 1972. Offers commercial banking services to customers.
Lao People's Democratic Republic	2	Established in 1993. Offers commercial banking and other financial services.
Malaysia	5	Established in 1959. Offers commercial banking and other financial services.
Myanmar	1	Operating in Myanmar for more than 20 years. Awarded a foreign banking license in 2014.
Philippines	1	Established in 1995. Provides commercial banking services to local corporate customers.
Singapore	1	Established in 1957. Operates as a licensed commercial bank.
Viet Nam	2	Established in 1961. Awarded a branch status in 1992. Provides services to companies from Thailand and from other countries.

Source: Bangkok Bank, website and 2018 annual report.

Bangkok Bank has expanded in ASEAN to follow its customers that have established operations or are expanding into other ASEAN Member States, driven by the prospects and benefits of the AEC. Some of the bank's clients have entered new markets, set up manufacturing facilities, and built supply chains in the region. Bangkok Bank operates close to its clients' overseas operations to support their international expansion.

Source: Bangkok Bank.

2.4.5. Fintech: Digital technology and players

Digital technology has been contributing to the changing financial landscape in ASEAN. The emergence of new financial providers can lead to different responses from traditional banks. A 2017 Ernst and Young analysis of 45 major banks indicated that there are four main ways in which banks can engage with fintech companies (table 2.7).

New and existing players are using financial technologies to provide alternative solutions such as for the unbanked or to serve niche markets. KPMG (2016) outlined two critical areas for fintech solutions. First, given the large number of migrant workers, low-cost money transfer solutions are required for remitting money home. TransferWise, a European money transfer service, has launched an Asia-Pacific hub in Singapore to facilitate remittances. Grab (Singapore), a transportation network company, is planning to launch an international wallet-to-wallet function in 2019. Voyager Innovations in the Philippines is developing systems for conducting digital payments and money transfers, especially for overseas workers, using smartphones to remit money to their home countries.[13] Second, fintech is being used to provide short-term loans for the small businesses that dominate the economies of countries in the region. Indonesian fintech firms have come up with numerous peer-to-peer (P2P) lending apps in response to the increase in demand and the lack of stringent regulatory control as yet.[14] There is a need to address consumer protection and to catch up with innovative financial services in the P2P space.

Table 2.7. Four main models of engagement with fintech firms

Model of engagement	Description
Investment	Banks invest their own capital in fintech start-ups as: • Dedicated in-house venture capital or strategic investment arms • Independent venture capital funds • Investments on their own balance sheet
Collaboration	Banks enter into various types of arrangements with fintech companies: • Using products or platforms developed by fintech firms (e.g., a bank teaming up with a robo-advisory fintech service to offer investment management services) • Collaborating as a network to develop and test new technologies and solutions • Setting up referral arrangements, primarily in peer-to-peer (P2P) lending (e.g. a bank might refer a small business that falls outside its risk appetite to a P2P fintech firm) • Establishing joint ventures or co-created services (e.g., a bank partnering with a fintech firm to launch a digital marketplace)
In-house development of products	Banks are accelerating their in-house development of fintech products and services. Historically, they have been slow to create new products, given the complexity of their businesses and the strict regulatory and compliance environment in which they operate. Examples of innovation range from contactless payments and robo-advisors to a suite of e-banking products and services.
M&A	Acquiring a fintech company can expand a bank's digital footprint and short-cut the development of new technology. This is typically banks' least preferred strategy, but large global and regional banks are taking stakes in online competitors.

Source: Ernst and Young (2017).

Foreign fintech companies also operate in ASEAN. Ant Financial (China), an affiliate of the Alibaba Group, is actively investing in the region.[15] It invested in Thailand's payment company, Ascend Money, in 2016 and formed a strategic partnership with Emtek Group, a leading mobile company in Indonesia in preparation for launching a mobile payment platform in that country. In 2017, Ant Financial bought a 45 per cent stake in Global Fintech Innovations Inc. (Mynt), a fintech business based in the Philippines, with the intention of sharing its digital financial systems with Mynt for the expansion of mobile payments in the Philippines. Fintech companies in ASEAN have also attracted investments through M&As. In 2019, PayU (Netherlands) acquired a majority stake in Red Dot Payment (Singapore) for $65 million.[16]

ASEAN fintech companies

Although still in its infancy, the fintech industry is growing rapidly in the ASEAN region. Promoting investments in fintech has the potential to speed up development of the financial sector, given that several markets in the region are underserved.

Over two-thirds of ASEAN fintech start-ups are less than five years old (Ernst and Young 2018). The 50 most-funded ASEAN fintech companies had raised over $1.7 billion as of 2019, attracting interest from venture capital firms from the region (mostly Singapore), as well as the United States, Japan, China and countries in Europe. Most of this funding was raised in recent years, with about $1 billion or 60 per cent raised between January 2018 and August 2019 (annex table 2.3). A majority of the 50 most-funded ASEAN fintech start-ups operate in the payments and remittance solution segment and are engaged in lending, loans and credit. The other types of solutions provided by these fintech start-ups are financial exchange, investment tools and platforms, financial product comparisons, financial accounting and administration services.

With a large and growing demand for such services, Indonesia is witnessing an increase in the number of fintech companies and start-ups. These start-ups are able to exploit niche markets that traditional financial services companies have been unable to serve. Although most of the top 50 fintech start-ups also serve customers in other ASEAN economies, only 42 per cent maintain a physical presence abroad (*AIR 2018*). Examples of those with a physical presence abroad include InvestorZ (Thailand) in Singapore, Acudeen Technologies (Philippines) in Myanmar, Omise (Thailand) in Indonesia and Singapore, and Coin.ph (Philippines) in Malaysia, Thailand and Singapore. Funding Societies (Singapore) has opened offices in Indonesia and Malaysia, and InstaReM (Singapore) has expanded into Malaysia. In 2019, wealth management fintech company Jitta (Thailand) expanded to Singapore; foreign exchange fintech Koku (Singapore) expanded to Indonesia and SME lending platform Validus Capital (Singapore) expanded to Indonesia.

Fintech firms' development and regional expansion has been underpinned by venture capital backing – both foreign and from within ASEAN. United States venture capital firms (500 Startups, Omidyar Network, Sequoia Capital) have invested in many ASEAN fintech companies. Other investors include companies from China (Ant Financial, Gobi Partners, GSR Ventures), Japan (GMO Venture Partners, Line Corporation), Australia (MC Payment, Square Peg Capital, Telstra Ventures) and the Republic of Korea (Intervest, Stonebridge Capital). European venture capital companies are also investing in ASEAN fintech start-ups (e.g. Chinsay AB (Sweden), Experian (Ireland), Ingenico Group (France) and Polychain (United Kingdom)). As the average fintech company in the region is less than two years old, most of the funding in ASEAN fintech markets comes from seed and angel investors (Ernst and Young 2018). Established venture capital firms tend to support mainly the larger, more established start-ups.

2.5. FDI AND MNEs IN WHOLESALE AND RETAIL ACTIVITIES

FDI in wholesale and retail is market-seeking oriented, entering markets with potential for growth. One study estimated retail sales in just four ASEAN Member States (Indonesia, Malaysia, Singapore, Thailand) to be $1 trillion in 2018.[17] Sales are set to grow further with the increasing population. Although "wet" markets and family-owned shops are still the mainstay of the retail industry, the increasingly consumerist lifestyle in ASEAN is creating a market for modern retail chains, not only supermarkets and convenience stores but also luxury brand outlets.

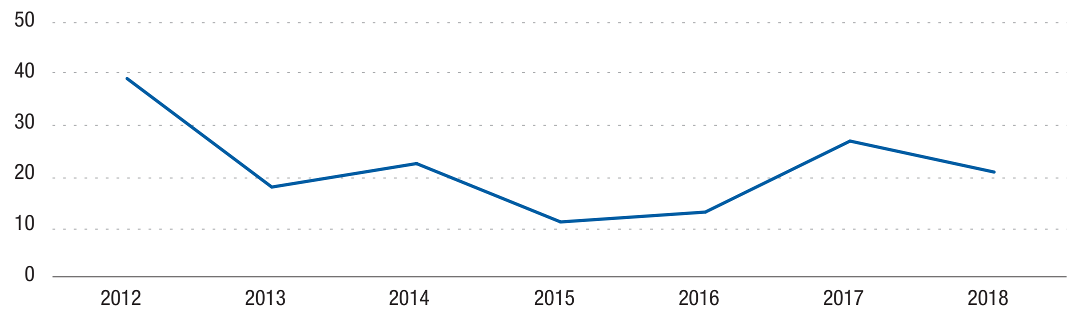
2.5.1. FDI trends and pattern in wholesale and retail

In 2012–2018, FDI flows to the wholesale and retail industry[18] in ASEAN amounted to an annual average of $29 billion or 16 per cent of total FDI inflows (or 24 per cent of services FDI). About 70 per cent of these flows went to Singapore. Indonesia accounted for 18 per cent, followed by Thailand and Viet Nam, with 4 per cent each. A majority of the FDI in this industry in Singapore was in the wholesale trade, as MNEs or Singapore-based wholesalers operated regional logistics hubs and coordinated purchases from that country. In other ASEAN Member States, disaggregated data are not available; however, the share of retail is likely to be much higher.

This section focuses on FDI in the retail industry, an intensely competitive industry in which major foreign MNEs have entered (and sometimes exited) the ASEAN market in recent years. M&A transactions in wholesale and retail in 2012–2018 were worth $18 billion, of which more than 80 per cent involved acquisitions in retail. Another reason to focus on retail is its impact on host economies. The retail industry has been the largest source of employment in ASEAN (Chang, Rynhart and Huynh 2016). Some 45 million people, or 16 per cent of the region's employment, work in this industry.

FDI into the wholesale and retail industry has fluctuated over the last seven years (figure 2.8). In 2012, ASEAN attracted $38 billion of such FDI, but in 2013 the volume fell to $17 billion. This was partially because of acquisitions of foreign-owned assets in the region by local retailers. Divestment by MNEs from the Netherlands and acquisitions of foreign assets by local companies led to the drop in 2015. The fall in 2018, from $26 billion in 2017 to $20 billion, can be explained by a -$8.9 billion divestment from the United States, traditionally a significant investor in this industry.

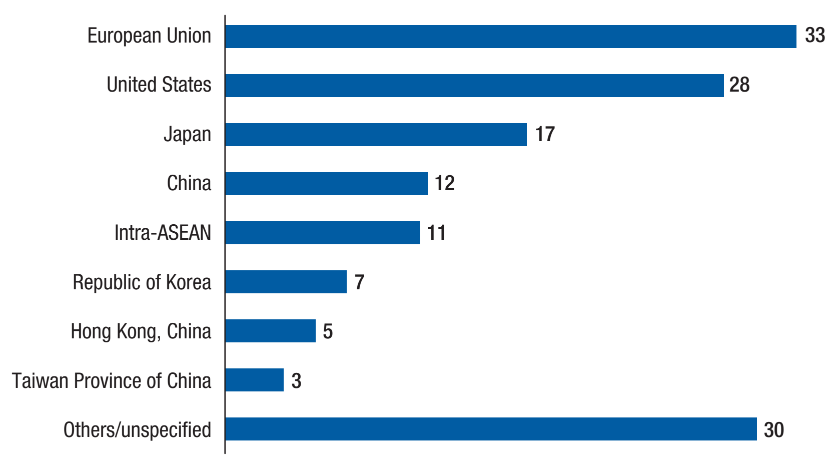
Figure 2.8. FDI flows in wholesale and retail, 2012–2018 (Billions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

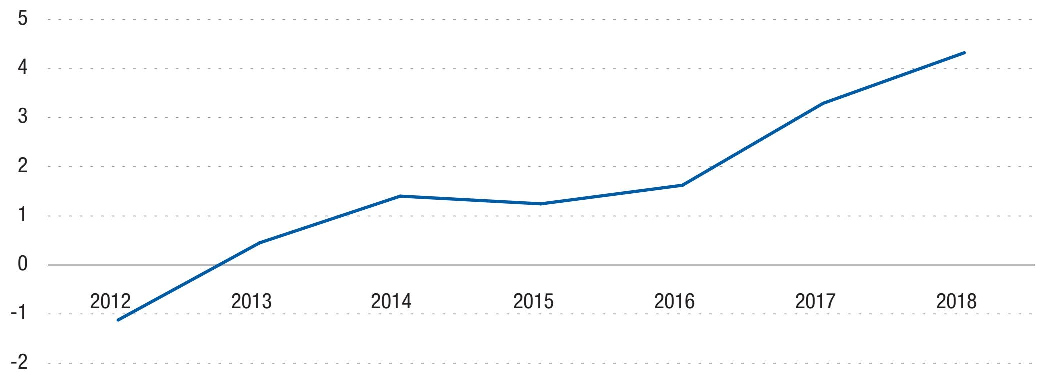
The major investors are from the EU, the United States, Japan, China and intra-ASEAN sources (figure 2.9). These five contributed nearly 70 per cent of FDI to the industry. Although FDI from most major economies into this industry has fluctuated over the years, intra-ASEAN investment has risen steadily since 2012 as ASEAN retailers have expanded in the region. In 2018, intra-ASEAN investment was the largest source of FDI in this industry. ASEAN companies such as Big C Supercenter (Thailand), CP All (Thailand) and Home Product (Thailand) as well as conglomerates such as Sime Darby (Malaysia) have expanded in the region. In 2013, intra-ASEAN investment was just $500 million, but in 2014 it rose to $1.4 billion and in 2018 to $4.3 billion, surpassing all other major investment sources (figure 2.10).

Figure 2.9. Largest investor home economy in wholesale and retail in ASEAN, 2012–2018 (Billions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

Figure 2.10. The rise of intra-ASEAN investment in wholesale and retail, 2012–2018 (Billions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

2.5.2. M&As in wholesale and retail

In 2012–2018, net M&A sales in wholesale and retail trade amounted to a net divestment of -$8 billion, whereas M&A sales in the services sector amounted to $50 billion. ASEAN retailers are expanding not only regionally but also domestically through acquisitions of the assets of foreign retailers (table 2.8). This phenomenon explains the increase in the levels of divestment in the industry in 2012–2018. Siam Makro, the Thai subsidiary of the trading company SHV Holdings (Netherlands), was acquired by local conglomerate CP in 2013. Casino (France) sold a 59 per cent stake in the Thai hypermarket operator Big C to TCC (Thailand) for $3.4 billion 2016. The total value of divestment deals in this industry over the 2012–2018 period was $11 billion, or 38 per cent of the total value of divestment deals for the entire services sector.

Table 2.8. M&A megadeals in wholesale and retail by ASEAN retailers, 2012–2018 (Millions of dollars and per cent)

Ultimate acquiring company	Ultimate acquiring nation	Target company	Target nation	Year	Value ($ million)	Shares owned after (%)
CP ALL	Thailand	Siam Makro	Thailand	2013	6,132	66
Thai Charoen Group	Thailand	Big C Supercenter	Thailand	2016	3,439	59
Central Group	Thailand	Casino Guichard-Perrachon SA-Big C Vietnam Stores	Viet Nam	2016	1,135	100
TCC Holding	Thailand	Metro Cash & Carry Vietnam	Viet Nam	2016	705	100
CT Corporation	Indonesia	PT Carrefour Indonesia	Indonesia	2013	673	100
GIC Private	Singapore	Trans Retail	Indonesia	2016	398	..
Aeon	Japan	Carrefour Malaysia	Malaysia	2012	324	100
Robinsons Retail Holdings	Philippines	Rustans Supercenters	Philippines	2018	320	100

Source: UNCTAD, M&A database.

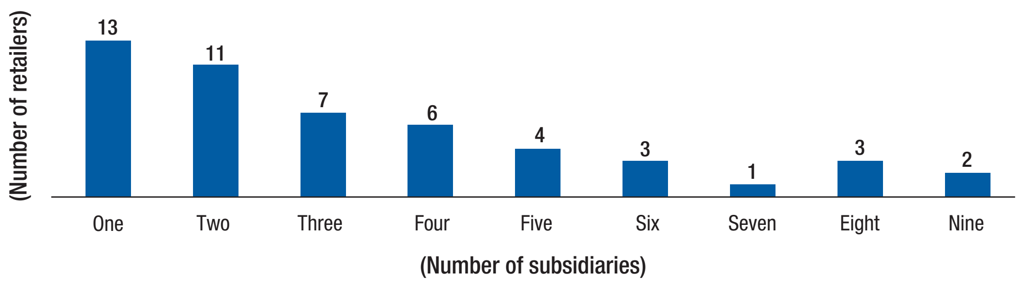
2.5.3. MNEs in ASEAN retail industry

Many global retailers, such as Alibaba (China), Amazon (United States), Carrefour (France), Tesco (United Kingdom) and Walmart (United States) are present in ASEAN, and they continue to expand regionally. Some have an extensive presence, e.g. Seven & I Holdings (Japan), Kering (France), Steinhoff International (South Africa), Sime Darby (Malaysia), Lawson (Japan), FamilyMart (Japan) and Shanghai Friendship Group (China).

Nearly 75 per cent of the 50 largest retailers with subsidiaries in ASEAN have two or more subsidiaries in the region, and 19 of them operate in at least four ASEAN Member States (annex table 2.4 and figure 2.11).

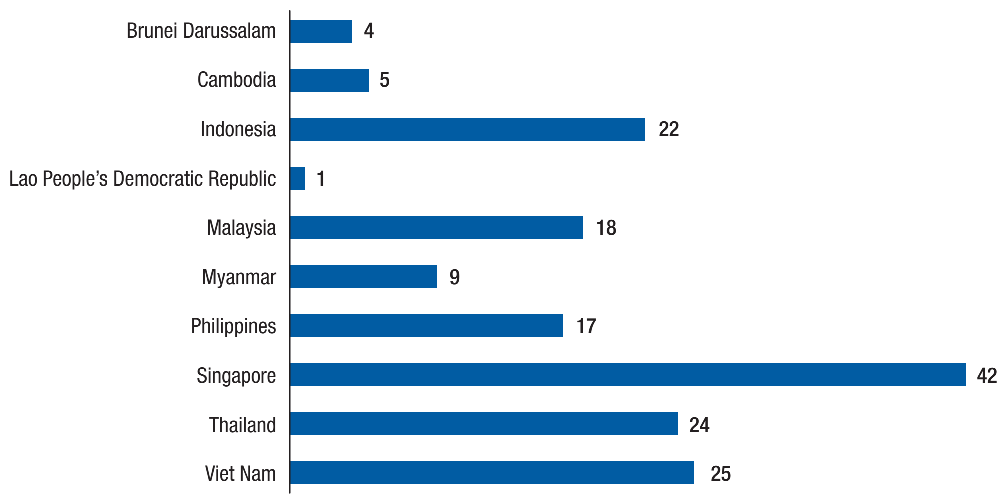
Despite being a small market in terms of population, Singapore received the most attention from the top 50 global retailers in 2018 (figure 2.12). The large population and growing number of middle-income consumers in Indonesia, Thailand and Viet Nam attracted many retailers to these markets.

Figure 2.11. Top 50 global retailers in ASEAN, 2019 (Number)



Source: Based on annex table 2.4.

Figure 2.12. Top 50 global retailers in ASEAN, by location of subsidiaries, 2019 (Number)



Source: Based on annex table 2.4.

Among the different types of retail activities, MNEs are actively investing in non-specialized stores such as supermarkets, convenience stores and department stores and in e-commerce.

Petrol stations

In Indonesia, most petrol stations are run by state-owned Pertamina, but foreign MNEs are gradually increasing their presence. Shell (United Kingdom-Netherlands) operates more than 70 stations under its brand in Greater Jakarta and Bandung. BP (United Kingdom) and local petroleum and chemical logistics company AKR formed a joint venture in 2017 to launch a petrol station network in the country. The joint venture capitalizes on BP's retail experience and AKR's extensive distribution channels.[19] BP and AKR aim to open 350 stations by 2029. In Myanmar, PTT Oil and Retail Business (Thailand) and local conglomerate Kanbawza signed a contract in 2019 to open 70 petrol stations by 2023.[20] China National Petroleum is also planning to open petrol stations in that country.

Clothing and luxury brand retailers

Fast Retailing (Japan), which owns the Uniqlo brand, has expanded rapidly in ASEAN. It has 209 stores in the region and has plans to open more in the coming years.[21] Other fast fashion retailers such as Zara (Spain) and H&M (Sweden) have a presence in the region and are continuing to open more stores.

Many luxury retailers (e.g. bags, eyewear, shoes, clothes, watches and jewellery) have been expanding in ASEAN. Most are from Europe (e.g. LVMH Moët Hennessy-Louis Vuitton and L'Oréal (both France), Compagnie Financière Richemont and Swatch (both Switzerland), Luxottica (Italy) and Chanel (United Kingdom)).

Furniture stores

IKEA (Sweden) has stores in Malaysia, Singapore and Thailand, continued to expand in the region. In 2018, it opened another store in Thailand. In response to the growing spending capability of consumers, it plans to open one store in the region every year for the next five to 10 years.

E-commerce

MNEs from China are active in e-commerce in ASEAN. In 2016, to support its internationalization plans, Alibaba bought a controlling stake in Lazada, an e-commerce company founded by Rocket Internet in 2012, for $1 billion. In 2017, Alibaba invested another $1 billion, increasing its stake to 83 per cent. Also in 2017, it invested $1.1 billion in Tokopedia, the leading Indonesia e-commerce company, becoming a minority shareholder. Alibaba, in partnership with Softbank (Japan), invested further in Tokopedia with $1.1 billion in 2018. Other Chinese companies in e-commerce, such as JD.com and Tencent, also have operations in the region.

Supermarkets, convenience stores and department stores

In the supermarket, hypermarket and convenience store segment, Japanese retailers have expanded progressively in ASEAN. Japanese MNE retailers have been present in the region since the 1980s. Although their presence subsequently stagnated and then declined, Japanese retailers started expanding overseas again in 2016[22] as the domestic market became saturated amid intensifying competition.

Aeon (Japan), formerly operated under the Jusco brand, opened its first store in the region in 1984 in Malaysia (box 2.3). After its acquisition in 2012 of the Malaysian business of Carrefour (France), it expanded quickly in that country. Its regional headquarters for ASEAN businesses is in Malaysia. Department store Takashimaya established its first store in ASEAN in Singapore in 1993. It opened a store in Ho Chi Minh in 2016[23] and a store in Bangkok in 2018 through a

Box 2.3. The growth of Aeon supermarkets in ASEAN

Aeon (Japan) has established a strong presence in all ASEAN Member States except Brunei Darussalam (annex table 2.4). It has invested extensively in retail and retail-related activities such as consumer credit and commercial real estate development. The group thus runs operations in different segments of the retail industry. In terms of the number of outlets, its largest presence in ASEAN is through its convenience stores network, with 521 stores in the Philippines and 120 in Viet Nam.

Aeon's supermarket operations have successfully expanded into Cambodia, Indonesia, Myanmar, Thailand and Viet Nam. Aeon runs 127 supermarkets and 40 general merchandise stores in the region (box table 2.3.1). It has financial services operations in the Lao People's Democratic Republic and the Philippines. Its commercial real estate development business, Aeon Mall, has developed shopping malls in Cambodia, Indonesia and Viet Nam.

Aeon's sales and profits are greater in ASEAN than in China, where it has 23 supermarkets and 56 general merchandise stores. It plans to spend more than twice as much in ASEAN as in China.

Box table 2.3.1. Aeon stores and supermarkets in ASEAN, 2019 (Number)

	General merchandise store	Supermarket (grocery)
ASEAN	40	127
Cambodia	2	5
Indonesia	2	0
Malaysia	2	6
Myanmar	0	15
Thailand	0	77
Viet Nam	4	4

Source: Aeon website and annual reports.

Aeon has been developing a range of locally manufactured goods and selling them under its private brand in Singapore as well as in its stores in other ASEAN Member States. ASEAN's free trade regime has facilitated Aeon's private brand strategy and the movement of its merchandise in the region.

Sources: Aeon and media reports.

joint venture with local partner Siam River Holdings (49 per cent). The expansion of Japanese retailers in ASEAN is often facilitated through collaboration with local partners. The partners enable Japanese MNEs to access certain business advantages such as the availability of store locations or logistics facilities or sources for goods. Fast Retailing (Japan) has partnered in Malaysia and Singapore with Wing Tai Asia, which has an established track record in introducing leading foreign brands (Meyer-Ohle 2014).

Among European supermarkets, Tesco (United Kingdom) and Carrefour (France) spearheaded the expansion into the ASEAN market. Carrefour set up its first hypermarket in Indonesia in 1998 and subsequently moved into other economies in the region. In 2010, however, it shifted its strategy and pulled out of ASEAN Member States in which it did not have realistic prospects of becoming a market leader.[24] It divested from Thailand in 2010, Singapore and Malaysia in 2012, and Indonesia in 2013.

Tesco entered Thailand in 1998. It took a stake in a joint venture to create the Tesco Lotus brand. It later expanded through the acquisition from the Thai CP Group of a controlling stake in Lotus. Tesco Lotus is now the second largest international business in Tesco's portfolio and has over 1,700 stores. In 2002, Tesco entered Malaysia through a partnership with Malaysian conglomerate Sime Darby. Since then, Tesco's presence has grown to include more than 50 hypermarkets.

ASEAN-based retail MNEs are emerging. Thailand's leading retail conglomerate, Central Group, has made several acquisitions in Viet Nam, including in shopping malls. It has also expanded into Indonesia. Other retailers such as Sime Darby (Malaysia), TCC (Thailand) and CP ALL (Thailand) (box 2.4) are expanding regionally with more retail operations.

Box 2.4. CP ALL

CP ALL was established under the Charoen Pokphand Group (Thailand) to operate 7-Eleven franchises after securing exclusive rights from 7-Eleven (Japan). It started with seven stores and has grown to a network of over 10,000. It also diversified to other brands and operates six other convenience store brands, two ready-to-eat and bakery services and a wholesale service, through its acquisition of Siam Makro (Netherlands), which it acquired in 2013 for $6.1 billion. It used that acquisition to expand across Asia, including to Cambodia, Myanmar, Singapore and Viet Nam.[a] In 2016, Siam Makro acquired an 80 per cent stake in Indoguna (Singapore), a meat and seafood company with a subsidiary in Viet Nam. In 2018, it further expanded its stores in Viet Nam.

Siam Makro opened a subsidiary in Cambodia in 2016 and further expanded in that country in 2017 through a 70 per cent joint venture with local investors. In 2019, it opened its first supermarket with a $19 million investment.[b] In September 2018, the company set up a wholly owned subsidiary in Myanmar as it plans to open stores in the country in 2019 and undertake other retail and wholesale activities there.[c]

Sources: Annual reports of CPP ALL and Siam Makro, and media reports.
[a] Reuters, "Thai CP All shareholders approve Siam Makro acquisition", 12 June 2013.
[b] Khmer Times, "Makro to open Siem Reap supermarket", 24 January 2019.
[c] Siam Makro, Annual Report, 2018.

2.5.4. E-commerce: Digital technology and players

E-commerce has been the most dynamic segment of the Internet economy in ASEAN over the past three years. The value of e-commerce rose four-fold, from $5.5 billion in 2015 to more than $23 billion in 2018.[25] Indonesia accounted for the most ($12 billion), and Thailand and Viet Nam each accounted for about $3 billion. E-commerce transactions in the region are expected to exceed $100 billion by 2025. The affordability of mobile internet, greater consumer trust in e-commerce and the growth of the logistics industry to handle e-commerce deliveries have been among the main drivers of this rapid growth.

Many online retail companies have expanded their presence in ASEAN. In 2017, Amazon (United States) invested in Singapore to enter the region's growing market, with a particular focus on Indonesia. DHL eCommerce (Germany) expanded in Thailand because of the high growth in e-commerce activities in that country. In 2018, Alibaba (China) extended its e-commerce activities concurrently in Indonesia, Malaysia, the Philippines, Singapore and Thailand. Goxip (Hong Kong, China), a fashion e-commerce site, has been making further investments in Malaysia, after having established a presence there in 2016.

Online retailers such as Zalora (Singapore) have grown rapidly without needing physical retail stores. Traditional retailers have responded by selling through online retail platforms such as Lazada Marketplace and the Go-Food platform (Go-Jek (Indonesia)) to leverage their online presence and market reach, or by developing their own e-commerce platforms. This new customer-centric focus has fostered a rapid increase in e-commerce sales in retailing. In ASEAN, e-commerce has been the most dynamic sector in the growing digital economy. The main shopping portals include Lazada (China) and Shopee (Thailand).

As in the banking and logistics industries, new kinds of start-ups have also emerged in the retail industry, using technology to venture into the e-commerce space. The 50 most-funded e-commerce start-ups in ASEAN had raised $12.6 billion as of July 2019, with most of the funding raised in the last two years. Many of them raised those funds to scale up operations and to expand into other ASEAN Member States.

The thriving e-commerce start-up environment is attracting many venture capital firms and corporate investors. In 2018, JD (China) led a Series C investment round in the Viet Nam e-commerce company Tiki. In September 2017, the company and Central Group (Thailand) formed a $500 million e-commerce joint venture.[26] Other venture capital firms based in ASEAN, the United States, Europe and other Asian economies have been actively providing funding that supports the growth of the region's e-commerce market place (*AIR 2018*). Start-ups such as Tokopedia (Indonesia) have benefited from such support (box 2.5).

Box 2.5. Tokopedia

Tokopedia is one of the top e-commerce companies in Indonesia. It provides its merchants with services that are needed for e-commerce transactions, such as logistics, banks and instant payment facilities. It provides same-day delivery and one-day shipping facilities, which involve a network of 11 logistics companies in the country. It plans to use artificial intelligence to predict demand and to extend the service to up to 90 per cent of its products in two to three years.[a]

Tokopedia has successfully raised capital through various funding rounds from venture capital firms such as East Ventures, CyberAgent Ventures, NetPrice, Softbank Ventures Korea and Sequoia Capital (*AIR 2018*). It has also attracted $1.1 billion in investments each from Alibaba (China) and Softbank Vision Fund (Japan). With recent funding raised, Tokopedia plans to start acquiring stakes of up to 30 per cent in potential partners, including logistics companies and offline businesses, in order to scale up further.

Source: Tokopedia and media reports.

[a] Nikkei Asian Review, "Indonesia's Tokopedia beefs up one-day delivery, holding off Amazon", 4 June 2019.

2.6. FDI AND MNEs IN LOGISTICS

The availability of competitive transportation infrastructure is important to facilitate the movement of goods and people in ASEAN. Ports, airports, road and rail infrastructure is crucial for the development of an efficient logistics industry, which is needed to support the growth of industrial activities, trade and commerce in the region. The provision of efficient logistics services (box 2.6) can improve business efficiency and reduce transaction costs.

FDI and MNE activities in logistics (movement of goods, management of storage and last-mile delivery in e-commerce) are expected to rise in light of increasing demand. Foreign companies are focusing their attention more on investing and expanding in ASEAN, including acquiring strategic assets to strengthen networks and establish footholds in the region.

Logistics services could be provided by third-party services (outsourcing) or internally within a company (insourcing). The third-party logistics market in ASEAN is expected to grow at a compound annual growth rate of 5.5 per cent over the next several years, from $36 billion in 2017 to $56 billion in 2025. Taking into account the share of companies' internal logistics services, the total logistics market in ASEAN by 2025 could exceed $110 billion – about the e-commerce value of six ASEAN Member States by 2025.

2.6.1. FDI in logistics

FDI in the logistics sector appears small, but that does not mean that logistical and freight MNEs are not active in ASEAN. As a proportion of total FDI, the share of the transportation and storage industry (used as a proxy for the logistics industry) in 2012–2018 was only 1 per cent but with an annual average value of $1.3 billion. During this period, FDI in the transportation and storage fell sharply (figure 2.13). Divestments by foreign MNEs contributed to negative FDI flows in 2014 and 2018.

Box 2.6. Logistics services in ASEAN: definition and key features

Logistics services can be defined as "the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from point of origin to point of consumption for the purpose of conforming to customer requirements" (UNCTAD 2005).

Key components of logistics services include core freight logistics services, related freight logistics services and non-core freight logistics services. Freight logistic services include transport by road, air, rail and ship. The United Nations Provisional Central Products Classification codes, which are used by all members of the World Trade Organization (WTO) to schedule commitments under the General Agreement on Trade in Services (GATS) and by ASEAN under the ASEAN Framework Agreement on Services (AFAS), provide a description of core freight logistics services and related freight logistics (box table 2.6.1).

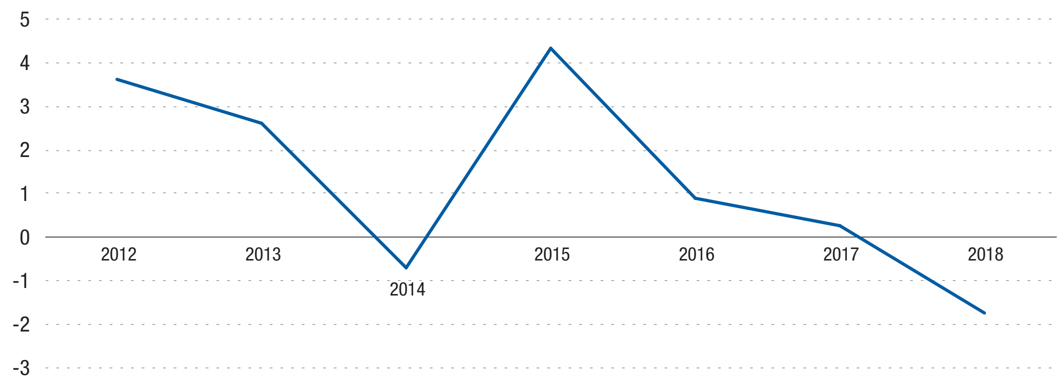
Box table 2.6.1. Freight logistics checklist

1. Core freight logistics services	
Transport services: Services auxiliary to all modes under the GATS and the AFAS	a. Cargo handling services b. Storage and warehousing services, including distribution centre services and material handling and equipment services, such as container station depots c. Transport agency services, including customs agency services and load scheduling d. Other auxiliary services, including through-chain logistics services, reverse logistics, container leasing and rental services
2. Related freight logistics services	
(i) Freight transport services	a. Marine transport services b. Internal waterways transport services c. Air transport services d. Air freight transport e. Rental of aircraft with crew f. Rail transport services g. Freight transport h. Road transport services i. Freight j. Rental of commercial vehicles with operator and without operator
(ii) Other related logistics services	a. Technical testing and analysis services b. Courier services c. Commission agents' services d. Wholesale trade services e. Retailing services (including inventory management of goods, assembling, sorting and grading of goods, breaking bulk, redistribution and delivery services) f. Other supporting services not covered

Source: United Nations Provisional Central Products Classification codes.

Aside from trade and industrial growth, the rise in e-commerce activities is also fuelling the demand for better logistics and new logistics requirements and solutions. For example, e-commerce activities require a shift in the type of storage needed, from simple warehousing to complex e-fulfilment centres where products are stored temporarily while orders are picked and packed, and shipped off to customers from all over the country, region or world. Speed, security and timeliness are key as online customers demand better services (e.g. immediate

Figure 2.13. FDI inflows in transportation and storage in ASEAN, 2012–2018 (Billions of dollars)



Source: ASEAN Secretariat, ASEAN FDI database.

responses to enquiries, package tracking, returns and refunds) from online merchants. Efficient logistics services are thus important.

Domestic logistics providers in the region tend to be small businesses that may not be the most cost-efficient owing to their lack of scale. Nor do these businesses necessarily have the capabilities to handle cross-border logistics, as they tend to be oriented to the domestic-market (Tham and Basu-Das 2017). The need for more efficient cross-border logistics services, lower logistics costs and new logistics requirements in e-commerce and the ability to meet increasing demand all present market-seeking opportunities for investors in the region.

In places where local logistics companies are small and fragmented, international logistics companies have entered the market, targeting especially export-oriented businesses. APL Logistics (United States), DSV (Denmark), Panalpina (Switzerland) and Yusen Logistics (Japan) have established operations across ASEAN to serve export-oriented manufacturers. They provide a broad range of services, such as cross-dock handling, inland transportation, warehousing and distribution management, and customs clearance.

Some foreign companies are following their industrial customers from their home country to ASEAN. Japan Overseas Infrastructure Investment Corporation for Transport and Urban (JOIN) has invested in transportation and logistics services in the region for this reason. Together with Kawanishi Warehouse (Japan), it established a cold storage warehouse in Indonesia in 2017. The warehouse supports Japanese food companies in Indonesia, to improve food quality through the provision of cold chain facilities. Daiwa House (Japan) with logistics company WHA Corporation (Thailand) established two logistics facilities at Laem Chabang and Bang Na in Thailand and a multitenant logistics facility in Indonesia to serve Japanese companies.

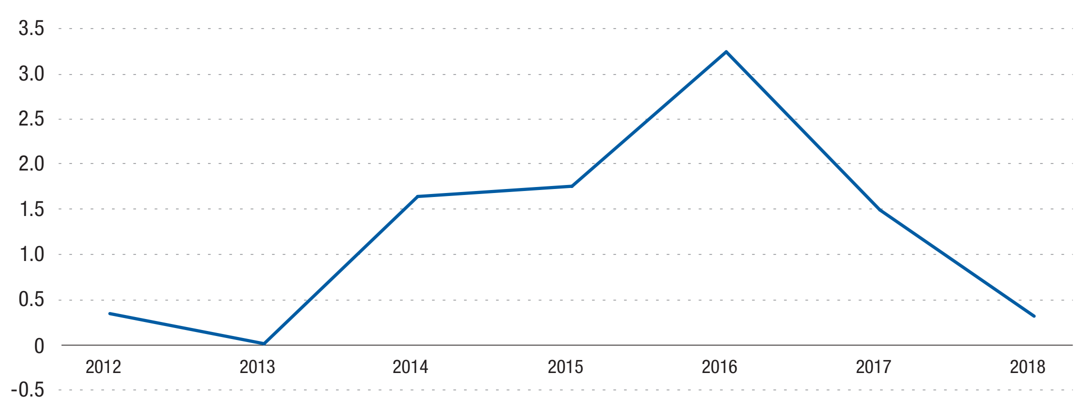
Some large MNEs with complex operations in ASEAN have also established their own in-house logistics companies to provide, manage and control the transportation and delivery of goods (imports and exports) between plants or subsidiaries in ASEAN and for export to their home countries or to third countries outside ASEAN. For instance, Samsung's substantial manufacturing presence in Viet Nam has led to complementary investments by the company in logistics, to support the group's supply chain management and export of its manufactured goods. In 2016, Samsung SDS, a subsidiary, established a joint venture with Aviation Logistics Corporation, a leading service provider in Viet Nam. In 2017, it established a joint venture with MP Logistics, with the aim of expanding its logistics business in that host country. The cooperation with these logistics companies is expected to help Samsung gain access to the Vietnamese cargo transportation industry and to facilitate Samsung exports from the company's two Vietnamese complexes.

Many conglomerates and oil MNEs, such as Petronas (Malaysia), PTT (Thailand) and Shell International in Brunei Darussalam, also have their own logistics subsidiaries to take care of their needs. Wilmar (Singapore) and PBB (Malaysia) of the Kuok Group use internal logistics facilities (*AIR 2018*). Sinar Mas Group (Indonesia), Triputra Group (Indonesia), Charoen Pokphand (Thailand), Thai Beverage (Thailand) and JG Holdings (Philippines) all have logistics subsidiaries that also serve the needs of these conglomerates.

2.6.2. M&As in logistics

M&As in logistics in ASEAN, though generally low, rose between 2013 and 2016 (figure 2.14). One megadeal, the $2.4 billion acquisition of Neptune Orient Lines (Singapore) in 2016 by Merit Corporation (Lebanon), significantly pushed up the value of cross-border M&As in the region that year. In 2017–2018, however, the number of cross-border M&As dropped notably as more local companies acquired foreign-owned logistics entities. Some examples of such M&A transactions: BTS Group (Thailand) acquired a 23 per cent stake in the Thai operations of Kerry Express (Hong Kong, China), Thai Beverage (Thailand) acquired a 75 per cent equity interest in Havi Logistics (Thailand) from the Havi Group (United States), Tasco (Malaysia) acquired Meriah Selalu in Malaysia from Nippon Yusen Kabushiki Kaisha (Japan), and SM Investments

Figure 2.14. M&As in transportation and storage in ASEAN, 2012–2018 (Billions of dollars)



Source: UNCTAD, M&A database.

(Philippines) acquired a 34 per cent interest in Negros Navigation in the Philippines from First Pacific (Hong Kong, China).

Most M&As in logistics occurred in Singapore and Malaysia between 2014 and 2018 (annex table 2.5). This is because these countries have more mature logistics companies available for M&As and because some foreign MNEs target these locations to strengthen their regional logistics business hubs.

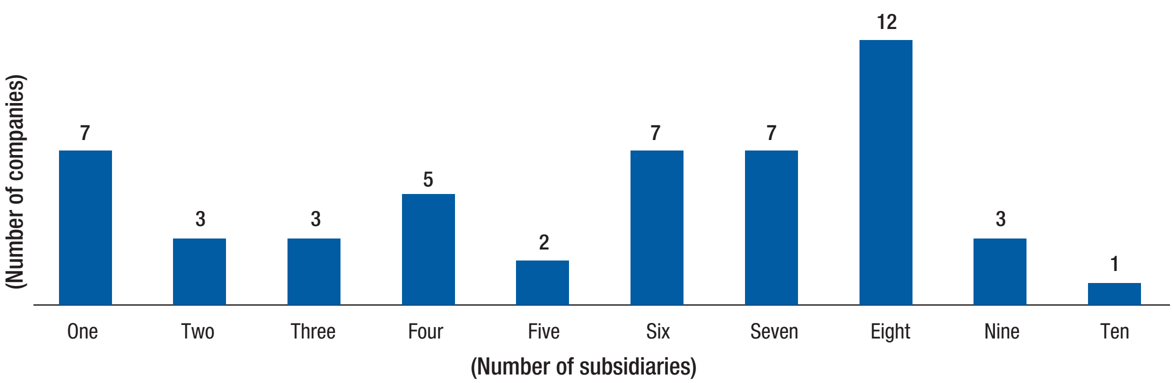
Asian logistics companies are active acquirers. Chinese companies are especially active in acquiring logistics assets to complement e-commerce activities. The acquisition by Nesta Investment (China) of Global Logistic Properties, a leading developer and operator of logistics facilities, was the largest deal in 2018. Its warehouses serve mainly manufacturers, retailers and logistics service providers. Notable recent acquisitions in Singapore by Chinese companies included Hainan Province Cihang's acquisition of CWT for cross-border trucking services, China Ocean Shipping Group's acquisition of Cogent Holdings (a company offering transportation and storage services for trucking services), Alibaba Group Holding's investment in Singapore Post for courier services and its acquisition in 2016 of a 64 per cent stake in Quantium Solutions International, a courier service company.

2.6.3. MNEs in the ASEAN logistics industry

Most of the world's largest logistics companies have a significant presence in ASEAN through subsidiaries, branches and representatives' offices. More than half of the top 50 logistics companies with subsidiaries in ASEAN have at least six subsidiaries (annex table 2.6, figure 2.15).

The top 50 are mainly logistics MNEs from developed countries (from the EU, Japan and the United States, in that order). For example, Deutsche Post (Germany) through DHL has a presence in every ASEAN country. Other German logistics companies such as Rhenus Group, Deutsche Bahn, Hapag-Lloyd and DB Shenker Logistics also have an extensive

Figure 2.15. Top 50 logistics companies with a presence in ASEAN, 2019 (Number)



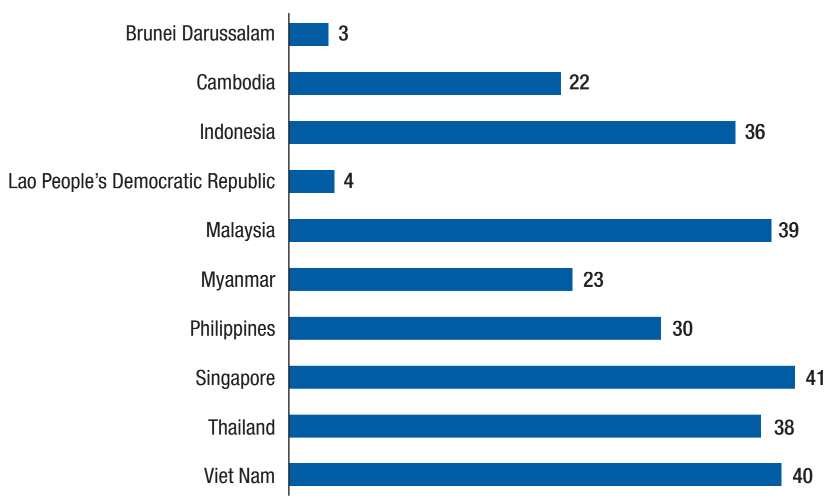
Source: Based on annex table 2.6.

regional presence. United States logistics companies in ASEAN include UPS, C.H. Robinson and Expedotors International. Japanese logistics companies include Nippon Yusen, Nippon Express, Yamato, Kawasaki Kisen Kaisha and Kintetsu World Express.

Some logistics MNEs have a presence (subsidiary) in fewer ASEAN Member States. They include Fedex (United States), XPO Logistics (United States), Ryder System (United States), CJ Logistics (Republic of Korea), Gefco (France), YRC Worldwide (United States) and Wallenius Wilhelmsen (Norway). Some of these companies also have a physical presence through branches and offices. Not having a physical subsidiary in a country does not mean that logistics companies do not provide services to clients in that host country. A majority of international logistics companies have extensive networks and partnerships with local logistics companies or other foreign logistics MNEs, which enable them to transport goods for clients despite not having a subsidiary presence in a given location.

The top 50 have a significant presence in five ASEAN Member States (Singapore, Viet Nam, Malaysia, Thailand and Indonesia) (figure 2.16). Almost all of them have a presence in Singapore because of that country's status as an international logistics hub. There are fewer international logistics companies in Brunei Darussalam and the Lao People's Democratic Republic because of their smaller markets. International logistics companies can also serve these markets through logistic networks with partners that already have a presence in these countries. The availability of efficient infrastructure facilities and significant volumes of business are important investment considerations. CJ Logistics (Republic of Korea), through its logistics network, facilitates the transportation of goods in and out of the Lao People's Democratic Republic. A considerable proportion of trade from that landlocked country passes through Thailand.

Figure 2.16. Top 50 logistic companies with a presence in ASEAN, by location of subsidiaries, 2019 (Number)



Source: Based on annex table 2.6.

This situation influences the operation of logistical companies in Thailand, which offer services to customers in the Lao People's Democratic Republic through subsidiaries in Thailand that coordinate with partners in the Lao People's Democratic Republic. The major exports of Brunei Darussalam relate to the petroleum industry and are often coordinated by vertically integrated oil companies that have their own logistics systems.

Most of the international logistics companies in ASEAN provide a variety of logistics services, covering transportation by air, sea and land. They also provide integrated logistics solutions coordinated by their subsidiaries in respective ASEAN Member States. For instance, UPS provides air freight services in five ASEAN Member States and brokerage operations in six. DB Schenker (Germany) provides air, land and sea freight logistics, and DSV (Denmark) provides transportation, warehousing and logistics solutions. DHL (Germany) and Panalpina (Switzerland) are delivering supply chain solutions in many ASEAN Member States. Kerry Logistics (Hong Kong, China) is engaged in third-party logistics, freight services, warehouse operations, and supply chain solutions in the region.

Many of the top 50 have also established regional headquarters subsidiaries in Singapore, using that country as a springboard to enter other ASEAN Member States. These companies include APL (United States), DHL (Germany), UPS (United States), Panalpina (Switzerland) and Kuehne + Nagel (Switzerland).

ASEAN logistics companies such as FM Global Logistics (Malaysia), SCG Logistics (Thailand), YCH (Singapore) and Viettel Logistics (Viet Nam) provide logistics and supply chain management services in other ASEAN Member States. ASEAN companies are increasingly active in providing logistics services in the region, driven by growing opportunities.

2.6.4. Digital technology in logistics

Logistics businesses are expected to evolve (PwC 2016). First, current business models are being adapted, such as when large retail or industrial customers enter the logistics market to manage their own logistics. Second, competition will intensify when new entrants emerge to meet demand, such as for last-mile logistics, with new technologies. Third, acquisitions will increase since market leaders will try to compete for market domination through scale, leading to the acquisition of smaller players, especially new start-ups.

The application of digital technology is increasingly an important feature in logistics and supply chain management. Logistics companies are using technology such as data analytics and artificial intelligence to improve the efficiency of business operations. Many use automation and artificial intelligence to improve inventory management, including advanced inventory tracking systems for improving speed and accuracy and reducing delivery costs.

Logistics start-ups are also active users of digital technology to serve niche markets, especially in last-mile delivery in e-commerce. These start-ups include Anchanto, an e-commerce logistics warehouse management system established in 2011 in Singapore. Anchanto's clients include ASOS, Levi's, Zalora and Flipkart. Haulio, another start-up based in Singapore, combines algorithms to facilitate container transportation through a centralized collaborative B2B platform. Fetch Me (Singapore) uses a smartphone system to support its business. Deliveries can be scheduled, and automated, with round-the-clock services that enable packages to be tracked. GHN (Giao Hàng Nhahn or "Fast Delivery"), a Vietnamese start-up, uses technology to provide rapid coordination, offering low-cost delivery within two hours. It works with e-commerce platforms such as Lazada and Shopee, as well as with local, physical retailers and grocery stores to get goods to buyers. Logivan (Viet Nam) uses technology for load optimization to match freight shippers with independent truckers that have space available. These e-commerce logistics start-ups differ from traditional logistics players in that they are asset light and use technology to serve niche markets.

***

The prospects for greater investment in logistics (as well as banking and retail trade) in ASEAN are promising. A number of key factors are expected to encourage and accelerate FDI in this industry.

Improving investment environment and liberalization

The investment environment in the region is improving further with regional integration, increased industrial activity, economic growth and market liberalization. ASEAN Member States have taken national actions and under the AFAS are further opening the logistics industry for investment, with additional relaxations of foreign equity ownership restrictions (table 2.9).

Rapid rise in trade volumes

Trade volumes in the region have risen rapidly, from $0.8 trillion in 2000 to $2.9 trillion in 2018 (figure 2.17). This trend is expected to continue. Strong trade activity will drive more investment in logistics services to meet demand.

Improving infrastructure facilities and increasing logistics efficiency

As a result of improving infrastructure development from more investment (AmCham Singapore and the U.S. Chamber of Commerce 2019) and the entrance of more logistics companies, logistics services in ASEAN Member States have become more efficient. Improving infrastructure plays an important role in attracting logistics investment.

Rise of e-commerce

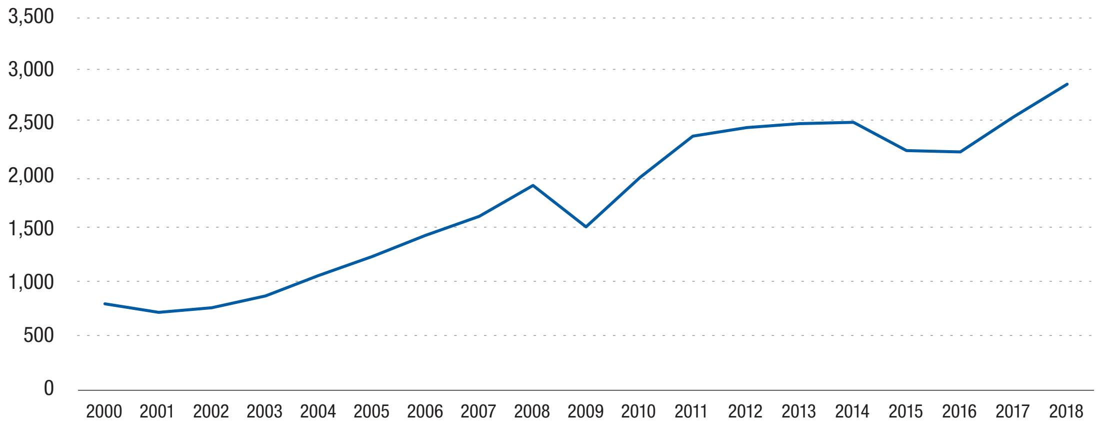
The region is witnessing a rapid rise in e-commerce and internet-based business activity. Increasing use of mobile phones, the shifting shopping habits of young consumers towards the digital domain and the rapid growth of e-commerce start-ups in ASEAN are contributing to the rise in e-commerce (*AIR 2018*). This in turn is driving a demand for greater and more efficient logistics services.

Table 2.9. AFAS: Foreign equity ownership in logistics services (courier, packaging and transportation), 2010 and 2018

Country	Subsector	Foreign equity ownership - 2010		Foreign equity ownership - 2018	
		Max (%)	Remarks	Max (%)	Remarks
Brunei Darussalam	Courier	51	Requirement: Joint venture with local partner	70	Requirement: Joint venture with local partner
	Transportation	51	Supply of international maritime transport: not to exceed 51%. Supply of international maritime transport of energy goods: unbound.	70	Supply of international maritime transport: not to exceed 51%. Supply of international maritime transport of energy goods: unbound.
Cambodia	Logistics services	No restriction	..	No restriction	..
Indonesia	Packaging	49	..	49 to 70	Foreign equity participation is allowed up to 70% only for Eastern parts.
	Transportation	49	Joint venture is required	49 to 70	Depends on specific subsector CPC codes
Lao People's Democratic Republic	Packaging services	..	Joint venture is required	..	Joint venture with Lao services suppliers is required for some codes
	Courier	No restriction		None	..
	Transportation		Horizontal limitations only	Mostly none	Some CPC codes allow foreign equity participation between 49% and 70%
Malaysia	Packaging	51	Only through a locally incorporated joint venture corporation	70	None except through a representative office, regional office or locally incorporated joint venture corporation with Malaysian individuals or Malaysian-controlled corporation or both
	Courier	51		70	
	Transportation	51 to 100	Some subsectors are only through a representative office, regional office or locally incorporated joint venture corporation	51 to 70	Some subsectors are only through a representative office, regional office or locally incorporated joint venture corporation
Myanmar	Packaging	..	In accordance with Myanmar Foreign Investment Law 1988	..	Permitted in accordance with the Myanmar Companies Law 2017
	Courier	100	In accordance with Myanmar Foreign Investment Law 1988	100	Permitted in accordance with the Myanmar Companies Law 2017
	Transportation	100	In accordance with Myanmar Foreign Investment Law 1988	100	Permitted in accordance with the Myanmar Companies Law 2017
Philippines	Courier	No restriction	..	No restriction	..
	Packaging	70	..	70	..
	Transportation	40 to 100	..	40 to 100	Depends on CPC codes
Singapore	Packaging	No restriction		No restriction	..
	Courier	..	Unbound	No restriction	..
	Transportation	No restriction	..	70 to 100	Depends on CPC codes
Thailand	Packaging	49	..	100	None
	Courier		..	70	..
	Transportation	49 to 51	..	49 to 70	..
Viet Nam	Packaging	51	..	70	..
	Courier	100	..	100	..
	Transportation	49 to 51	Only through the establishment of joint ventures	49 to 100	Depends on CPC codes

Source: ASEAN Secretariat.
Note: CPC refers to central product classification.

Figure 2.17. ASEAN trade volume, 2000–2018 (Billions of dollars)



Source: World Bank, World Development Indicators database.

Emergence of new players

Some logistics start-ups with support from venture capital and private equity funding have expanded into other ASEAN markets. For example, Logivan (Viet Nam) has raised funding from Insignia Venture Partners (Singapore) and Ninja Van (Singapore) from various partners to scale up (box 2.7). The increasing appetite of venture capital companies for funding start-ups is likely to encourage more new players into the industry.

Regional logistics unicorns such as Grab (Singapore) and Gojek (Indonesia) have been actively acquiring smaller start-ups to strengthen and complement their existing services. These two companies have also set up venture capital arms to facilitate investment in other start-ups and to expand their regional footprint. Gojek has acquired as many as 12 start-ups between 2016 and 2019. Grab has acquired minority stakes in Ninja Van (Singapore), Moca (Viet Nam) and Ovo (Indonesia).

Box 2.7. Ninja Van

Ninja Van (Singapore), an e-commerce parcel delivery service, has a strong regional presence. The company uses technology (e.g. algorithms) to improve delivery services by examining the life cycle of a parcel from pick-up to drop-off. The company also uses mapping technology to plot the best delivery routes, to shorten delivery time and reduce fuel costs. It has raised funding from venture capital firms to support expansion into other ASEAN Member States. In 2018, it raised $87 million in funding from DPD Group (France), a parcel delivery firm, to fund its business expansion. In 2019, Ninja Van established a collaborative partnership with Grab that aims to integrate Ninja Van's logistics services on the Grab app through GrabExpress, which is Grab's on-demand parcel and courier delivery service.

Sources: Various media reports and company source.

2.7. CONCLUSION

The services sector is the largest recipient of FDI in ASEAN, accounting for two-thirds of all FDI flows in 2014–2018. That share will continue to grow as economies in the region become more service oriented. Nearly 80 per cent went to three industries: financial services, wholesale and retail, and real estate. FDI into these industries has continued to rise, attracted by the region's growing markets, economic growth and developing internet economy. FDI in logistics, although small, is gaining increasing attention from logistics MNEs, including ASEAN companies.

Many major MNEs in banking, retail and logistics are present in ASEAN. They are involved in different segments of value chains, by expanding into new locations and by opening more stores. Some ASEAN Member States are still relatively underserved by banks, especially in the CLMV countries. The size of the underserved banking segment suggests that there is scope for investment in banking, including the use of technology to reach the unserved in the region.

Digital technology has also played a role in shaping the services industry landscape. Banks are making investments in fintech activities and in some cases have acquired companies with fintech capabilities. Digital technology has also brought about new business opportunities that support the growth of fintech start-ups, which serve niche markets. The rapid rise in e-commerce has contributed to an increase in retail activities and in start-ups. In logistics, digital technology is being applied to improve efficiency in supply chain management, and the number of start-ups in this industry is also increasing.

The prospects for services FDI (in banking, retail and logistics) are promising because of the improving investment environment, rapid rise in trade volumes, increasing logistics efficiency and demand, rise in e-commerce and emergence of new players. In addition, the rising number of middle-income consumers, the large population and the growing consumerism and regional integration will further increase the attractiveness of ASEAN for services investment.

Further growth of FDI in services will be underpinned by the different regional agreements signed recently, and the implementation of the various programmes of the AEC Blueprint 2025. These agreements include the ASEAN Trade in Services Agreement (ATISA), signed in 2019, which builds upon the market liberalization achieved under the ASEAN Framework Agreement on Services (AFAS) and the ASEAN Agreement on e-Commerce, signed in 2018, which aimed to increase digital connectivity, and advance trade rules and strengthen the environment for e-commerce. Under AEC 2025, characterized by free flows of goods, services, investment and capital, the region will offer investors an even more attractive location for FDI in services.

NOTES

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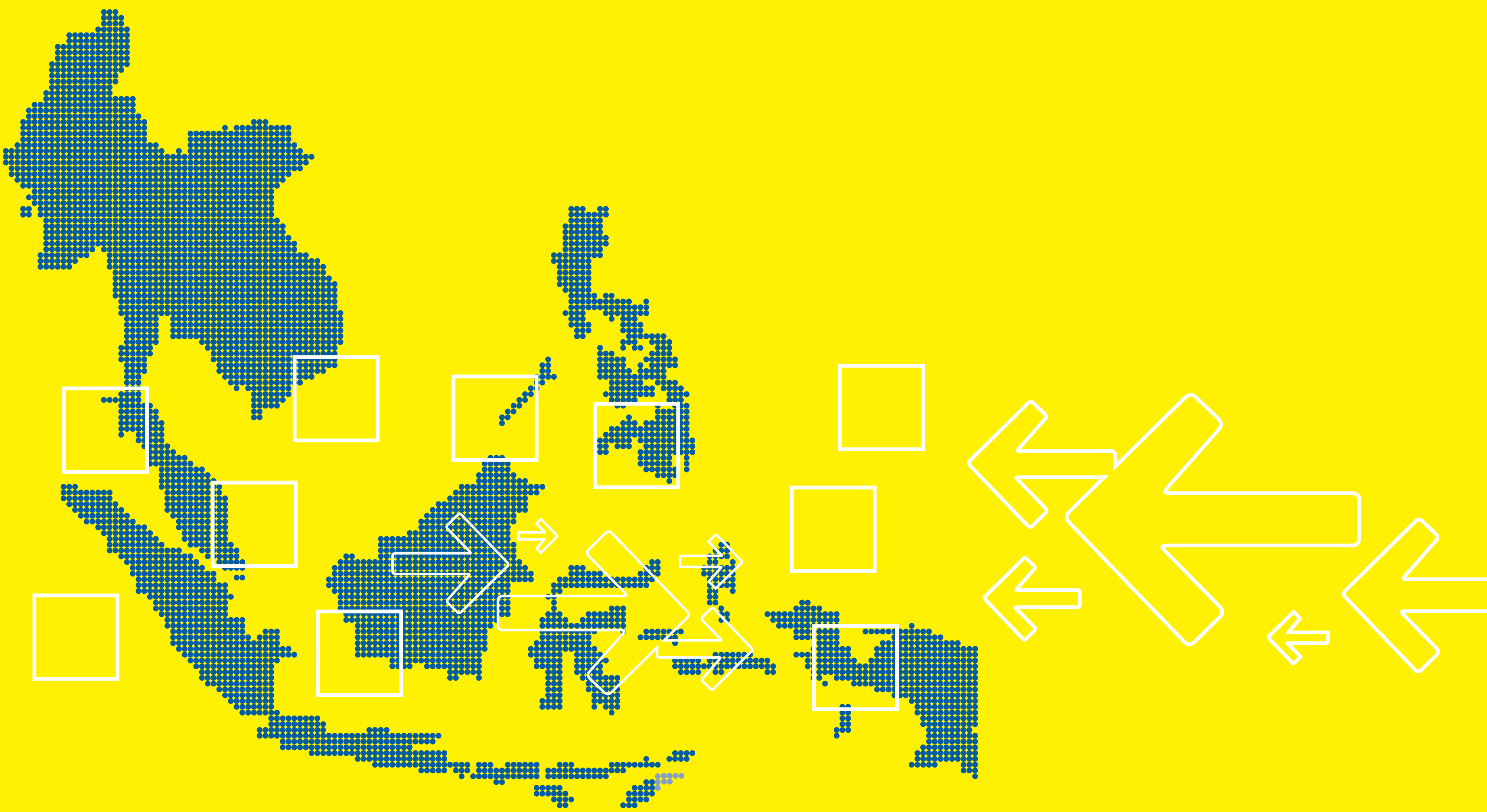
PART TWO

INVESTMENT IN HEALTH CARE



CHAPTER 3

Foreign Investments and MNEs in the Health Care Industry in ASEAN

3.1. INTRODUCTION

Health care is an important industry in the services sector. It has significant implications for social, demographic and economic development. The health care industry encompasses the provision of medical care (curative, preventive and palliative), pharmaceuticals, medical technology and equipment, health insurance, research and development (R&D) centres and educational institutions. The health care expenditure in ASEAN accounts for 4 per cent of the region's GDP, much less than the world average of 10 per cent.[1]

The provision of health care in ASEAN has traditionally been the responsibility of the public sector. With budgetary constraints, growing populations and changing demographics, the public sector faces significant challenges to meet current and future demand. The private sector, including foreign health care companies, can complement the efforts of the public sector in the delivery of care.

This report focuses on private investment, in particular FDI and foreign companies in the health care industry in ASEAN. It does not cover public health issues or public investments in health care.

The objective of this chapter is to analyse the role of foreign direct investment (FDI) and multinational enterprises (MNEs) in the development of the health care industry in ASEAN (box 3.1). The chapter examines the interrelationship between various segments of the health care value chain and the roles of different categories of investors, companies and stakeholders. It highlights the key features of the health care industry and factors explaining the growing demand for health care in the region. The chapter also analyses the influence of the new industrial revolution and technological advances in the delivery of care and for private investment in health care.

Box 3.1. Definition and scope of health care

Investment in health care refers to all types of foreign investment (e.g. FDI, venture capital, private equity, non-equity arrangements), different modes of market entry (mergers and acquisitions (M&As), greenfield projects and joint ventures) and different channels of foreign involvement (e.g. technology suppliers, financiers, management contracts, knowledge or R&D collaboration) in the following segments of the health care value chain:

- Health care infrastructure (e.g. private hospitals, clinics, specialized medical centres, diagnostic centres, nursing homes)
- Manufacturing (pharmaceuticals, medical equipment and devices)
- Application and development of medical technologies (digital technology, medical solutions)
- Distribution and wholesaling of medical equipment, devices and pharmaceuticals
- Insurance (medical insurance)
- Other services supporting the health care industry (logistics, information technology and business process management (IT-BPM), specialized services)
- Strategic collaboration and alliances such as in R&D, knowledge sharing and training

3.2. KEY FEATURES OF HEALTH CARE INDUSTRY IN ASEAN

Key features of the industry in ASEAN include the rapid rise in demand for health care services and facilities, the important role of the private sector, the growth in medical tourism (in some Member States), commitment to universal health care coverage and the improving health care investment environment.

Rising population

ASEAN is a $3 trillion economy and home to 650 million people, accounting for about 9 per cent of the world population in 2018 (table 3.1). By 2025, the population is expected to reach nearly 700 million and more than 790 million by 2050. The growing economy and population will drive more demand for health care services.

Longer life expectancy and increase in older population

The life expectancy in the region has improved over the past 15 years. In 1990, average life expectancy was between 64 and 65 years old. By 2016, the average life expectancy had increased to 73 years.[2] By 2050, more than one-fifth of the region's population will be over 60 years old.[3] Longer life expectancy and an increase in the older population will have implications for the demand for health and for geriatric care facilities.

Growing middle-class population and increasing chronic disease incidence

The region is witnessing a growing middle-class population and affluent consumers who are more health conscious. In 2012, the middle class in ASEAN was estimated at 190 million

Table 3.1. ASEAN: Selected indicators

	GDP ($ billions)			Population (millions)			Current health expenditure per capita ($)	
	2010	2015	2018	2010	2015	2018	2010	2016[a]
Brunei Darussalam	14	13	14	0.39	0.42	0.43	803	631
Cambodia	26	31	25	14.3	15.5	16.2	54	78
Indonesia	755	861	1,042	242.5	258.2	267.7	92	112
Lao People's Democratic Republic	7	14	18	6.2	6.7	7	35	55
Malaysia	255	297	354	28.1	30.7	31.5	293	362
Myanmar	49	60	71	50.2	52.4	53.7	15	62
Philippines	200	293	331	93.7	101.7	106.6	92	129
Singapore	236	304	364	5.1	5.5	5.6	1,502	2,462
Thailand	341	401	505	67.2	68.7	69.4	172	222
Viet Nam	116	193	245	88.5	93.6	95.5	78	123
Total	**1,999**	**2,467**	**2,968**	**596**	**633**	**654**	**113**	**155**
ASEAN share of world	**3.0**	**3.3**	**3.5**	**8.6**	**8.6**	**8.6**	**..**	**..**

Source: World Bank, World Development Indicator database.
[a] Latest available year.

people.[4] By 2020, that number is projected to more than double, to 400 million.[5] The growing middle-class base means a continued rise in demand for health care and an opportunity for private investment in hospitals and other care services.

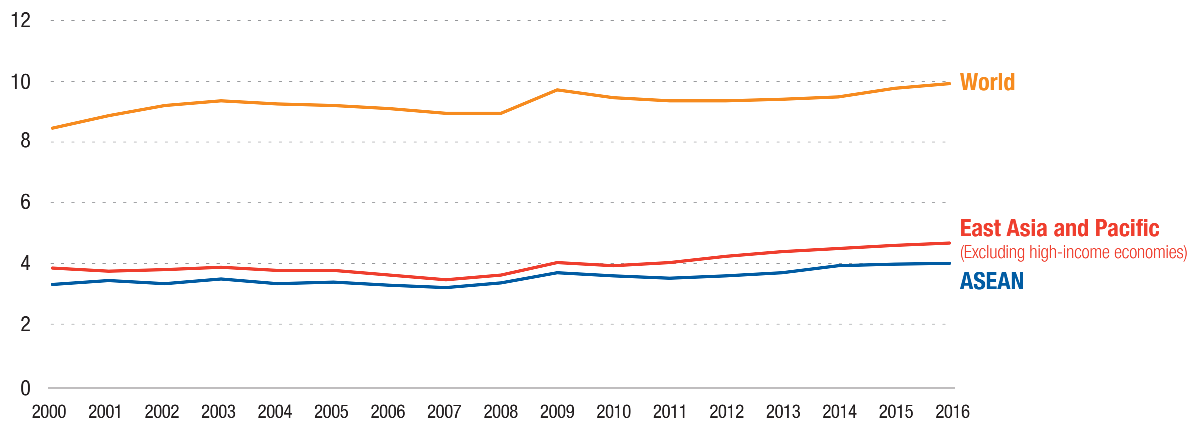
Rising per capita income and changing lifestyles are contributing to the prevalence of chronic diseases such as diabetes and heart diseases, which requires long-term treatment and care. The incidence of chronic diseases in the region is expected to double from 2001 to 2025.[6]

Health care expenditure

In 2016, ASEAN's health care expenditure was $99 billion, which was equivalent to 1.3 per cent of world health care expenditure. Health expenditure per capita in the region was $113 in 2010 (table 3.1). By 2025, the per capita health care expenditure is expected to rise 3.2 times to $364.[7] Health care spending in the region by that time is expected to reach at least $269 billion, more than the estimated size of the region's fast growing internet economy ($240 billion by 2025). However, the health care delivery market remains significantly under-penetrated and under-supplied, while demand continues to rise. Countries in the region thus face a significant demand as well as supply challenge (chapter 4).

In 2016, ASEAN's average health care expenditure as a percentage of regional GDP stood at 4 per cent. It significantly trails that of the world and developed nations (e.g. 9 per cent by Australia and 17 per cent by United States) and behind the average expenditure of East Asia and the Pacific developing economies (figure 3.1). This relatively low number suggests that there is scope for an increase in health care investment against the backdrop of increasing demand.

Figure 3.1. Health care expenditure, ASEAN, East Asia and Pacific, and World, 2000–2016 (Per cent of GDP)



Source: WHO, Global Health Expenditure database and World Bank.

Table 3.2. Medical tourists in ASEAN Members States, 2011 and 2017 (Selected cases) (Number)

Country	2011	2017
Malaysia	643,000	1,050,000
Singapore	540,000	Between 370,000 and 550 ,000*
Thailand	500,000	2,400,000
Viet Nam	..	80,000

Sources: Various media news and other sources.
Notes:
*Based on 2016 estimate.
a. Malaysia Healthcare Travel Council (https://www.mhtc.org.my/)
b. Singapore, 2012 figure from ASEAN Today, "Malaysia and Thailand threaten to take Singapore's healthcare crown", 7 July 2017 and 2016 figure from South China Morning Post, "Medical tourism looks healthy in Malaysia, but in Singapore?", 19 November 2017.
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e. Philippines received 80,000 to 250,000 foreign visitors for medical tourism. These tourists are mostly from the Pacific Islands (Guam, Palau, Marshall Islands, and Micronesia) and other countries such as Australia, East Asia (China, Japan, Republic of Korea, Taiwan Province of China) and Sri Lanka.

Medical tourism

Medical tourism in this report relates to people travelling to ASEAN Member States for medical treatments or care.Three ASEAN Member States (i.e. Malaysia, Singapore, Thailand) are among the world's major hotspots for medical tourism (chapter 4).[8] These Member States are witnessing growth in medical tourism, which adds a special feature to their health care landscape (table 3.2). Cost advantages, affordable and high-quality private health care facilities, and tourism values are key factors contributing to the growth of this industry segment. Notwithstanding the decline in the number of medical tourists to Singapore in recent years, the country remains an attractive medical tourism hub, especially for more complex medical cases. Rising costs in Singapore and better services in private hospitals in medical tourists' home countries are the main reasons for the decline in medical tourism in Singapore. Other Member States such as the Philippines and Viet Nam are also receiving medical tourists mostly from neighbouring countries for better quality and affordable treatment.

Some ASEAN Member States have specific policies or dedicated institutions aimed at supporting the development of medical tourism. Aside from affordable care services, these Member States have taken a combination of measures, which include targeted policy development, coordinated institutional support and cross-ministry and agency cooperation to support medical tourism with the view to strengthen the health care ecosystem.

Growing private health care investment and services

Private investment is a key feature and is significant across all health care segments in ASEAN. In some, such as hospitals and pharmaceuticals, private investment is rising. The private sector has been investing in and operating hospitals across ASEAN with different degrees of involvement (table 3.3). In some Member States, private hospitals account for more than 50 per cent of all hospitals or more than 20 per cent of hospital beds, while in others such as the Lao People's Democratic Republic, Myanmar and Viet Nam, private sector participation is relatively low but increasing.

Table 3.3. Private sector involvement in health care, various years (Share of hospitals and hospital beds that are private, per cent)

	Hospitals		Hospital beds	
	Year	Share (%)	Year	Share (%)
Brunei Darussalam	2017	33	2013	14
Cambodia	2016	62	..	..
Indonesia	2017	64	2017	47
Lao People's Democratic Republic	2016	8	..	..
Malaysia	2017	57	2017	24
Myanmar	2016	15	2015	7
Philippines	2018	60	2016	53
Singapore	2018	29	2015	25
Thailand	2016	30	2015	20
Viet Nam	2016	14	2016	<10[a]

Sources: National sources, WHO and media reports.
[a] Viet Nam targets to increase the share of hospital beds by private sector to 20 per cent by 2020.

Universal health care coverage

ASEAN Member States are implementing universal health care programmes for their citizens (chapter 4). For example, Indonesia launched a national health insurance scheme in 2014;[9] previously more than 125 million people (more than half the population) lacked access to state health coverage, and state or private health insurance.[10] In 2017, 76 per cent of the Indonesian population are covered by the national health care insurance. The Lao People's Democratic Republic and Cambodia have partially implemented universal health care, covering about 12 per cent and 17 per cent of their populations respectively. Myanmar is implementing Myanmar Health Vision 2030 as a step towards universal coverage.[11] Thailand has a successful national health care insurance to cover all citizens. In 2017, nearly 100 per cent of the Thai population are covered. Singapore's Ministry of Health continues to develop and innovate its health care

Table 3.4. ASEAN: 2015 UHC index of essential service coverage

	UHC index
Brunei Darussalam	>=80
Cambodia	55
Indonesia	49
Lao People's Democratic Republic	48
Malaysia	70
Myanmar	60
Philippines	58
Singapore	>=80
Thailand	75
Viet Nam	73

Source: World Health Organisation Global Health Observatory Data Repository.
Note: The index is based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, noncommunicable diseases and service capacity and access. The index is presented on a scale of 0 to 100. Values greater than or equal to 80 are presented as 80 as the index does not provide fine resolution at high values.

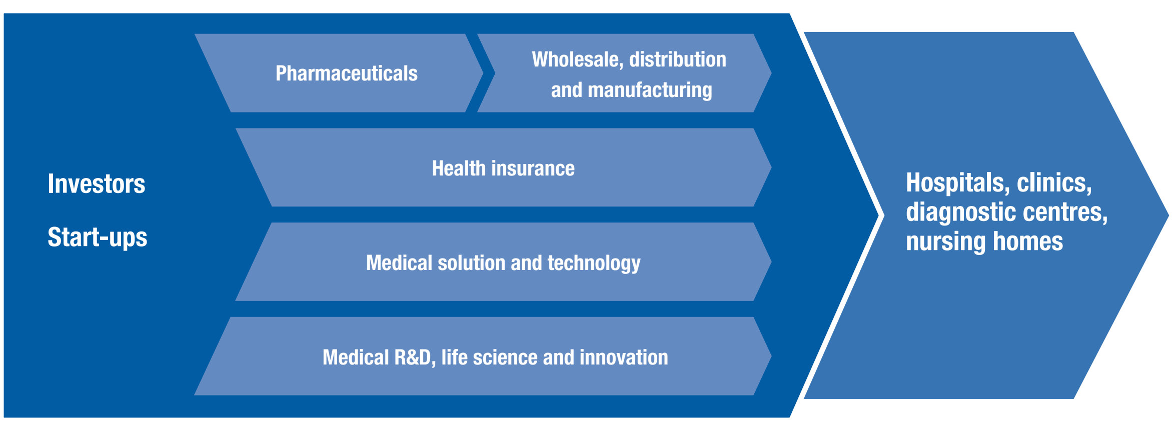
system to provide additional primary health care and hospital services, intermediate and long-term care, and health care financing schemes (e.g. MediShield Life, CareShield Life, MediSave, CHAS, ElderShield) to ensure that its citizens have access to health care in a timely, cost-effective and seamless manner.[12]

The Universal Healthcare Coverage (UHC) of countries in the region in terms of access to essential service coverage varies significantly (table 3.4). Some have high a UHC index, while others have a low index value.

Health care value chain

The health care industry in ASEAN differs in terms of quality and development across the Member States. This reflects the different levels of economic development, population size and social conditions of each country. Despite the diversity, private investment in health care in ASEAN Member States – domestic and foreign – is rising across the different segments of the health care value chain, with significant investments in health care infrastructure such as hospitals, diagnostic and specialized centres, and pharmaceuticals (figure 3.2).

Figure 3.2. Key segments of the health care value chain



Source: *ASEAN Investment Report 2019* research.

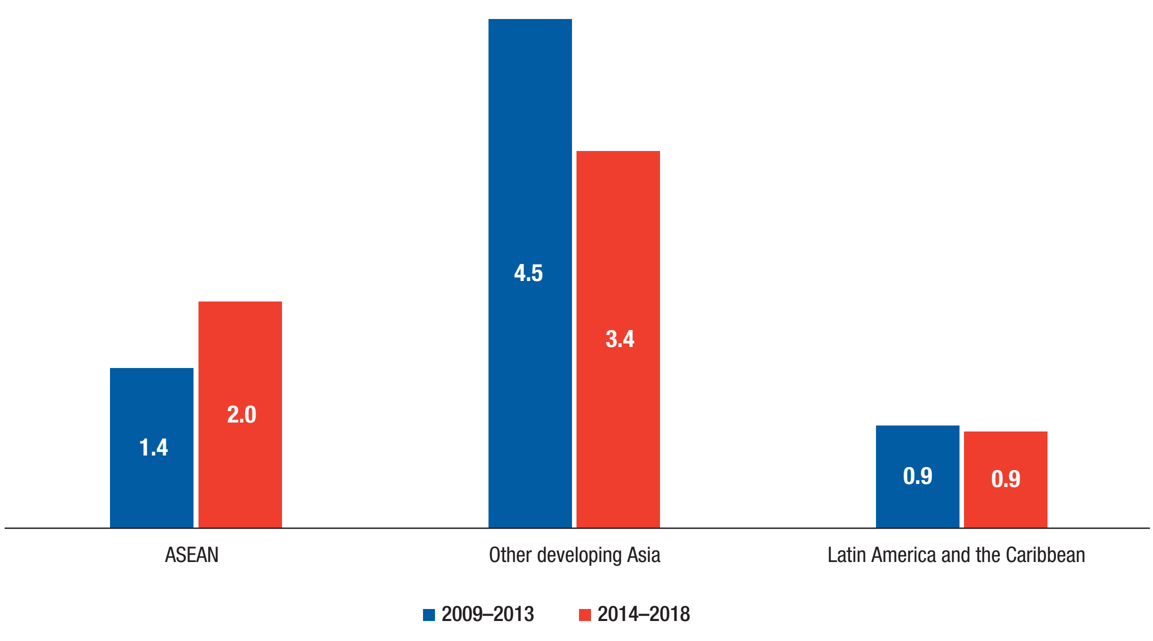
3.3. FOREIGN INVESTMENT AND MNEs IN THE HEALTH CARE INDUSTRY

In the health care service segment, local hospital groups and clinics dominate the landscape, except in the CLMV countries, which have witnessed a rise in foreign involvement in health care in recent years. Favourable investment policies and targeted efforts by governments to attract health care FDI have contributed to the improving landscape in these economies.

3.3.1. Foreign direct investment in health care

FDI in health care in ASEAN is small as a percentage of total FDI but is rising. Greenfield investment projects in the region rose by 43 per cent in the past decade, from an annual average of $1.4 billion in 2009–2013 to $2 billion in 2014–2018.[13] Compared with other developing regions (e.g. Latin America and the Caribbean), ASEAN is witnessing more greenfield investment activities in health care (figure 3.3). For the reasons explained in section 3.2, the potential for growth is promising.

Figure 3.3. Greenfield investment in health-related sectors in developing regions, average for period, 2009–2013 and 2014–2018 (Billions of dollars)



Source: UNCTAD.
Note: Other developing Asia covers 13 economies, including China and India.

3.3.2. VC and PE investments in health care

The region has been receiving increasing attention from venture capital firms (VCs) in recent years. VCs are recognizing ASEAN as a hotbed for health care start-ups.Their investment in health care is rising, with most deals in hospitals and pharmaceuticals (table 3.5). Most of the funding has come from investment by ASEAN VCs or by VCs based in the region, mainly in Singapore. These investors include corporate VCs (e.g. UOB (Singapore) and Kickstart Ventures (Philippines)) that invest in health care start-ups. United States and European VCs are also active through their operations that are based in the region, primarily in Singapore.

Table 3.5. ASEAN: Venture capital deals in health care, by segment, 2014–2018 (Millions of dollars)

Health care segment	2014	2015	2016	2017	2018	Cumulative 2014–2018
Biotechnology	12	..	..	0.5	54	66
Health care service	0.5	..	102	118	42	262
Health care IT	3	20	18	31	26	97
Health care specialists	0.4	..	..	..	..	0.4
Medical devices and equipment	..	..	0.4	18	10	28
Pharmaceuticals	14	34	32	80	50	210
Total	**30**	**54**	**152**	**247**	**181**	**664**

Source: Preqin.
Notes: Includes hospitals and other care organizations that provide services to treat patients with curative, preventive, rehabilitative and palliative care. Health care specialists relate to companies that focus on a specific area of medicine or a group of patients to diagnose, manage, prevent or treat certain symptoms or conditions which includes cardiology, oncology and cancer treatment. Figures exclude add-ons, grants, mergers, secondary stock purchases and venture debt.

3.3.3. Cross-border M&As in health care

The value of cross-border M&As in health care in ASEAN is small. The lack of health care assets, the less mature M&A environment and the regulatory environment limits the number of health care M&As in the region. Small-value transactions and the lack of megadeals also contribute to the low M&A values. Most M&A transactions take place in the more developed ASEAN markets (e.g. Malaysia, Singapore and Thailand). Asian investors are major acquirers of health care assets or companies in the region.

Hospitals, pharmaceuticals and medical equipment are the largest target segments for cross-border M&As (table 3.6, table 3.7). Most of the hospital M&A deals are by PEs. They are active investors in hospitals and home health care services. However, large hospital groups in ASEAN such as IHH Healthcare and KPJ (both Malaysia), OUE Lippo Healthcare and Raffles Medical (both Singapore), and Bangkok Dusit Medical Service (Thailand) have in past years acquired hospitals in other ASEAN Member States to gain immediate access to markets, networks, brand names and hospital management expertise.

Table 3.6. Cross-border M&As in ASEAN, 2008–2018 (Millions of dollars)

Health care sectors	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Manufacturing and distribution											
Biological products, except diagnostic substances	74	317	35	25	-	-	-	-	60	-	28
Medicinal chemicals and botanical products	-	-	-	-	-	-	-	9	8	-	-
Pharmaceutical preparations	5	20	-	122	95	610	170	12	36	134	675
Surgical and medical instruments and apparatus	-	-	26	-	101	-	-	-	-	-	-
Orthopedic, prosthetic, and surgical supplies		-	-	-	123	-	-	-	-	1	4
X-Ray apparatus & tubes & other irradiation equip.	-	-	-	157	-	312	134	-	818	-	808
Electromedical and electrotherapeutic apparatus	-	-	-	-	-	38	-	-	-	-	-
Medical, dental, and hospital equipment & supplies	6	-	-	28	1	3	-	-	-	-	576
Drugs, drug proprietaries, and druggists' sundries	30	137		2	2	-	-	1		-	-
Health care infrastructure and care services											
Offices and clinics of doctors of medicine	-	-	-	-	-	-	53	-	-	-	-
Offices and clinics of dentists	-	-	7	-	-		-	-	-	-	206
General medical and surgical hospitals	392	41	3,065	1,162	665	236	25	40	167	202	-
Specialty hospitals, except psychiatric	-	-	132	-	-	6	-	-	-	-	-
Medical laboratories	-	-	-	-	50	-	-	-	-	-	1
Home health care services	-	-	-	-	-	-	-	-	-	131	-
Health and allied services, nec	-		9	-	-	24	-	13	94	41	-
Total	**507**	**515**	**3,274**	**1,496**	**1,037**	**1,229**	**383**	**75**	**1,183**	**510**	**2,299**

Source: UNCTAD, M&A database.
Note: On gross basis.

Table 3.7. ASEAN: Cross-border M&As in health care, 2016–2018 (Selected deals) (Millions of dollars and per cent)

Ultimate acquiring company	Ultimate acquiring economy	Target company	Target nation	Target industry	Year	Value ($ million)	Shares acquired (%)
CVC Capital Partners	United Kingdom	Siloam International Hospitals	Indonesia	General medical and surgical hospitals	2016	167	15
Navis Capital Partners	Malaysia	Hanoi French Hospital	Viet Nam	General medical and surgical hospitals	2016	..	..
Undisclosed Acquiror	unspecified	Bumrungrad Hospital	Thailand	General medical and surgical hospitals	2017	130	3
Health Management International	Singapore	Mahkota Medical Centre	Malaysia	General medical and surgical hospitals	2017	130	51
Bowsprit Capital	Singapore	Siloam Hospitals Buton	Indonesia	General medical and surgical hospitals	2017	21	100
Bowsprit Capital	Singapore	Siloam Hospitals Labuan Bajo	Indonesia	General medical and surgical hospitals	2017	14	100
Health Management International	Singapore	Regency Specialist Hospital	Malaysia	General medical and surgical hospitals	2017	..	39
Quadria Capital	Singapore	MWH Holdings	Singapore	General medical and surgical hospitals	2017	..	..
Quadrant Private Equity	Australia	SOC Pte Ltd-Certain assets	Singapore	Specialty hospitals	2016	..	100
Nanjing Xinjiekou Dept Store	China	Cordlife Group	Singapore	Health and allied services, nec	2016	64	20
RHC Holding	India	Religare Health Trust Trustee Manager	Singapore	Health and allied services, nec	2016	15	100
Cordlife Group	Singapore	Stemlife Bhd	Malaysia	Health and allied services, nec	2016	15	57
Lanius	Hong Kong, China	Healthway Medical Corp	Singapore	Health and allied services, nec	2017	38	40
Cordlife Group	Singapore	Stemlife Bhd	Malaysia	Health and allied services, nec	2017	3	9
Humanwell Healthcare	China	Lifestyles Healthcare	Singapore	Home health care services	2017	131	16
Cedarlake Capital Partners	China	Novena Global Healthcare Group	Singapore	Home health care services	2018	..	10
TPG Capital	United States	Jetanin	Thailand	Home health care services	2018	..	..
Clearbridge Health	Singapore	Marzan Health Care	Philippines	Medical laboratories	2018	1	65
Instant Holdings	Singapore	Quantum Diagnostics	Malaysia	Medical laboratories	2018	..	100
TPG Capital	United States	Gribbles Pathology	Malaysia	Medical laboratories	2018	..	100
Ping An Insurance	China	Fullerton Healthcare	Singapore	Nursin and personal care	2017	122	..
Singapore Inst Of Advanced	Singapore	Berjaya Investment Holdings	Singapore	Nursing and personal care	2017	10	100
Pfizer	United States	Hospira Malaysia	Malaysia	Pharmaceutical preparations	2016	4	..
PCC	Germany	IRPC Polyols	Thailand	Pharmaceutical preparations	2016	2	25
Investor Group	Singapore	PT Biotis Prima Agrisindo	Indonesia	Pharmaceutical preparations	2016	..	100
Taisho Pharmaceutical	Japan	DHG Pharmaceutical	Viet Nam	Pharmaceutical preparations	2016	..	25
Zeria Pharmaceutical	Japan	Pharmaceutical JSC	Viet Nam	Pharmaceutical preparations	2016	..	11
Undisclosed Acquiror	unspecified	Traphaco JSC	Viet Nam	Pharmaceutical preparations	2017	65	25
Diamond Leaf Invests	Hong Kong, China	Ondarea Inc	Philippines	Pharmaceutical preparations	2017	20	51
Bain Capital	United States	DSM Sinochem Pharmaceuticals	Singapore	Pharmaceutical preparations	2018	665	100
Diamond Leaf Invests	Hong Kong, China	Bionutra Innovations	Philippines	Pharmaceutical preparations	2018	10	100
Pritzker Organization	United States	MediPurpose Pte Ltd-Babylance Safety Heelstick Device	Singapore	Surgical and medical equipment	2016	..	100
CITIC Securities	China	Biosensors International Group	Singapore	X-Ray and other irradiation equipment	2016	818	81
Blue Sail Med	China	CB Cardio Holdings II	Singapore	X-Ray and other irradiation equipment	2018	807	63
Ultimate Horizon	Singapore	Rel-Ion Sterilization Services	Indonesia	X-Ray and other irradiation equipment	2018	1	22

Source: UNCTAD, M&A database.

3.3.4. Determinants and motivations

FDI in health care in ASEAN is influenced by a number of factors, primarily market-seeking considerations, future growth prospects and host country-specific elements (e.g liberalization, local partners, a conducive investment environment). Depending on the companies and the segments, other major influences on FDI include efficiency-seeking motives and strategic reasons (table 3.8).

Market factors and the relatively low-cost structure that enables the delivery of affordable health care services in the region are key aspects in investment decisions. Favourable and improving policy and regulatory environments that generate investment opportunities are also important factors. In many ASEAN Member States, 100 per cent foreign equity ownership is allowed in hospitals and other segments (chapter 4).

Table 3.8. Motivations of FDI in health care in ASEAN

Health care segment	Key motivation factors
Hospitals	• Market factors: market size, rising demand and consumer income, and growth prospects • Internationalized proprietary advantages • Strategic investments and opportunities at growth locations • Diversification of markets and return on investment • Host-country population structure, demographics and favourable regulatory environment
Pharmaceuticals	• Low production cost considerations • Market factors • Strengthening regional foothold and value chain integration • Favourable conditions for contract manufacturing and investment • Increasing production capacity, undertaking R&D activities and providing a more integrated operation
Medical equipment and devices	• Low production cost • Market factors • Reinvestment for expansion and integrated operation • Strengthen regional presence • Undertake R&D activities
Health insurance	• Market factors • Demand for quality and efficient care • Increasing numbers of middle-income consumers and increasing health conscious society • Need to be in growing markets
Start-ups	• Market factors • Supportive and favourable start-ups ecosystem, including government support • Access to finance, VCs and PEs • Business and regional scalability opportunities
IT-BPM services	• Cost factors • Language and IT skills, and availability of skilled workers • Market factors: serving clients based in ASEAN and the global market • Host-country attraction and investment policies

Sources: *ASEAN Investment Report 2019* research and companies interviewed for cases in the report.

Rapid economic growth, the growing population and an expanding middle class have attracted health care investment to ASEAN. Some health care MNEs invest in the region to exploit and internationalize their proprietary advantages. For instance, hospital groups such as Bangkok Chain Hospitals (Thailand), KPJ (Malaysia) and Raffles Hospital (Singapore) are investing and operating in primary care services in other ASEAN Member States to internationalize their hospital management expertise and to take advantage of emerging investment opportunities.

In addition to market-seeking considerations, efficiency-seeking or low-cost production factors continued to attract pharmaceutical companies to produce drugs and medicines in the region to supply to local markets and for exports. Many of the major drug companies in ASEAN have continued to expand or reinvest in the region to increase production capacity and move into new business functions (upgrading in the value chain). The existence of capable local pharmaceutical companies to be contract manufacturers has also played a key role in improving the investment environment, which helps attract pharmaceuticals FDI. The size of the pharmaceuticals market in the region and the host country are important determinants. The commitment of ASEAN Member States towards universal health care provides opportunities for MNEs to produce and service local markets.

Some MNEs or foreign entities have invested in the health care industry (e.g. hospitals) in ASEAN because of strategic reasons. They include non-health care companies, sovereign wealth funds (e.g. Khazanah (Malaysia) and Temasek (Singapore)) and pension funds (e.g. the Thai national pension fund). They seek a return on investment or to invest in strategic assets in rapidly growing industries, of which health care is one. Non-health care companies or conglomerates invest in health care (e.g. Mitsui, Itochu, Sojitz and Mitsubishi (all Japanese)) to diversify their business portfolio or to seize investment opportunities in strategic health care assets in the region. PE and VC companies are involved because of investment opportunities in a growing industry.

Some non-health companies, such as those in real estate (e.g. Rojana (Thailand)) and other industries (e.g. a subsidiary of Toyota) invest in health care by forming alliances and partnerships to establish a foothold in the health care markets of host countries. The availability of strong local partners has also facilitated joint ventures and strategic alliances by major health care companies in the region such as in the hospital and pharmaceutical segments.

Many ASEAN health care providers, manufacturers and start-ups have internationalized. They venture overseas to grow, to seize investment opportunities and to diversify their geographical reach. The burgeoning pharmaceuticals industry in some ASEAN Member States also has attracted them to establish a presence and to be close to markets and customers.

3.4. ACTORS OF HEALTH CARE INDUSTRY IN ASEAN

Foreign MNEs and ASEAN companies are significant actors in the region's growing health care industry (section 3.6). They operate in different segments of the value chain (table 3.9). There are differences between them in terms of corporate activities, expertise and internationalization objectives. In hospital services, ASEAN hospital groups and PEs are major private investors. The pharmaceuticals and health insurance segments have a significant number of international MNEs, many of which have been in ASEAN for several decades.

Table 3.9. Different health care actors in ASEAN

Groups	Role/function	Investment activities
Hospital groups	**Investor and provider** • Provide care services to local and medical tourists	Invest in, manage and operate hospitals, clinics, specialized centres and nursing homes
Technology and equipment suppliers	**Enabler** • Supply technology, medical solution and equipment	Invest to manufacture, market, distribute and export medical solutions and equipment to hospitals, medical centres, clinics and other care service providers They also partner with pharmaceutical companies and hospitals to establish diagnostic laboratories
Pharmaceuticals	**Provider and manufacturer** • Supply and manufacture pharmaceutical products • Manufacture pharmaceuticals	Invest to manufacture, market, distribute and export pharmaceutical products
Health insurance	**Enabler** • Provide risk coverage • Reduce out-of-pocket expenses • Support the development of the health care industry	Invest in or expand to provide insurance coverage in growth areas such as private and corporate health insurance
Investors	**Investor, owner and operator** Invest in, own and operate health care facilities and in different segments • Sovereign wealth funds • Pension funds • Health care MNEs • Non-health care MNEs • Private equity companies • Venture capitals • Others	Undertake strategic investment in growth industry and achieve return on investment Expand and diversify revenue streams Seize investment and diversification opportunities Grow through internationalization
Medical start-ups	**Innovator, investor and disruptor** • Innovate, invest and operate digital and medical technologies	Invest and exploit digital revolution opportunities Innovate to increase efficiency through application of robotics, artificial intelligence (AI,) data analytics, Internet of Things (IoT) solutions and develop new medical technologies
Other health care services	**Facilitator** Provide services that support the development of health care industries • Health IT-BPM services • R&D entities • Logistics for health care	Invest in and operate facilities to provide services to upstream health care stakeholders

Source: ASEAN Investment Report 2019 research.

3.4.1. ASEAN health care providers: hospitals

In the health care services segment (hospitals), there are different categories of investors (hospital and non-hospital entities) (table 3.10).

Table 3.10. Foreign investors in hospitals in ASEAN

Types of investors	ASEAN	Non-ASEAN
Hospital MNEs (Health care service providers)	• Large private hospital groups: e.g. IHH Healthcare and KPJ (Malaysia), Raffles Hospitals (Singapore), BDMS (Thailand) • Small private hospital groups e.g Clearbridge Health (Singapore) • Conglomerates: Metro Pacific Investments (Philippines), Sime Darby (Malaysia)	• Private hospital groups: Ramsay (Australia), Sunrise Japan Hospital
Non-hospital MNEs	• Sovereign wealth funds: Khazanah (Malaysia), Temasek (Singapore) • PEs and VCs: Quadria Capital (Singapore), TE Asia Healthcare (Singapore), Vertex (Singapore), Navis Capital (Malaysia)	• Large companies and conglomerates: Mitsui, Sojitz, Itochu, Sekisui Chemical (all Japan) • PEs and VCs: Columbia (United States), KKR (United States), Capital Medica (Japan)

Source: *ASEAN Investment Report 2019* research.

Many of the major private hospitals in Indonesia, Malaysia, Singapore and Thailand are members of large hospital groups. They have investments in hospitals in other ASEAN Member States (table 3.11). The Lippo Group (Indonesia) through Siloam International Hospitals (Indonesia) and OUELH (Singapore) has hospital investments in Indonesia and Myanmar; IHH Healthcare (Malaysia) (owner of the Pantai, Parkway and Gleneagles hospital chains) has hospital facilities in Brunei Darussalam, Malaysia and Singapore; Raffles Hospital (Singapore) has operations in Cambodia, Indonesia, Singapore and Viet Nam; and Bangkok Dusit Medical Services (BDMS, with an extensive hospital network in Thailand) is a care service provider in Cambodia, the Lao People's Democratic Republic and Myanmar (section 3.6.1). Other health care providers include Health Management International (Singapore), which owns Mahkota and Regency hospitals in Malaysia; KPJ Healthcare (Malaysia) (an integrated health care service provider) has operations in Malaysia, Indonesia and Thailand; and Thomson Medical Group (Singapore) has medical centres in Malaysia and health services in Indonesia.

Some ASEAN hospitals continue to look for investment opportunities in the region. Samitivej Hospital, a member of BDMS, plans to further expand to the neighbouring countries (e.g. Cambodia, the Lao People's Democratic Republic, Myanmar and Viet Nam). It has a joint venture with Parami Hospital in Myanmar, which established Samitivej International Clinic at Parami's medical complex in 2014. It opened a stand-alone medical clinic in Myanmar, through a joint venture, in 2016 to serve expatriates and the local population. Thonburi Healthcare Group (Thailand), through a joint venture, opened the $100 million 200-bed Aryu International Hospital in Yangon in 2019.

Table 3.11. Top 15 major hospitals and health care providers in ASEAN, by assets, 2018

Company	Headquarters	Total assets[a] (Millions of dollars)	Presence in other ASEAN countries
IHH Healthcare	Malaysia	9,584	Brunei Darussalam, Indonesia, Singapore, Myanmar (under development), Viet Nam
Bangkok Dusit Medical Services	Thailand	3,765	Cambodia, Lao People's Democratic Republic, Myanmar, Singapore
KPJ Healthcare	Malaysia	1,042	Indonesia, Thailand
Raffles Medical Group	Singapore	753	Indonesia, Cambodia, Viet Nam
Bumrungrad Hospital	Thailand	721	Myanmar
Siloam International Hospitals	Indonesia	559	Myanmar
Thonburi Healthcare	Thailand	550	Myanmar
Bangkok Chain Hospital	Thailand	389	Lao People's Democratic Republic
Thomson Medical Group	Singapore	180	Indonesia, Malaysia, Viet Nam
Q&M Dental Group	Singapore	165	Malaysia
Cordlife Group	Singapore	144	Indonesia, Malaysia, Philippines, Thailand
Singapore Medical Group	Singapore	125	Indonesia
Health Management International	Singapore	97	Indonesia, Malaysia
ISEC Healthcare	Singapore	54	Myanmar, Malaysia
Clearbridge Health	Singapore	51	Indonesia, Malaysia, Philippines

Sources: Bloomberg and Orbis.
[a] Based on 2017 values.

The CLMV countries have witnessed more FDI activity in hospitals and clinics in recent years, reflecting the improving investment environment and attraction of these countries. Emerging opportunities to establish hospitals and clinics are driving ASEAN hospitals (and foreign interests) to invest in these countries (table 3.12).

Equity investments

Some ASEAN hospital groups operate integrated businesses that involved other segments of the health care value chain (e.g. insurance, pharmaceuticals distribution and manufacturing). Some have established investment companies or holding companies abroad (e.g. in Singapore) with the purpose to undertake investment in hospitals and other health care activities in the region – adding to the complexity of their corporate structure (box 3.2). Large hospital groups, especially those with Joint Commission International (JCI) accreditation for health care service quality, have also established representative offices in target host countries to facilitate medical tourism.

Table 3.12. ASEAN health care service providers in CLMV countries (Selected cases)

Investor	Headquarters	Hospital	Host country	Equity ownership (%)	Year	Remarks
OUELH	Singapore	Yoma Siloam Hospital Pun Hlaing Limited	Myanmar	40	2019	Investor is part of the Indonesian Lippo conglomerate.
		Pun Hlaing International Hospital Limited	Myanmar	35	2019	
Thomson Medical Group	Singapore	Hanh Phuc International Hospital	Viet Nam	Medical collaboration	2011	Investor helps co-develop operational procedures and policies for nurses and non-medical departments of the hospital.
Singapore Medical Group	Singapore	Care Plus Clinic Vietnam (CCVN)	Ho Chi Minh City	47 (in CityClinic Asia Investment (CCAI))	2017	Investor provides training to hospital in marketing. CCAI has a 100% foreign investor license for health care operations in Viet Nam.
Wattana Medical Group	Thailand	Alliance International Medical Center (AIMC)	Vientiane, Lao People's Democratic Republic	..	2011	AIMC is a joint venture between New Chip Xeng Group of Lao PDR and Wattana Medical Group.
Bangkok Chain Hospital	Thailand	Kasemrad International Hospital Vientiane	Vientiane, People's Democratic Republic	76	2017	Joint venture with a Lao investor to establish the hospital
Singapore National Eye Center and Singapore National University Hospital	Singapore	FV Hospital (in Hanoi and Saigon Clinic)	Viet Nam	..	..	Collaboration between the hospitals
Navis Capital	Malaysia	Hanoi French Hospital (L'hopital Francais de Hanoi)	Viet Nam	Investment	2016	Investor owns the hospital.
AJT Holdings	Singapore	Singapore Medical Center	Cambodia	Partnership: AJT manages the center	2018	..

Sources: Media and company websites.

Box 3.2. Key features and characteristics of ASEAN hospital groups

The large hospital groups in ASEAN have similar features and corporate arrangements. Some of these features and characteristics include complex structures and multiple subsidiaries, and international partnerships and affiliations.

Complex structure and multiple subsidiaries

Some homegrown ASEAN hospital chains operate different health care brands that help them to target different segments of the market, both at home and abroad. For example, BDMS, the largest medical group in Thailand, has 45 hospitals and medical entities there as well as two in Cambodia (section 3.6.1). It has six hospital brands: Bangkok Hospitals (21 hospitals), Samitivej Hospitals (6), BNH Hospitals (1), Phyathai Hospitals (5), Paolo Hospitals (6) and The Royal Hospitals (2). The two Royal Hospitals are in Cambodia. BDMS is looking at other neighbouring countries for future expansion.

The IHH Healthcare (Malaysia) consists of a network of hospitals and a few major brands (e.g. Mount Elizabeth, Gleneagles, Pantai, Parkway and Fortis). The two Mount Elizabeth hospitals in Singapore attract many medical tourists. The Parkway Pantai group of hospitals is mostly in Malaysia and Singapore. It has also acquired a significant stake in Fortis, which has hospitals network in India. Siloam International Hospitals, under the Lippo Group (Indonesia), has hospitals in the country under the Siloam brand. The group has a health care presence in Singapore through OUE Lippo Healthcare, and through joint ventures it owns and operates hospitals in Myanmar.

Integrated business and investment holding

ASEAN hospital groups also operate integrated businesses involving distribution and manufacturing of pharmaceuticals as well as health insurance businesses. For instance, BDMS's health care portfolio includes international pharmaceuticals business (manufacturing of sterile and generic pharmaceutical products and distribution), drugstores (retailing), medical devices and equipment, pathology services and health insurance.

International partnerships and affiliations

The major ASEAN hospital groups also have strategic investment interests with foreign partners. They have established alliances and partnership with major MNEs to supply pharmaceuticals, equipment and medical solutions. Some have also established knowledge collaboration in R&D activities, training and education. For instance, BDMS (Thailand) has partnerships with specialized medical centres and colleges in Japan, the United States, and Europe; Raffles Hospital (Singapore) is affiliated with the United States-based Mayo Clinic Care Network; Maayo Medical (Philippines) has Ottobock (a German medical technology company) as one of its partners; PT Siloam International (Indonesia) signed an agreement in 2017 with Philips (Netherlands) to supply, maintain and service health care technology and equipment in all of Siloam's hospitals in Indonesia.

These partnerships and affiliations are pursued for a number of reasons: (i) funding resources for expansion, (ii) access to markets, (iii) access to modern technology and specialized expertise or skills, (iv) patient referrals and (v) accreditation and recognition.

Source: *ASEAN Investment Report 2019* research.

In some cases, major local hospitals also involve foreign or strategic partners in their hospital operations. Examples include Ramsay (Australia) with Sime Darby Health Care (Malaysia) and the equity stake of Mitsui (Japan) in IHH Healthcare (Malaysia). Foreign health care institutions also get involved with ASEAN hospitals through collaboration and strategic partnership in knowledge sharing, technological development, R&D and capacity-building. In this way, they contribute to the development of the health care industry in the region and connect with private health care providers in ASEAN.

Aside from hospital groups, some ASEAN health care companies have also opened medical clinics and laboratories in other ASEAN Member States. They include Q and M Dental Group (Singapore) for dental care, Cordlife (Singapore) for health and allied services and Clearbridge Health (Singapore) in medical laboratory. Singapore Medical Group invested in Careplus Clinic Vietnam (a health care specialist services provider that focuses on health screening, women's health, pediatrics and diagnostic imaging).

Not all major hospital groups expand to other ASEAN Member States. Those from a home country with a large domestic market (e.g. Indonesia, the Philippines) have a limited overseas presence because they have chosen to focus on expansion at home. PT Mitra Keluarga Karyasehat (Indonesia), with 19 hospitals, and Metro Pacific Hospital Holdings (Philippines), with 14, do not invest outside the country.

In contrast, hospital groups from Malaysia and Singapore have investments outside their home countries because of the limited market at home and as part of their business strategy to operate close to patients abroad. Some Thai hospital groups also established hospital facilities in the CLMV countries to serve patients there.

Non-equity participation

ASEAN hospital groups have foreign involvement in their hospital business through collaboration on hospital development, medical knowledge and technology issues. For instance, a network of hospitals owned by the VinGroup Corporation (Viet Nam) has foreign collaborations in oncology, cardiology, organ transplantation and hospital management. Foreign collaborators include UPMC Healthcare Group and GE Healthcare (both from the United States), Sanno Hospital and International University of Health and Welfare (both from Japan) and other foreign collaborators based in France, the Republic of Korea and Singapore. Similarly, hospitals from Singapore collaborate and support the establishment of hospitals in Viet Nam; for example, Thomson Medical supported the establishment of Hanh Phuc International Hospital (Viet Nam). Thomson Medical co-developed hospital operational procedures and policies for nurses at the Vietnamese hospital. AJT Holdings (Singapore) manages the Singapore Medical Center in Cambodia under a partnership agreement with the owners. Other health institutions from European countries, Japan and the United States collaborate with ASEAN hospitals in R&D, in training and in sharing medical knowledge and experiences (section 3.4.2).

Mode of expansion

ASEAN hospital groups have expanded abroad through a combination of acquisitions, greenfield investments, joint ventures and strategic collaboration. For example, IHH Healthcare (Malaysia) in its early years expanded its home-country hospital network through the acquisition of local and foreign-owned hospitals in Malaysia and abroad. It also built new facilities, such as the Mount Elizabeth Novena Hospital and Specialist Centre in Singapore.

Where opportunities for M&As are limited, ASEAN hospital groups have built new hospitals in host countries. BDMS (Thailand) built two Royal Hospitals in Cambodia. Wattana Medical Group (Thailand), through a joint venture, established the Alliance International Medical Center in the Lao People's Democratic Republic. Bangkok Chain Hospital and a Lao investor entered into a joint venture to build the $70 million, 254-bed Kasemrad International Hospital Vientiane, which will open in 2020.[14] Joint-venture arrangements with local partners are frequently used where local knowledge or networks of local partners are important and regulatory frameworks are continuously improving, such as in the CLMV countries. Samitivej Hospital, a subsidiary of BDMS (Thailand), expanded in Myanmar through a joint venture.[15] KPJ Healthcare (Malaysia) has a joint-venture hospital in Bangkok and IHH (Malaysia) is building a hospital in Myanmar.

Several Singaporean health care groups have invested in the CLMV countries through joint ventures with local partners or other health care-related companies that already have operations in these economies. Singapore Medical Group in 2017 made a strategic investment in Viet Nam through an investment and management consultancy services arm (CityClinic Asia Investments). Its wholly owned subsidiary, CityClinic Vietnam, operates CarePlus Clinic Vietnam. Raffles Medical Group formed a joint venture with Singapore-registered AEA International Holdings, which operates the International SOS clinics in a few ASEAN Member States.

Expansion through vertical integration

Some hospital groups have also evolved to become more integrated through providing other health care services such as pathology and diagnostic laboratories, pharmacy, and manufacturing of pharmaceuticals and nutrition-based products. Raffles Medical (Singapore) operates medical facilities in 13 cities in Cambodia, Singapore and Viet Nam, as well as in China and Japan. It also operates medical laboratories, dental clinics, imaging centres and management consultancies. Raffles clinics in and outside Singapore have their own pharmacies, which sell its own manufactured health care products and those of other companies.[16]

KPJ Healthcare (Malaysia) has hospitals in Indonesia, Malaysia and Thailand. In Malaysia, it has a network of clinics, assisted-living care facilities, health care universities and colleges, laboratories and diagnostics chains, and healthy meals facilities.[17]

Non-hospital investors

Conglomerates and non-health care MNEs (e.g. banks, large Japanese trading companies) also invest in hospitals in ASEAN. Private equity companies seeking returns on investment have equity stakes in or own hospitals in different ASEAN Member States. These PE companies operating in the region and with investment in hospitals include Columbia (United States), Quadria Capital (Singapore), Navis Capital (Malaysia) and TE Asia Healthcare (Singapore). Bowsprit Capital (Singapore) acquired two hospitals in Indonesia in 2017.

3.4.2. Foreign health care providers and MNEs

Foreign companies have entered the ASEAN market in hospital operations through various approaches, including acquisitions, taking up strategic stakes and collaborations (table 3.13). For example, the Australian health care group, Ramsay Health Care, owns and operates seven facilities in ASEAN through joint-venture arrangements with Sime Darby (Malaysia). The joint-venture entity, Ramsay Sime Darby Health Care (Malaysia), operates three hospitals in Indonesia, and three hospitals and a nursing college in Malaysia.

International Columbia (United States), through Columbia Asia Healthcare, headquartered in Malaysia, owns and manages medical facilities in Indonesia (3), Malaysia (12) and Viet Nam (3) (section 3.6.1). Columbia Asia Healthcare oversees International Columbia's health care interests in Southeast Asia. Capital Medica (Japan) tied up with Sojitz Corporation (Japan) is expanding in ASEAN (section 3.6.1). In 2015, Capital Medica-Sojitz entered into a partnership with TMMC Healthcare (Viet Nam) to focus on training for medical and supporting staff, research and technology, and development of medical centres. TMMC Healthcare has four general hospitals, one polyclinic and one medical college in Viet Nam.

3.4.2.1. Japanese MNEs

Health care investment from Japan in ASEAN is small but rising, with growing interest by Japanese institutions and companies to participate in various segments of the health care value chain (figure 3.4). Japanese companies are involved in health care in the region through equity and non-equity forms of participation and with different business functions (e.g. provision of health care services, retailing and distribution, manufacturing, R&D, knowledge collaboration and regional headquarters activities).

Encouragement of such participation by the Government of Japan through measures that support Japanese health care-related institutions and companies to provide services overseas also played a role in this investment development in ASEAN (*AIR 2018*). Investment opportunities in ASEAN and the rapid growth in health care demand have attracted investment by Japanese MNEs.

These investors include conglomerates, trading companies, large MNEs, hospital groups, pharmaceutical companies and other health-related corporations. Many operate in hospital segment in ASEAN through M&As and joint ventures (annex table 3.1).

Trading companies such as Mitsui and Mitsubishi have invested in major hospital groups in the region through the acquisition of strategic stakes and the formation of strategic alliances. For instance, Itochu acquired a stake in OUE Lippo Healthcare (Singapore), which has hospitals in Singapore and Myanmar. Sojitz partners with Tam Tri Medical Group in Viet Nam.

Table 3.13. Foreign investment and involvement in hospital operations in ASEAN (Selected cases)

Foreign partner	Headquarters	Hospital partners in ASEAN	Headquarters	Type of connection	Remarks
Genea Group	Australia	Han Phuc International Hospital	Viet Nam	Collaboration	Partnership to develop an international hospital devoted to health care for families at Han Phuc Hospital
Ramsay Hospital	Australia	Sime Darby Healthcare	Malaysia	Joint-venture partner	A partner of Sime Darby, a Malaysian conglomerate, in health care
Agreement with IBA (Ion Beam Applications)	Belgium	Parkway Pantai Group	Malaysia	Solution supplier	Supplied and installed a proton therapy system at Mount Elizabeth Novena Hospital (Singapore). Parkway Pantai is a member of the IHH Healthcare group.
Ottobock	Germany	Maayo Medical	Philippines	Shareholder	A medical technology company
Hannover Medical School	Germany	Bangkok Dusit Medical Services Group	Thailand	Knowledge collaboration	Exchange of knowledge and skills in orthopedics and trauma surgery
Hongkong Integrated Oncology Centre	Hong Kong, China	Makati Medical Center	Philippines	Knowledge collaboration	Sharing of best practices
Mitsui	Japan	IHH Healthcare	Malaysia	Equity stake investment	Strategic investment by Mitsui
Gakken Cocofump Holdings	Japan	Health Management International	Singapore	Knowledge sharing	Partnership with Japan's leading elderly care provider (Gakken Cocofump) on training and best practices on community care and home caregiver segments in Singapore and the region
Sano Hospital				Knowledge sharing, patient referrals	Joint cooperation to study and develop projects on gastrointestinal tract disease and patient referrals
Universal Strategy Institute	Japan	Bangkok Dusit Medical Services Group	Thailand	Collaboration	Collaboration on a radiation centre, which will use the heavy ion therapy technology
Nagoya University				Medical training and patient referrals	Training medical personnel and enabling patient referrals
Sanno Hospital and International University of Health and Welfare	Japan	VinMec Healthcare System[a]	Viet Nam	Technology cooperation	Technology transfer and capacity-building with VinMec hospital
Straumann Group	Switzerland	Bangkok Dusit Medical Services Group	Thailand	Knowledge collaboration	Collaboration between BDMS's Dental Center and the Swiss Group on implant, restorative and regenerative dentistry

/…

Table 3.13. Foreign investment and involvement in hospital operations in ASEAN (Selected cases) (Concluded)

Foreign partner	Headquarters	Hospital partners in ASEAN	Headquarters	Type of connection	Remarks
MD Anderson Cancer Center, University of Texas	United States	Bangkok Dusit Medical Services Group	Thailand	R&D collaboration	Collaboration on basic research and development in safe and efficient treatment; exchange of knowledge and case studies on cancer prevention and cure
Oregon Health & Science University				Health alliance	The alliance aims to become an international centre of medical excellence in areas such as occupational health, pediatrics and preventive cardiology.
Cedars-Sinai Medical Center's Maxine Dunitz Neurosurgical Institute				R&D collaboration	Collaboration in research and development on treating diseases of the brain and nervous system
IBM Watson	United States	KPJ Healthcare	Malaysia	Solution supplier	Supplied cognitive computing platform for oncology to help doctors deliver evidence-based cancer treatment options
Mayo Clinic	United States	Raffles Medical Group	Singapore	Medical collaboration	The Mayo Care network allows Raffles' doctors to access medical expertise from the United States in treating complicated medical conditions.
International Columbia	United States	Columbia Asia Healthcare	Malaysia	Subsidiary	Columbia Asia oversees and invests in Asia including in ASEAN.
University of California Comprehensive Cancer Center	United States	Makati Medical Center	Philippines	Partnership/ collaboration	Multidisciplinary collaboration for patients requiring complex and advanced levels of cancer care
Asian American Medical Group (Singapore) in collaboration with UPMC	Based in Singapore	VinMec Healthcare Systema	Viet Nam	Joint alliance	Establishment of the Vietnamese American Liver Center in VinMec International Hospital, Viet Nam (2013)
GE Healthcare	United States			Supplier partnership	Agreement to promote science and technology application and improve health care capacity-building in cardiology and oncology

Sources: Company annual reports and websites.

[a] A domestically focused Vietnamese health care group of seven hospitals and one medical college (https://www.vinmec.com/en/gioi-thieu/about-vinmec-healthcare-system/)

Figure 3.4. Japanese companies in ASEAN's health care value chain

Value chain	Nursing and care homes	Hospitals & medical services	Distribution & retailing of pharmaceuticals and devices	Manufacturing of pharmaceuticals & devices	R&D	Knowledge collaboration & training
Objective	Provide nursing and care home to patients and old aged people	Invest and provide preventive and curative care services	Distribute, sale and market pharmaceutical products and devices in host country and in the region	Manufacture pharmaceutical products and devices	Undertake medical related R&D activities	Collaborate on sharing of knowledge and establish facilities for training
Corporate examples	• Star Partners (in Thailand) • Riei (in Thailand) • Sakura Cross Clinic • Long Life Holding (in Indonesia) • Medical Care Services (in Malaysia) • Oubaitouri (in Viet Nam) • Tetsuyu (in Singapore)	• Sakurajyuji Group (in Thailand) • Kaikoukai Group • Mitsui & Co (in Malaysia) • Mediva Inc (in Viet Nam) • Mitsubishi Corporation (in Myanmar) • Sanshinkai (in Myanmar) • Itochu Corporation (in Indonesia) • Marubeni (in Philippines)	• Nipro (in Indonesia, Malaysia, Singapore) • Omron Healthcare (in Indonesia, Singapore, Thailand) • Shimadzu (in Malaysia)	• Nipro (in Indonesia, Thailand) • Omron Healthcare (in Viet Nam) • Sysmex (in Singapore) • Shimadzu (in Philippines, Viet Nam) • Mani (in Myanmar, Viet Nam)	• Takeda Pharmaceutical (in Singapore) • Hoya (in Singapore) • Kyowa Hakko Kirin (in Singapore) • Shimadzu (in Singapore) • Olympus (in Singapore)	• Olympus (in Thailand, Indonesia) • Fujifilm (in Viet Nam) • Mediva (in Myanmar)

Source: *ASEAN Investment Report 2019* research.

Japanese hospital groups such as Kitahara International Hospital owns the $35 million Sunrise Japan Hospital in Cambodia, the first Japanese hospital in that country. Other Japanese hospitals, including Happy International Hospital and Japan International Eye Hospital, have invested in and owned medical facilities in Viet Nam.

The rise of the health care industry in ASEAN has attracted Japanese pharmaceutical companies to invest and expand in the region. Toho Pharmaceutical, one of Japan's leading pharmaceutical wholesalers, built a medication production factory in Hanoi. Toho Holdings entered into an agreement in 2018 with Pharmaniaga (Malaysia) to expand pharmaceuticals distribution and business development in Malaysia. Nipro Pharma Corporation, Japan's biggest prescription drug contract manufacturer, expanded in Viet Nam. Fuji Pharma acquired OLIC (one of the largest pharmaceutical contract manufacturers in Thailand) from DKSH (Switzerland) in 2012 and Sumitomo Dainippon Pharma with a presence in Singapore established a subsidiary (Sumitomo Pharmaceuticals) in Thailand in 2019.

Some Japanese companies have also invested in health care institutions in ASEAN, including training of health workers; some of these workers are later sent to Japan (e.g. St. Frances Cabrini Medical Center in the Philippines). Japanese health care companies with nursing care expertise look for opportunities to expand aboard, including in ASEAN, to better exploit their experience and management know-how in such business operation.

In tapping the growing demand for health care services in ASEAN, some medical services companies and hospitals from Japan have established representatives in offices in the region. For example, IMS International Medical Support opened a medical service support company in Hanoi in April 2019 with two major Japanese health care companies (I-cell Networks and Assam Company). The joint-venture company provides information, counselling and support services for Vietnamese patients wishing to travel to Japan for examination and treatment. It also provides health care services and coordinates with Vinmec Hospital and Thong Nhat Hospital in Viet Nam after patients return home.[18]

3.4.2.2. European MNEs

The European health-related MNEs in ASEAN are concentrated in the pharmaceuticals, medical equipment and health insurance segments. A few European hospitals operate in the CLMV countries (e.g. in the Lao People's Democratic Republic and in Viet Nam). Two major international standard hospitals in Viet Nam (L'Hôpital Français de Hanoi and Franco-Vietnamese Hospital in Ho Chi Minh) are owned and managed by French companies and doctors. Franco-Vietnamese Hospital is 100 per cent foreign-owned by Medical Founders Holding (Hong Kong, China), the company of the French founders, and by Quadria Capital, a PE company based in Singapore.

Many European pharmaceuticals and equipment manufacturers operate in ASEAN with multiple subsidiaries and in different ASEAN Member States. They include AstraZeneca (United Kingdom), Bayer (Germany), Mylan (Netherlands), Novartis (Switzerland), Novo Nordisk (Denmark) and Solvay (Belgium) (section 3.4.3). They serve the local market and export abroad.

European MNEs enter the ASEAN health care market through direct investments, joint ventures and collaborations with local health care groups. In 2018, IVI-RMA Global[19] signed an agreement with Thomson Medical Group (Singapore) to form a joint venture on assisted reproduction in Singapore. The joint venture delivers clinical services, training and research for assisted reproduction services. The partnership also aims to address the growing demand for assisted reproduction in Asia, including in Indonesia and Viet Nam.[20] European insurance companies (e.g. Axa (France) and Allianz (Germany)) are involved with health insurance and partner with local hospital groups in offering coverage (section 3.4.5).

European MNEs also supply equipment and medical technology and solutions to many hospitals and health care providers in ASEAN through their agents and sales subsidiaries. Malaysia's IHH Healthcare Group, through its hospital chains, procures medical solutions and equipment from Karl Storz (Germany), Siemens Healthcare (Germany), Royal Philips (Netherlands) and Elekta (Sweden). BDMS (Thailand) collaborates with various European hospitals in specialized fields of expertise (e.g. Straumann Group (Switzerland) and Hannover Medical School (Germany)).

3.4.2.3. United States MNEs

United States MNEs are present in ASEAN mainly as health care funds, PE companies, and in the pharmaceuticals, insurance, and medical technology and equipment segments. PE companies such as International Columbia, through its subsidiary in Malaysia, have a significant presence in hospital operation in the region (section 3.6.1). Pharmaceutical companies (e.g. Pfizer, Johnson and Johnson, and Eli Lilly) have operations in multiple ASEAN Member States in the manufacturing and distribution of pharmaceutical products. Some United States MNEs also export pharmaceutical products from ASEAN to third countries. United States medical equipment manufacturers such as GE Healthcare and Boston Scientific have a significant presence in the region.

United States hospitals and institutions also participate in ASEAN's health care industry through knowledge exchange, research collaboration and other non-equity forms of involvement.

3.4.2.4. Australian MNEs

As compared with health care companies from countries in Europe, and from Japan and the United States, fewer health care entities, hospitals and equipment suppliers from Australia have a presence in ASEAN. Just six of the 75 largest Australian MNEs with a presence in ASEAN are in health-related operations (*AIR 2018*) (table 3.15). Major Australian private hospitals such as Ramsay Health Care, Healthscope and Primary Health Care have operations in ASEAN. Healthscope, a major community pathology service provider, operates in Malaysia and Singapore.

Australian companies such as Telstra Health provide technology solutions that assist hospitals and medical centres in ASEAN. It offers the CloudMed Arcus Hospital Information System, an integrated patient care system that provides a single medical record for hospital networks. The system reduces the amount of time spent on paperwork and improves the efficiency

Table 3.15. Major Australian health care-related MNEs in ASEAN (Selected cases)

MNE	Key activity	Presence in ASEAN countries
Ramsay Health Care	Health care services	Indonesia, Malaysia
Healthscope	Health care services	Malaysia, Singapore, Viet Nam
Ansell	Health care equipment and supplies	Malaysia, Singapore, Thailand, Viet Nam
Primary Health Care	Health care services	Singapore
Cochlear	Health care equipment and supplies	Malaysia, Singapore
Blackmores	Health supplements	Indonesia, Malaysia, Singapore, Thailand

Source: *ASEAN Investment Report 2018.*

of doctors, nurses and pharmacists. Clients include Sunway Group Healthcare Malaysia, Penang Adventist Hospital and Tung Shin Hospital's Western Medicine and Traditional Chinese Medicine (all in Malaysia) as well as Khon Kaen University Hospital in Thailand.

Australian VCs and PEs are also investing in the health care industry in ASEAN. Aura Group raised $5.5 million fund to invest in Viet Nam's private health and medical industry, including in Pacific Holdings Vietnam Joint Stock Company (a private health care group).

3.4.2.5.Korean MNEs

Korean FDI in ASEAN health care has been modest but rising. Investment values before 2017 ranged between $100,00 and $500,000.[21] In 2017, however, Korean health investments to ASEAN rose to $1 million and in 2018 increased to $3.8 million. Nonetheless, ASEAN received only 2.4 per cent of the Republic of Korea's global outward FDI in health care in 2018.

Korean health care companies invest primarily in Viet Nam and Singapore (tables 3.16 and 3.17). Their motivation is to diversify their market reach in these countries. In most cases they invest by establishing wholly owned subsidiaries.

3.4.2.6. Others

Health care companies from other countries are present in ASEAN. Triple Eye Infrastructure (Canada) established a joint venture with Dai An JSC Corporation (Viet Nam) to build an estimated $225 million international standard hospital in northern Viet Nam. Bausch Health

Table 3.16. Korean health care FDI in ASEAN, 2017–2018 (Selected cases) (Millions of dollars)

	Total	Viet Nam	Singapore	Indonesia
2017	1.0	0.4	0.5	..
2018	3.8	2.2	0.9	0.1
	Malaysia	**Myanmar**	**Philippines**	**Thailand**
2017	..	..	0.01	..
2018	0.1	0.1	0.01	0.2

Source: KOTRA.

Table 3.17. Korean health care companies and institutions in Singapore and Viet Nam (Selected cases)

Organization	Activity	Entry modes	Year	Location
SI Dental Hospital	Dentistry	Wholly owned subsidiary	2005	Ho Chi Minh
Gayajamo Hospital	Obstetrics and gynecology	Wholly owned subsidiary	2005	Ho Chi Minh
HAN-VIET Plastic Surgery	Plastic surgery	Joint venture	2007	Ho Chi Minh
Haengbok Oriental Medicine Clinic	Oriental medicine	Wholly owned subsidiary	2007	Ho Chi Minh
Medical Care International Dasom Poly Clinic	Internal medicine	Wholly owned subsidiary	2008	Ho Chi Minh
Seoul Medical Clinic	Family medicine	Wholly owned subsidiary	2011	Ho Chi Minh
Dermaster Clinic	Plastic surgery	Wholly owned subsidiary	2017	Ho Chi Minh
Oracle Land	Plastic surgery	Joint venture	2012	Ho Chi Minh
Sejong Hospital	Cardiology	Wholly owned subsidiary	2018	Hanoi
Kim's Eye Hospital	Ophthalmology, surgery, orthopedics	Wholly owned subsidiary	2019	Ho Chi Minh
BK Medical Group	Plastic surgery	Wholly owned subsidiary	2014	Singapore
CHA Healthcare Singapore[a]	Invested in a 6.9 per cent stake in Singapore Medical Group in 2017 and increased the stake to 24.1 per cent in 2019		2017 and 2019	Singapore
C&R Healthcare Global	Jointly launched the Korea-Singapore Healthcare Incubator with Singapore Golden Equator to help Korean companies expand into Singapore and ASEAN		2017	Singapore

Sources: KhIDI (2013, 2016) and media reports.
[a] A subsidiary of the Korean health care group CHA Health Systems.

(Canada), Chinese MNEs (e.g. Shanghai Industrial Holdings, Kangmei Pharmaceutical, Humanwell Healthcare), Indian companies (e.g. Aurobindo, Biocon, Dr. Reddy's Laboratories, Ranbaxy and Sun Pharmaceutical Industries) and Teva Pharmaceutical (Isreal) have operations in the region.

3.4.3. Pharmaceutical and medical device manufacturers

This health care segment strengthens the ecosystem in ASEAN through the development, manufacturing and distribution of medicines in local markets (e.g. to the host country's public and private hospitals and other health care service providers) and exports of pharmaceutical products and medical devices. It is the largest segment for FDI and involves many major international MNEs, which have strong proprietary and product brand advantages, large R&D budgets, patents and robust global market networks.

They produce in ASEAN for efficiency-seeking as well as market-seeking reasons. The availability of local partners with strong market networks and suitable local firms as contract manufacturers are important factors for many international pharmaceutical MNEs. These reasons explain the increasing FDI in pharmaceuticals in some ASEAN Member States, such as Viet Nam (box 3.3).

Box 3.3. Foreign pharmaceuticals MNEs in Viet Nam

Foreign MNEs are participating in the growing Vietnamese pharmaceuticals market and using the host country as a manufacturing base. Many enter Viet Nam using the joint venture channel. The rapid growth of pharmaceuticals in Viet Nam is contributing to the increase in FDI in the country in recent years. The country's pharmaceuticals market is forecast to double, from $3.3 billion in 2015 to $6.6 billion in 2020.[a]

The penetration of foreign pharmaceutical groups such as Sanofi (France), Taisho (Japan) and Abbott (United States) in Viet Nam is putting pressure on local companies and at the same time expanding supply in the host market. The government is encouraging domestic drug manufacturing to reduce reliance on imported drugs (particularly patented ones). This is one of the reasons behind the decision of Taisho (Japan) to scale up engagement in Viet Nam. It acquired a 24.4 per cent stake in Hau Giang Pharmaceutical JSC (DHG) (Viet Nam) in 2016. The equity stake and alliance with DHG enable the partners to share knowledge, technology and experience in the pharmaceuticals business.

In 2016, Abbott (United States) acquired Glomed Pharmaceutical Company, a leading Vietnamese drug manufacturer. Nipro Pharma Corporation (Japan) built a $150 million manufacturing plant in Haiphong, which started operation in 2015 and expanded in 2017 in the Saigon Hi-Tech Park to increase capacity to meet growing local demand for medical equipment. The expansion project also focuses on R&D activities.

Sanofi (France) has been in Viet Nam for about 50 years; it is the third-largest market for Sanofi, after India and Indonesia. In 2015, Sanofi constructed its third plant in the Saigon High-Tech Park to expand capacity. About 80 per cent of Sanofi's manufactures are sold domestically and the rest exported to other Asian countries. Sanofi also established a strategic partnership with Vinapharm (Viet Nam) in 2017. Other MNEs have also established a presence in Viet Nam's pharmaceuticals industry to access the local market.

B. Braun (Germany) is involved in the marketing and manufacture of drugs in Viet Nam. It has expanded its production capacity into medical equipment. Dream Incubator (Japan) and ORIX Corporation (Japan) invested in a stake in Santedo Corporation, a holding company operating a wholesale medication operation and pharmacy chain in Viet Nam.

Source: Media, Vietnam Investment Review and company websites.
[a] See Vietnam Investment Review, "Singaporean healthcare gaint wants to acquire $50 million Hanoi-American Hospital", 10 March 2018.

Aside from major pharmaceutical companies, other MNEs are involved in producing and supplying medical equipment, technology and solutions. Many of these MNEs are also involved with multiple business functions from distribution, marketing and manufacturing to R&D activities in ASEAN.

Some major MNEs in the pharmaceuticals and medical equipment segments have also established regional headquarters; in most cases they are based in Singapore. The regional headquarters vary in functions, including activities such as the functions of sales, marketing, logistical coordination and administration, and acts as an investment company.

3.4.3.1. Global pharmaceutical and medical device MNEs

MNEs from Europe, Japan and the United States are present in the region. They also operate through strategic partnerships and as contract manufacturers. Some also have established training centres.

Many of the leading global pharmaceuticals and health care equipment and solution MNEs such as Abbott (United States), GE Healthcare (United States) (section 3.6.3), GlaxoSmithKline (United Kingdom), Omron Healthcare (Japan), Pfizer (United States), Sanofi (France), Siemens Healthcare (Germany) (section 3.6.3) and Takeda (Japan), have a significant presence in ASEAN and in a wide range of operations (table 3.18).

Many of these major health care-related MNEs have been in the region for more than half a century (table 3.19).

Many large international MNEs not only produce for domestic markets but also to export to other ASEAN Member States and globally. These MNEs include Abbott in Singapore, Bayer in Indonesia, Boston Scientific's medical device manufacturing facility in Malaysia, GSK in Indonesia and the Philippines, Johnson & Johnson in Thailand, the Novartis tableting plant and biotech manufacturing facility in Singapore, and Pfizer in and Sanofi in Indonesia.

The region is also a clinical test base for many of the pharmaceutical players. Member States such as Indonesia, Malaysia, the Philippines, Singapore and Thailand are recognized as emerging clinical trial markets (Ali et al. 2018). Chembio Diagnostics (United States) acquired RVR Diagnostics (Malaysia), which provides point-of-care diagnostic tests for infectious diseases, for $3.5 million in 2017.[22] TPG Capital Asia (ultimate parent in United States) acquired Quest Laboratories, a Singapore-based medical laboratory, in 2018. The acquisition is part of TPG's purchase of Healthscope (Australia), an Asian pathology laboratory that operated Quest Laboratories in Singapore and Viet Nam, and Gribbles Pathology in Malaysia.[23]

Global pharmaceuticals are bringing their R&D and clinical tests and trials to the region. For example, GSK (United Kingdom) conducts many clinical trials of medicines and vaccines for tropical diseases in Thailand. In that host country, it also supports R&D projects for vaccines for influenza, human papillomavirus, and anti-Hepatitis B.[24] Takeda (Japan) opened a clinical research centre in Singapore. Other MNEs have also set up R&D facilities in Singapore, such as Philips (Netherlands), which opened a regional oncology centre with a local partner, and Hoya Surgical Optics (United States), which opened a research facility to develop solutions for cataracts. Novartis (Switzerland) has cooperation agreements with hospitals in Viet Nam to conduct clinical studies on medicines for malaria, respiratory and cardiovascular diseases, and skin disorders.[25] In 2018, two Japanese companies, Health Sciences Research Institute (a medical laboratory service provider) and Toyota Tsusho Corporation (a subsidiary of Toyota Motor Corporation), entered into a joint venture with Kalbe Farma (Indonesia) to establish a $7 million clinical laboratory in Jakarta. The venture enables the Japanese partners to make inroads into Indonesia's health care industry. Daewoong Pharmaceutical (Republic of Korea) opened a biotechnology research centre in Indonesia in 2018.

Table 3.18. Global MNEs with multiple business functions in the ASEAN health care industry (Selected cases)

Company	Headquarters	Selected activities in ASEAN
Abbott	United States	• Manufacturing, sales and distribution: Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Importation, sales and distribution: Cambodia
Amgen	United States	• Manufacturing (bio-manufacturing, chemical synthesis manufacturing): Singapore • R&D: Singapore • Marketing, administrative and warehouse: Singapore • Marketing: Thailand • Regional headquarters: Singapore
Baxter International	United States	• Commercial presence: Malaysia, Singapore, Thailand • Manufacturing: Philippines, Singapore, Thailand • Regional headquarters: Singapore
Bayer	Germany	• Manufacturing: Indonesia, Philippines, Singapore Thailand, Viet Nam • Sales and distribution: Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Shared services, information technology-business process outsourcing (IT-BPO): Philippines
Becton Dickinson	United States	• Sales and distribution: Malaysia, Philippines, Singapore, Thailand • Manufacturing: Singapore • Regional headquarters: Singapore • R&D: Singapore
Cardinal Health	United States	• Commercial presence: Singapore • IT-BPO: Philippines
Fujifilm Holdings	Japan	• Commercial presence: Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam • Manufacturing: Singapore • Regional hub: Singapore
GE Healthcare	United States	• Commercial presence: Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam • Manufacturing: Philippines • Research and development: Singapore
GlaxoSmithKline	United Kingdom	• Commercial presence: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam • Manufacturing: Indonesia, Malaysia, Philippines, Singapore, Viet Nam • R&D pilot plant: Singapore
Johnson & Johnson	United States	• Commercial presence: Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Manufacturing: Malaysia, Philippines, Singapore, Thailand • Regional headquarters: Singapore • Leadership laboratory: Singapore • Research and development: Malaysia
Mani	Japan	• Commercial presence: Viet Nam • Manufacturing: Lao People's Democratic Republic, Myanmar, Viet Nam
Medtronic	United States and Ireland	• Commercial presence: Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Manufacturing: Singapore, Thailand • Regional headquarters: Singapore
MSD	United States	• Manufacturing: Indonesia, Malaysia, Singapore • Sales and distribution: Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Regional headquarters: Singapore
Novartis	Switzerland	• Manufacturing: Indonesia, Malaysia, Philippines, Singapore • Sales and distribution: Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Regional headquarters and Institute for Tropical Diseases: Singapore • Research and clinical testing: Viet Nam
Olympus	Japan	• Commercial presence: Malaysia, Thailand, Viet Nam • Manufacturing: Viet Nam • R&D: Singapore
Omron Healthcare	Japan	• Commercial presence: Indonesia, Singapore, Thailand • Manufacturing: Viet Nam • Services: Malaysia
Pfizer	United States	• Sales and distribution: Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Manufacturing: Indonesia, Singapore, Viet Nam • Regional headquarters: Singapore

/...

Table 3.18. Global MNEs with multiple business functions in the ASEAN health care industry (Selected cases) (Concluded)

Company	Headquarters	Selected activities in ASEAN
Philips Healthcare	Netherlands	• Commercial presence: Indonesia, Malaysia, Philippines, Singapore, Thailand • Manufacturing: Malaysia • Regional headquarters: Singapore • Accounting shared services centre: Thailand
Ramsay Health Care	Australia	• Three hospitals in Indonesia • Three hospitals in Malaysia • Nursing college in Malaysia
Roche	Switzerland	• Sales and distribution: Indonesia, Malaysia, Philippines, Singapore, Thailand • Manufacturing: Singapore • Regional headquarters: Singapore • Representative office: Viet Nam • Shared services centre: Malaysia
Sanofi	France	• Commercial presence: Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam • Manufacturing: Indonesia, Singapore, Viet Nam • Regional headquarters: Singapore • Clinical research: Singapore
Shimadzu	Japan	• Commercial presence: Malaysia • Manufacturing: Philippines, Viet Nam • R&D: Singapore
Siemens Healthcare	Germany	• Commercial presence: Indonesia, Malaysia, Singapore, Thailand, Viet Nam • Manufacturing: Indonesia, Malaysia, Thailand
Stryker Corporation	United States	• Commercial presence: Malaysia, Singapore, Thailand • Regional headquarters: Singapore
Takeda Pharmaceuticals	Japan	• Sales and distribution: Malaysia, Philippines, Singapore, Thailand • Regional headquarters: Singapore • Development of vaccines: Singapore
3M	United States	• Manufacturing: Indonesia, Malaysia, Singapore, Thailand • Sales and distribution: Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam • Supply chain and business operations centre: Singapore • R&D: Singapore • Shared services, IT-BPO: Philippines

Sources: Company annual reports and websites.

Table 3.19. The long presence of major pharmaceutical and medical equipment and solution MNEs in ASEAN (Selected cases)

MNE	Headquarters	Year of presence in selected ASEAN countries
Sanofi	France	Indonesia: 1956; Viet Nam: at least 1968
Johnson & Johnson	United States	Indonesia: 1959; Malaysia: 1960; Philippines: 1956; Thailand: 1947
GE	United States	Indonesia: 1940; Malaysia: 1975; Philippines: 1935; Singapore: 1969; Thailand: early 19th century
Siemens	Germany	Indonesia: 1855; Malaysia: 1908; Philippines: 1894; Thailand: 1900
Abbott	United States	Indonesia: 1978; Malaysia: 1987; Philippines: 1938; Singapore: 1970; Thailand: 1968
GlaxoSmithKline	United Kingdom	Indonesia: 1970's; Malaysia: almost 50 years; Philippines: 1963; Singapore: 1972; Thailand: 1964
Bayer	Germany	Indonesia: 1957; Malaysia: 1967; Philippines: 1962; Singapore: 1979; Thailand: 1962
Takeda	Japan	Indonesia: 1971; Philippines: 1968; Singapore: 2008; Thailand: 1978

Sources: Websites and annual reports of companies.

Many leading global pharmaceuticals companies have evolved their businesses from the production of pharmaceuticals to also include diagnostics and medical devices and solutions (from home care to integrated hospital equipment and medical technology). Many of them have pursued integrated operations from pharmaceuticals to health care solutions, and from technology development to life sciences. Such expansion along the health care value chain is made possible by their large resources, their global networks, and their access to expertise and advanced research and technology. Some global medical device manufacturers, such as GE Healthcare (United States), Siemens Healthcare (Germany) and Philips (Netherlands) have expanded their portfolio in health care in ASEAN into medical technology and medical solutions.

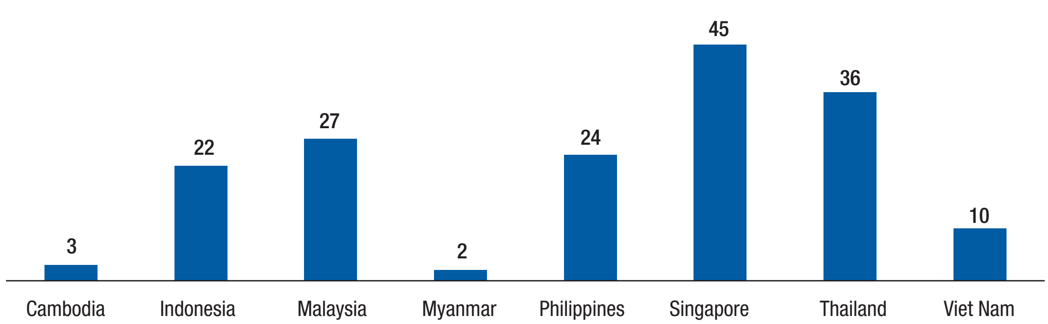
There are more M&As in pharmaceuticals than in other health care segments (section 3.3.2). For instance, Abbott Laboratories (United States) has acquired Glomed, a Vietnamese drug manufacturer; Adamed Group (Poland) acquired a stake in Davipharm, Vietnam's fastest-growing pharmaceutical company, for $50 million; CFR International (Chile) acquired Domesco JSC (Viet Nam), the third-largest listed drug maker in Viet Nam, for $63 million; and Daiwa-SSI Fund (Japan) acquired a 20 per cent stake in CVI Pharma (Viet Nam).[26]

Fifty largest pharmaceutical MNEs

Of the 100 largest pharmaceuticals companies in the world, 79 have a presence in ASEAN. Many of the top 50 have presence in multiple ASEAN Member States (annex table 3.2). Singapore hosts most of these MNEs, followed by Thailand and Malaysia (figure 3.5).

Many of these top 50 have established multiple subsidiaries with different business functions in the same host country. Most have a sales and distribution subsidiary in a host country. Some have manufacturing operations, research facilities and back-office activities in some ASEAN Member States. The top 50 also have subsidiaries in ASEAN that they use as hubs to export to other Member States and further afield. GlaxoSmithKline (United Kingdom) has subsidiaries with different functions in Cambodia, Indonesia, Malaysia, the Philippines,

Figure 3.5. The 50 largest pharmaceutical MNEs in ASEAN, location of ASEAN subsidiaries, 2018 (Number)

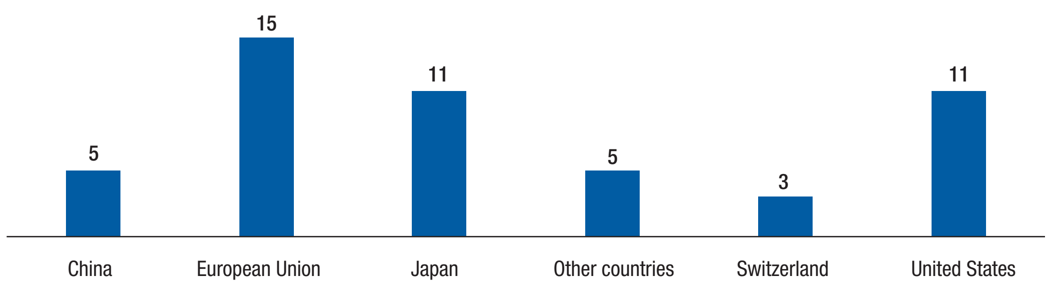


Source: Based on annex table 3.2.

Singapore, Thailand and Viet Nam. In Singapore, it has two global manufacturing supply sites, a vaccines manufacturing site, an R&D facility and a regional headquarters. In Indonesia, it has two global manufacturing supply facilities and a commercial office. In the Philippines, it has two distribution, marketing and sales operations. In Malaysia, GSK operates a business service centre and a global hub, which consolidates the organization's global and regional service delivery in IT, finance, employee services and other internal business functions. In Viet Nam, it has a research and manufacturing facility and another for sales activities. In Cambodia and Thailand its subsidiaries coordinate with local distribution partners for sales.

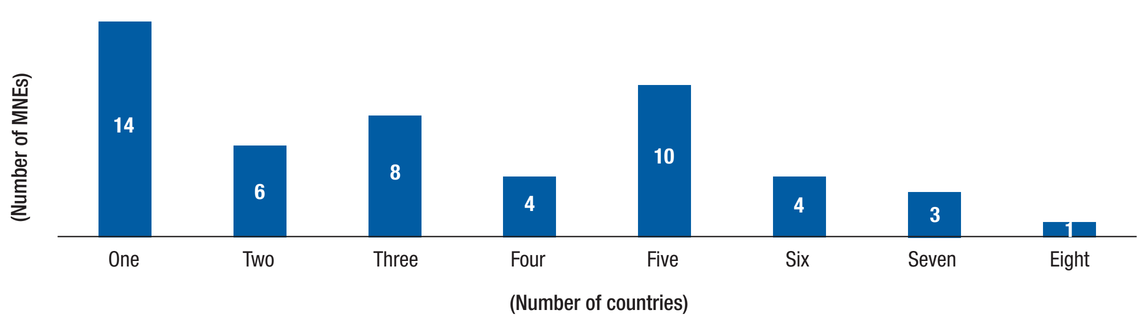
The top 50 are dominated by MNEs from developed countries because of their patent and proprietary advantages. The European pharmaceuticals MNEs are the majority in the top 50, followed by MNEs from the United States and Japan (figure 3.6). Three-fifths of the top 50 operate in at least three ASEAN Member States (figure 3.7), with Bayer (Germany) in eight Member States and seven others with a presence in more than six Member States. The 10 largest pharmaceutical companies operate in six ASEAN Member States, on average. However, 14 of the top 50 operate in only one ASEAN country. Chinese pharmaceuticals companies (5)

Figure 3.6. The 50 largest pharmaceutical companies in ASEAN, investor home-country, 2018 (Number)



Source: Based on annex table 3.2.

Figure 3.7. The 50 largest pharmaceuticals MNEs in ASEAN, number of locations in ASEAN Member States, 2018 (Number of countries)



Source: Based on annex table 3.2.

are also present but mainly in Singapore. Most of the pharmaceuticals companies in Singapore operate in the host country's science parks, with links to Singapore research institutions and domestic pharmaceuticals companies (*AIR 2017*).

3.4.3.2. ASEAN pharmaceutical companies

Many ASEAN pharmaceutical companies focus on producing for and serving their respective domestic markets. These local companies have manufacturing facilities to produce their own brands of generic drugs and serve niche markets. Many are contract manufacturers to foreign and local pharmaceuticals companies (table 3.20). Their contract services increase the competitiveness of their countries for FDI in pharmaceuticals.

Some ASEAN pharmaceutical companies have established joint-venture partnerships and strategic alliances with major MNEs and other ASEAN pharmaceutical companies, including as contract manufacturers (box 3.4). Local knowledge and business networks play a role in making them a local partner of choice. They have a better understanding of local culture and language, consumer behaviour and domestic distribution points.

Box 3.4. Partnership arrangements between ASEAN and foreign pharmaceutical companies

Many pharmaceutical MNEs enter into joint-venture arrangements with local partners to access local markets and business networks. For instance, Kalbe Farma (Indonesia) established a joint venture with Health Sciences Research Institute (Japan) and Toyota Tsusho Corporation (Japan) to operate a laboratory clinic that performs tests for molecular diagnostics and cytogenetics. The business network of Kalbe Farma provides the Japanese partners access to the Indonesian health care market.

Dexa Medica Group (Indonesia) has developed strategic partnerships and alliances with global pharmaceutical companies such as Pfizer (United States), Glaxo Smith Kline (United Kingdom), Novartis (Switzerland) and CSL Behring (Australia) to manufacture and distribute pharmaceutical products. PT Perusahaan Dagang Tempo (Indonesia) distributes pharmaceutical and consumer health products to major MNEs and local companies in Indonesia.

Berlin Pharmaceutical (Thailand), which manufactures and distributes pharmaceuticals, has partnership arrangements with foreign companies (e.g. Acino Pharma (Switzerland), Apotex (Canada), Ethypharm (France) and Intas (India)). It also distributes the medications and pharmaceutical products of these partners in Thailand.

E.L. Laboratories (Philippines) provides industrial pharmaceutical manufacturing solutions to domestic and multinational pharmaceutical companies in the Philippines. It is a specialty contract manufacturer for clients such as Bayer (Germany) and Servier (France).

PT Otto Pharmaceutical Industries (Indonesia), a subsidiary of the Indonesian pharmaceutical Mensa group, entered into a joint venture with Chong Kun Dang Pharmaceutical Corporation (Republic of Korea) to manufacture oncology products in Indonesia. The two companies have opened a $30 million factory in 2019. Kalbe Farma (Indonesia) has established a joint venture with Genexine (Republic of Korea) to produce biological drugs and the biologic drug raw materials.

Sources: Media information and company websites.

Table 3.20. ASEAN pharmaceutical contract manufacturers (Selected cases)

Company	Location	Remarks	Foreign customers or foreign tie-up arrangements
PT Ikapharmindo Putramas	Indonesia	Develops and manufactures pharmaceuticals, cosmetic and baby care products	Produces under license for major companies in Australia, Europe and the United States and has strategic business alliances with foreign companies
PT Sydna Farma Indonesia	Indonesia	Provides pharmaceuticals contract manufacturing and product licensing to other companies	Produces products based on licenses for foreign pharmaceuticals companies and as a contract manufacturer for major local pharmaceuticals companies. Takeda Pharmaceutical (Japan) in Indonesia is a partner of Sydna Farma's Indonesian parent company.
PT Ferron Pharmaceuticals	Indonesia	Provides pharmaceuticals contract manufacturing and generic drug manufacturing services	Works under partnership arrangements, has licensing arrangements with foreign MNEs and manufactures products for them
PT Darya-Varia Laboratoria	Indonesia	Manufactures the company's own brands and provides contract manufacturing services to local and multinational companies	Partners with Dr. Falk GmbH & Co. (Germany), IBSS Biomed (Poland), PT Procter and Gamble (Indonesia), PT Servier Indonesia (a subsidiary of Servier Laboratories (France)), PT Boehringer Ingelheim Indonesia (a subsidiary of Boehringer Ingelheim (Germany)) and Neostrata Company (United States)
Sunward Pharmaceutical (Malaysia) and Sunward Pharmaceutical (Singapore)	Malaysia and Singapore	Operate two production factories that offer development and manufacturing services, and contract manufacturing services to other companies for generic drugs, health supplements and over-the-counter items	Maintain business alliance arrangements with Aventis Behring (United States) for blood products, supply innovative drugs (therapeutics and OTC medication) to global customers, maintain business alliance agreement with Nichi-Iko Pharmaceutical Group (Japan)
CCM Pharmaceutical	Malaysia	Provides contract manufacturing for multinational pharmaceutical companies and exports its own products throughout ASEAN, Asia-Pacific and other parts of the world	Distributes insulin and insulin delivery devices from Biocon Ltd (India)
Pharmaniaga Manufacturing	Malaysia	Manufactures and supplies generic medicines and offers contract manufacturing services to local and foreign companies	Operates in Indonesia under PT Errita Pharma (manufactures and sells pharmaceutical products) and PT Millenium Pharmacon International (distributes and trades pharmaceuticals, food supplements and diagnostic products)
SG Global Biotech	Malaysia	Manufactures its own brand and provides contract manufacturing services to others	Provides contract manufacturing services of herbal natural medicine, food supplements, and health food for clients in Malaysia and from overseas
Pharma Industries Philippines (a subsidiary of Interthai Pharmaceuticals Thailand)	Philippines	Provides pharmaceutical contract manufacturing with a client base of over 50 multinational companies	Clients include 3M (United States), Abbott (United States), Allergan (Ireland), Altana Pharma (Germany), Aventis (France), Bayer (Germany), Bristol-Myers Squibb (United States), Merck (Germany), Eisai (Japan), Glaxo Smith Kline (United Kingdom), GX International (Philippines), Natrapharm (Philippines), Novartis (Switzerland), Solvay (Belgium), United Laboratories (Philippines) and Yamanouchi (Japan)
E.L. Laboratories	Philippines	Provides contract manufacturing for leading Filipino and multinational pharmaceuticals companies	Customers include Bayer (Germany) and Servier (France)
Lloyd Laboratories	Philippines	Provides contract manufacturing for local and foreign companies	Has manufacturing facilities in Indonesia (PT Lloyd Pharma Indonesia), offices in Singapore (subsidiary), Thailand (subsidiary) and Viet Nam (representative office)
Beacons Pharmaceuticals	Singapore	Manufactures generic pharmaceuticals, and provides contract manufacturing to other companies	Clients include Vetpharm Lab (Singapore), Borsch Med (Singapore), Khunaco Import Export Co. (Cambodia), Asiapharm Biotech (Singapore) and Hong Kiat Trading (Brunei Darussalam). It has pharmacy operations in Malaysia and a joint venture in China.
Cleo Singapore	Singapore	Offers contract manufacturing services and manufactures its own pharmaceutical products	..
Pacific Healthcare	Thailand	Offers contract manufacturing services to other companies	Customers include Aqvida GmBH (Germany), Chiesi Farmaceutici Spa (Italy), Guerbet (France), IPCA Laboratories (India), Newport Pharmaceutical Limited (Ireland), Normon Laboratories (Spain) and TEVA Pharmaceutical Industries (Israel)
PKFB Pharmaceutical Manufacturing	Thailand	Has facilities and capacity to fabricate products for client under their own brands	..
Interthai Pharmaceutical	Thailand	Offers manufacturing and packaging services for pharmaceuticals, food supplements, cosmetics and animal products	Customers include Otsuka (Japan), Takeda (Japan), Paradigm Pharma (United States), Nutramedica (Philippines), Bausch Health (Canada), Astra Zeneca (United Kingdom), Pfizer (United States), Sanofi (France), Merck (United States), Astellas (Japan), Servier (France), Eisai (Japan) and Daiichi Sankyo (Japan)

Sources: ASEAN Investment Report 2019 research, based on company websites and annual reports.

Some of these local pharmaceuticals and contract manufacturers have internationalized to other ASEAN Member States. They include Unilab (Philippines), which has manufacturing facilities in four other ASEAN Member States (Indonesia, Malaysia, Singapore and Viet Nam), and Kalbe Farma and Dexa Medica (both Indonesian pharmaceutical companies), which have operations in other ASEAN Member States (section 3.6.2). Pharmaniaga (Malaysia) operates in Indonesia with manufacturing, distribution and trading functions; Hovid (Malaysia) has subsidiaries in the Philippines and Singapore; and Lloyd Laboratories (Philippines) has established multiple subsidiaries in ASEAN (manufacturing facilities in Indonesia), a subsidiary in Singapore and Thailand, and a representative office in Viet Nam. Sunward Pharmaceuticals (Singapore) has expanded to Malaysia.

Some ASEAN pharmaceutical companies internationalize to grow and expand abroad because of limited markets and cost challenges at home. For instance, local companies in Singapore and Malaysia have internationalized to lower costs or diversify geographical operations to overcome such challenges at home.

ASEAN pharmaceutical companies also have established strong business linkages with international pharmaceutical MNEs by using those MNEs as contract manufacturers. Pascual Laboratories (Philippines) manufactures 75 per cent of the product requirements in the Philippines and the remaining 25 per cent are imported or contracted out to companies such as Mundi Pharma (United States), Optaderm (Canada) and VistaPharma (United States).

Other factors that have motivated ASEAN pharmaceutical companies to internationalize include the need to operate close to customers by following them to markets abroad (e.g. neighbouring ASEAN Member States), as well as investment opportunities and increasing demand for pharmaceutical products in host markets such as in the CLMV countries. Home-grown ASEAN pharmaceutical companies first export their products to overseas markets through the appointment of agents in host countries and later establish distribution and marketing subsidiaries abroad (often with local partners) (e.g. Kalbe Farma (Indonesia), Dexa Medica (Indonesia), United Laboratories (Philippines)) (section 3.6.2).

3.4.4. Health care start-ups and innovators

Start-ups play an important role in strengthening the health care ecosystem. This cohort of health care actors is growing rapidly because of emerging opportunities brought about by digital technologies and medical innovation. Increasing interest by VCs and PEs, including more opportunities to access their funding, have led to the strong environment in the region for start-ups.

Health care start-ups offer a wide range of technological and medical solutions, from surgical robotics, artificial intelligence (AI) and tele-health to data analytics and cloud applications (section 3.5). They are involved in providing health solutions to assist patients, improving surgical procedures, distributing medical equipment, developing AI and data analytics applications, and delivering tele-health and telemedicine services (box 3.5).

Box 3.5. Definitions of tele-health and telemedicine

A common feature of tele-health and telemedicine is that they both use information and communication technologies to overcome geographical barriers in providing clinical support with the goal of improving health outcomes.

Tele-health
Tele-health involves the use of telecommunications and virtual technology to deliver health care outside of traditional health care facilities. For example, it could include virtual home health care, which may involve guidance in certain procedures for patients or elderly people in their homes. Health care workers in remote areas could use tele-health to obtain guidance from professionals elsewhere on the diagnosis, care and referral of patients.

Telemedicine
Telemedicine is a subset of tele-health. WHO defines telemedicine as "The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities" (WHO 2010, p. 9).

The distinguishing feature of telemedicine is that it is restricted to services delivered by physicians, whereas tele-health is services provided by health professionals in general, which encompasses nurses, pharmacists and others.

Source: World Health Organization.

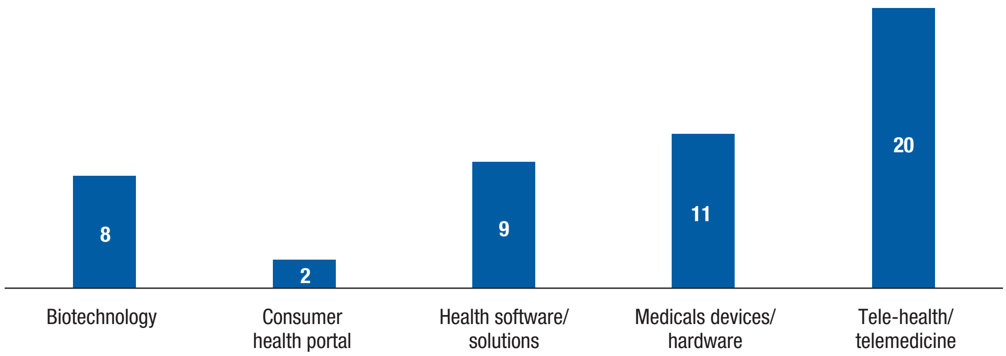
They innovate and initially serve their home market. However, some quickly scale up and expand to neighbouring ASEAN Member States to diversify their geographical coverage and to exploit their proprietary advantages through FDI. First-mover advantages and success in fundraising for expansion also play roles in encouraging start-ups to venture abroad quickly. Some start-ups have established strategic partnership with bigger corporations for the delivery of care services, which also facilitated their internationalization.

Top 50 most-funded medical technology start-ups

The top 50 of these start-ups in ASEAN had raised nearly $1 billion in venture capital funding as of July 2019, with nearly 80 per cent raising their funds since 2017. This underpins the rapid growth in fundraising by health care start-ups in the region. These firms mostly operate in tele-health, medical devices, biotechnology and health solutions segment (figure 3.8).

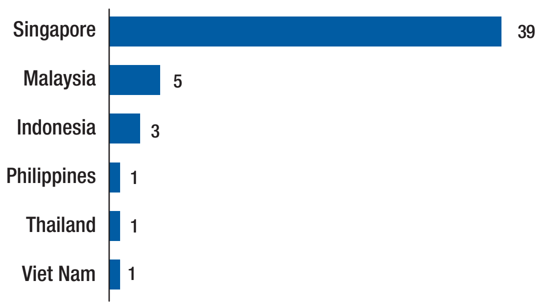
A majority of these top 50 are based in Singapore (39), and they accounted for more than 88 per cent of all funds raised by start-ups in the region (figures 3.9 and 3.10). Singapore's more developed start-up and medical ecosystems explain the high concentration in that country (*AIR 2017, 2018*).

Figure 3.8. Fifty most-funded medical technology start-ups in ASEAN, by specialization, 2019
(Number of companies)



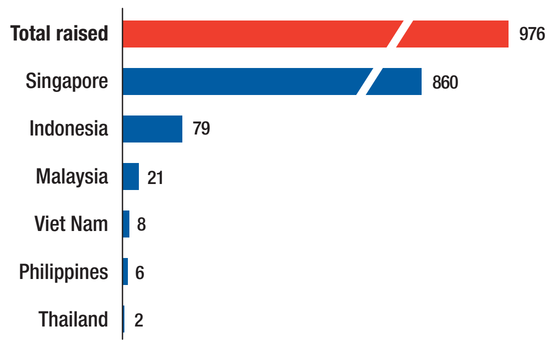
Source: Based on annex table 3.3.

Figure 3.9. Fifty most-funded medical technology start-ups in ASEAN, 2019: country of origin (Number of companies)



Source: Based on annex table 3.3.

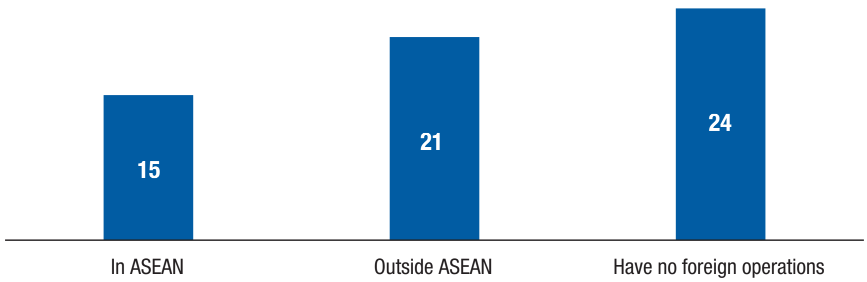
Figure 3.10. Fifty most-funded medical technology start-ups in ASEAN, 2019: country of origin (Millions of dollars)



Source: Based on annex table 3.3.

Some of these start-ups have not yet internationalized. They serve only domestic markets because of large home markets that have yet to be fully tapped. Halodoc (Indonesia), a telemedicine system, helps patients consult doctors through messaging and calling services in Indonesia. Some start-ups are born global because the type of technology they provide enables them to reach out to global markets. Element (Singapore), a biometric identification software used on mobile devices, targets countries in Africa and Asia that lack basic health services. It has offices in Indonesia, the Philippines and Singapore, as well as in Kenya, Nigeria and the United States. Only 15 of the top 50 have a physical presence in another ASEAN country (figure 3.11).

Figure 3.11. Fifty most-funded medical start-ups in ASEAN, 2019: locations of foreign operations
(Number of countries)



Source: Based on annex table 3.3.
Note: Some start-ups have established a presence in ASEAN and concurrently outside the region.

Many of those that do not have a presence in neighbouring countries have indicated interest in expanding in the region as they scale up. They are also in their early stages of development and of the fundraising exercise. Another reason why these firms are yet to open offices in another ASEAN country is the standardized nature of the type of medical technology, which makes it possible to conduct cross-border business across ASEAN without having a physical base in the target country. Such medical technology start-ups use their home markets as a base to expand overseas. MyDoc (Singapore), a digital health care platform, connects patients to providers and health services. It offers such services in Malaysia, the Philippines, Thailand and Viet Nam but does not have offices in these Member States.

Some of the top 50 indicated that their primary reason for raising funding is to internationalize and expand to markets abroad. Homage (Singapore), a tele-health company, has raised financing to expand to new Asian markets. Joi Health (Viet Nam), a tele-health company, raised $5 million from Monk Hill Ventures (Singapore) in 2019 to expand across Southeast Asia. PurelyB (Malaysia), a consumer health portal, has raised funding to expand to Indonesia, Singapore and Hong Kong (China). Connexions Asia (Singapore) has operations in Indonesia and is planning to expand to Malaysia, the Philippines and Thailand. mClinica (Philippines), a provider of mobile health technology for pharmacies and the pharmaceutical industry, expanded in Southeast Asia after getting funds from Kickstart Ventures (a corporate VC associated with Globe Telecom (Philippines)). Kickstart, together with 500 Startups (United States) and IMJ Investment (Japan), invested in mClinica for its expansion in Indonesia, Thailand and Viet Nam. Ucare.AI (Singapore), an AI-based disease prediction solution for health care professionals, is planning to expand into other ASEAN Member States.

Many of these start-ups have opened operations outside ASEAN, such as in the United States, to tap into the medical ecosystems of other countries (e.g. Biofourmis (Singapore) and Tessa Therapeutics (Singapore)). More than two-fifths of the top 50 have foreign operations outside

ASEAN. The driving force to expand abroad is not market-seeking reasons but research and talent-seeking motives (e.g. a subsidiary of Engine Biosciences (Singapore) in San Francisco employs mainly scientists).

Some start-ups partner with corporate VCs to expand into new digital health areas. Others have established partnerships with large hospital groups and significant organizations in other ASEAN Member States to scale up (box 3.6).

Outside the top 50 start-ups are other players engaged in operations and services across ASEAN, such as LumaHealth (Thailand), a health insurance platform that offers insurance plans in Cambodia, Myanmar, Thailand and Viet Nam. CyGen (Malaysia), a cloud-based, patient-centric, cognitive preventive health care platform, has operations in Malaysia and India and plans to expand to other ASEAN Member States. Geob International (Malaysia), which provides smart wearables for diabetic patients, has expanded its operations to Singapore.

Box 3.6. Health care start-ups: partnerships with larger corporations

Some start-ups have entered into partnerships with major corporations to strengthen their place in the value chain, to scale up or to expand the customer base for the application of their technologies.

In 2018, Siloam Hospital Group, Indonesia's largest health care group, partnered with BookDoc (Malaysia), an online platform for connecting patients and health care professionals. Through the partnership, Siloam gained access to BookDoc's expanding network of patients across ASEAN. BookDoc, established in 2015, now operates in five Member States. The start-up has also partnered with Malaysian health care providers such as National Heart Center, Sime Darby Healthcare and KPJ Healthcare; in Singapore with NTUC, Singapore Medical Group, Pacific Healthcare Holdings, Asian American Medical Group and Q&M Dental Care; and in Thailand with Bumrungrad Hospital.[a]

In some cases, some start-ups operating in e-commerce or other digital domains invest in health start-ups to form strategic partnerships. For instance, on-demand app Go-Jek (Indonesia) and e-commerce platform Blibli (Indonesia) partner with Halodoc (Indonesia). The strategic partnership involves Go-Jek's motorcycle delivery in sending out medicine. Go-Jek has its own medicine delivery feature (i.e. Go-Med) that links with Halodoc. Blibli, a technology company, helps Halodoc with technology support and advice on how to scale.

Sources: Media and company websites.
Notes: "BookDoc: About us" (www.BookDoc.com).

3.4.5. Services supporting health care development

Other companies also support the development of the health care industry. These companies include those in insurance, IT-BPM services, logistics and specialized hospital cleaning services.

3.4.5.1. Health insurance

Health insurance provides coverage to hedge against the risk of significant out-of-pocket health care costs and uncertainty about the need for medical treatment. It plays an important role in supporting the development of the health care industry through providing insurance coverage. There are three main categories of insurance: national health insurance by the public sector, corporate health insurance and private health insurance. Private health insurance involves two main groups of actors: insurance MNEs that offer health insurance in host countries and in ASEAN, and hospital groups in the region that provide health insurance plans to policyholders.

The provision of health insurance in ASEAN is dominated by major insurance MNEs, mainly from developed countries, and many have been in the region for decades. For instance, Aetna (United States) and Cigna (United States) have operations in Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. Similarly, AXA (France) has a commercial presence in a number of ASEAN Member States.

Insufficient hospital beds and facilities, possible high out-of-pocket costs and customers' desire to have quick access to health care continue to drive the demand for private health insurance. This has translated into business opportunities for health insurance providers, including insurance MNEs.

The strong network, partnership and collaboration between insurance companies and health care service providers (hospitals, medical centres, government) highlights the growing interconnection of health care players along the value chain. Many telemedicine businesses are linked with health insurance, for example; they settle the bills with the insurance companies without involving patients (e.g. DocDoc (Singapore)).

Within the health insurance industry, companies are also increasingly moving towards digital environment through digitalizing records of policyholders, claims and other information for data analysis purposes. There are also links between insurance companies and tele-health.

Health care service providers are working closely with insurance companies to develop insurance plan to meet patients' needs. In expanding their policyholder base, insurance companies are developing partnerships and alliances with various stakeholders including hospitals, government and tele-health companies, as well as policyholders themselves (box 3.7). They are also using digital technology and AI to support their operations through data analytics and in improving the effectiveness of their marketing reach.

Box 3.7. Insurance MNEs with strategic partnership arrangements in ASEAN

Allianz (Germany) expanded its network and customer base in the region in 2018 with new partnerships to reach out to new customers. It partners with BDMS (Thailand), PolicyStreet (Malaysia) (a fast-growing start-up) and Go-Jek (Indonesia) (a rapidly growing mobile platform). As part of its strategy to expand network and customer base in health business, it invested $35 million in Go-Jek in 2018. The investment is an extension of the existing insurance partnership.[a]

Aetna (United States) has an agreement with Swiss Life to offer customers of Swiss Life expatriate health care coverage in Southeast Asia. It has sold health insurance in Singapore since 2012.

Cigna (United States), through an arrangement with Parkway Shenton (Singapore) (a large private medical operator), provides customers with access to health care services. The arrangement covers more than 100 health care centres and clinics.

CS Global Health (Hong Kong, China) has collaborative and strategic partnerships with many hospitals, medical centres, and medical assistance companies in many countries, including in Malaysia and Thailand. In Thailand, it partners with Bangkok Hospital and Thonburi Bamrungmuang Hospital, and in Malaysia with Penang Adventist Hospital and Loh Guan Lye Specialists Centre in offering health insurance services.

MSH (China) signed strategic cooperation agreements with hospitals in Malaysia, Singapore, Thailand in 2015 to provide health insurance coverage to policyholders (box table 3.7.1)

Box table 3.7.1. MSH strategic partnerships in ASEAN Member States (Selected cases)

ASEAN country	Partners
Malaysia	KPJ Tawakkal Specialist Hospital, Tropicana Medical Centre, Ramsay Sime Darby Health Care
Singapore	Parkway Shenton, Parkway Hospitals, Tan Tock Seng Hospital, International Medical Clinic, FeM Surgery, SingHealth, PanAsia Surgery, Raffles Hospital/Raffles Medical Clinics, National University Hospital International Patient Liaison Centre, Jude Lee Gastro Surgery, Clinic for Digestive Surgery.
Thailand	Bangkok Hospital Group, Bumrungrad Hospital, Phyathai 2 International Hospital, Samitivej Hospitals.

Source: MSH (China).

Sources: Company websites and annual reports.

[a] Allianz: Asia Pacific, “Allianz delivers solid half-year performance in Asia”, 8 August 2018.

ASEAN hospital groups

Some ASEAN hospital groups have also developed their own health insurance products and services. The Raffles Medical Group (Singapore) has established Raffles Health Insurance (RHI). One of its products is Raffles Shield, which is integrated with and complements the public health plan (Medishield Life) for Singaporeans. RHI partnered with Bupa International (United Kingdom) to establish World Health Options. Insured by RHI and administered by Bupa, World Health Options is Raffles Medical Group’s modular international health insurance plan for individuals and families.

BDMS has established a health and life insurance operation within the group. In 2015 and 2016, the group's health insurance contributed to more than 22 per cent of patient revenue payouts. It has partnered with the German insurance company, Allianz Ayudhya Assurance in Thailand, to offer health insurance riders to patients. St. Luke's Medical Center (Philippines) has partnered with Aetna International (United States), Prudential (United Kingdom), Bupa International (United Kingdom) and eight other insurance providers in providing health insurance coverage.

3.4.5.2. Health care-related IT-BPM

IT-BPM activities facilitate and support the operations of upstream health companies (e.g. pharmaceuticals and insurers) and providers (e.g. hospitals) by offering IT-BPM services to companies within the same group of MNEs (shared services centres) and to third parties. Outsourcing back-office and IT functions to health IT-BPM companies helps improve the efficiencies and operations of upstream health care actors.

There are three types of health IT-BPM companies in ASEAN: (i) MNEs that have established shared service centres, (ii) independent IT-BPM MNEs that provide services to third-party clients, including those based in ASEAN, and (iii) local IT-BPM companies that serve third-party customers. Most health IT-BPM companies (shared service centres and independent IT-BPM companies) in ASEAN are located in the Philippines, because of the country's cost advantage, language skills and supportive national policy towards the development of the business process outsourcing (BPO) and IT-BPM industry. The health IT-BPM companies in the Philippines are involved in data encoding, transcribing and related services (table 3.21).

Table 3.21. Health IT-BPM enterprises in the Philippines, 2018 (Selected cases)

Enterprise	Nationality	Activity
724Care Inc	61% Filipino; 39% Canadian	Provides IT-enabled services, data encoding, transcription, BPO and related services
Acusis Philippines	99.988% United States; 0.012% Filipino	Provides IT-enabled services such as medical transcription services
Armco Healthcare Services	99.99% United States; 0.01% Filipino	Provides BPO services such as medical coding and other related services
Boomerand Corporate Outsourcing Solutions	67% Filipino; 33% United States	Provides medical and legal transcription services
Codes and Crew Outsourcing Hub	80% Filipino; 20% Australian	Gathers information on needs of diabetic patients into electronic form for the use of the industry
Conduent Business Services Philippines	..	Processes health care transactions
Edata Services Philippines	99.97% United States; 0.02% Filipino; 0.01% Mexican	Provides medical and legal transcription services for the health care business and legal process outsourcing market
Etcit Inc	100% Filipino	Engages in medical transcription, data warehousing and management, software development and application
Inforesta Philippines	99.7% Japanese; 0.3% Filipino	Provides computer-based data processing including medical information services, database research and related services
M.T. Safe Transmission of all Transciptions	90% United States; 10% Filipino	Provides medical transcription services
Miramed Philippines	100% United States	Provides medical coding and medical auditing services
Prescribe Corporation	99.92% Hong Kong (China); 0.048% Filipino; 0.032% United Kingdom	Provides medical and legal transcription IT services
T.B.P.O. Transcription and BPO	100% Filipino	Provides medical transcription and data entry
Unlimited Transcription Solutions	100% Filipino	Provides transcription services in the form of medical transcription, legal transcription, business transcription, medical billing and encoding

Source: PEZA.
Note: As of 30 September 2018.

As an example of shared service centres of MNEs, GlaxoSmithKline (United Kingdom) established a subsidiary in Malaysia to provide IT-BPM services to its global group of companies. The business services centre of Bayer (Germany) in the Philippines develops and implements IT-based designs and solutions to support the group's global operation. 3M (United States) opened a global service centre in the Philippines to provide shared services in processing finance, sourcing and procurement, and human resource requirements for the group. Cardinal Health (United States) has shared services operation in the Philippines to serve clients worldwide. Shearwater Health Global Healthcare Solutions (United States) has back-office operations in the Philippines, where health care companies outsource clinical and administrative activities to it. Similarly, other health care-related MNEs such as Boehringer Ingelheim (Germany) and Optum (United States) have established IT-BPM centres in the Philippines to provide services to companies within the group, and also to clients based in ASEAN and elsewhere.

3.4.6. VC and PE investors

The role of VCs and PEs is important in supporting the development of medical technology start-ups in ASEAN (section 3.4.4). Many foreign and regional VCs and PEs have invested in health care infrastructure and in start-ups. Most regional VCs, excluding corporate VCs, operate in Singapore.

Private equity companies such as Bowsprit Capital and Clermont (both based in Singapore) and Navis Capital (Malaysia) have investments in hospitals in ASEAN. The Clermont Group (Singapore) has investments in hospitals in the Philippines and Viet Nam. In 2013, it acquired an 80 per cent stake in Hoan My Medical Corporation (Viet Nam), which has 14 hospitals and six clinics. It is also a significant shareholder in Medical City, a leading private health care provider in the Philippines, and has invested in medical start-ups in telemedicine such as in Halodoc (Indonesia) and Vie Vie (Viet Nam).

Navis Capital (Malaysia) signed an agreement to invest in PT Tawada Healthcare, one of the largest medical device distributors in Indonesia, and has an investment in Hanoi French Hospital. Tawada partners with many international health care equipment manufacturers such as Carestream (United States), Siemens (Germany), Drager, Samsung (Republic of Korea), Medtronic (Ireland), Abbott Vascular (United States), Smith & Nephew (United Kingdom) and Baxter Healthcare (United States) to distribute their products in Indonesia.

Quadria Capital (Singapore) has over $1.8 billion in assets under management and investments in 18 companies across the Asia-Pacific region. Its investments in ASEAN include Lablink (a hospital laboratory chain in Malaysia offering diagnostics services), MWH Holdings (a Singapore-based multispecialty care group) and the 220-bed FV Hospital in Viet Nam (section 3.6.4).

TE Asia Healthcare (Singapore) invests, owns and operates various specialty centres and hospitals in ASEAN such as a specialty cardiac hospital in Malaysia; and oncology hospitals in Viet Nam and Indonesia (section 3.6.4).

Most investors for leading tele-health start-ups in the region are from the United States (e.g. 500 Startups, Fenox Venture Capital, B Capital Group, Endeavor Catalyst) and Singapore (e.g. Golden Gate Ventures, Singtel Innov8, Spiral Ventures, Jungle Ventures, NSI Ventures, UOB Ventures, EDBI). Other funders include VCs and high net worth individuals from China, Hong Kong (China) and Japan. The top 10 ASEAN tele-health start-ups have Singapore VCs involved as either leading the funding round or participating as investors (table 3.22).

Table 3.22. Top 10 most-funded ASEAN tele-health start-ups and their Singapore-based investors, 2019

Tele-health start-up	Headquarters	Total funds raised (Millions of dollars)	Singapore-based investors
Halodoc	Indonesia	65	NSI Ventures, UOB Venture, Singtel Innov8, Clermont Group
Connexions Asia	Singapore	58	Singtel Innov8, Heritas Venture Fund, EDBI
DocDoc	Singapore	18	Jungle Ventures
Alodokter	Indonesia	12	Golden Gate Ventures, Jungle Ventures
mClinica	Singapore	6	Patamar Capital, Spiral Ventures
Lifetrack	The Philippines	6	UPB Venture
Homage	Singapore	4	Golden Gate Ventures, SeedPlus, HealthXCapital, Capikris Foundation
Medical Departures	Thailand	2	Cento Ventures, OPT Sea (Japan)
Healint	Singapore	1	Wavemaker, National Research Foundation, JFDI Asia
Healthmetric	Malaysia	1	Spiral Ventures

Source: Crunchbase.

VCs that have invested in the top 50 most-funded medical technology start-ups include Norwest Venture Partners, Qualcomm Ventures, 500 Startups (all based in the United States), Softbank (Japan), and NS Blackbird and Ventures (Australia). Those based in ASEAN include Golden Gate Ventures (Singapore) investing in tele-health company Alodokter (Indonesia); GDP Venture (Indonesia), investing in Element (Singapore); and Intudo Ventures (Indonesia), investing in Nalagenetics (Singapore).

Corporate VCs in ASEAN have also been active in investing in ASEAN's health start-ups. They include Genting (Malaysia) in TauRx Therapeutics (Singapore), Venturra Capital (Indonesia) in Kfit (Malaysia), Hoya (Japan) in EndoMaster (Singapore), and UOB Ventures (Singapore) in Lifetrack (Philippines). Telkom Indonesia, HSBC (United Kingdom) and Japanese Sumitomo Corporation Equity Asia in Hong Kong (China) have all invested in Connexions Asia (Singapore).

Halodoc (Indonesia) has received investments from Go-Jek (Indonesia), NSI Ventures (Singapore), Singtel Innov8 (Singapore) and the Clermont Group (Singapore). CXA Group (Singapore), a predictive and data intelligence platform for better health, wealth and wellness choices, raised $25 million in its latest round of funding from investors that included HSBC (United Kingdom), Singtel Innov8 (Singapore), Telkom Indonesia MDI Ventures (Indonesia) and Muang Thai Fuchsia Ventures.

Japanese VCs are also involved in ASEAN tele-health start-ups. For example, Medical Departures (Thailand) received funding support from CyberAgent Capital (Japan)[27] and OPT SEA (the Asia Arm of Japanese digital advertising agency OPT Group; Sumitomo (Japan) subsidiary Sumitomo Corporation Equity Asia (Hong Kong, China) funded Connexions Asia (CSA); and Japanese-based Strive and Shin Ryoku Trust funded Healint (Singapore). A number of VCs from China and Hong Kong (China) have stakes in ASEAN tele-health start-ups. For example, SXE Ventures funded BookDoc (Malaysia), Cyberport Macro Fund funded Connexions Asia (Singapore) and Wuxi Apptec funded Halodoc (Indonesia).

VCs from Indonesia, Malaysia and Thailand mainly support tele-health start-ups from their respective countries. GnB Accelerator (Indonesia) funded TeleCTG (Indonesia) and Pesan Lab (Indonesia), RHL Ventures (Malaysia) and Cradle Health Ventures (Malaysia) funded HealthMetric (Malaysia), and Invent (Thailand) for Meditech Solution and Santora Nakama (Thailand) funded YesMom. A majority of the leading Philippine-based tele-health start-ups are part of the Ayala Group (Philippines) (*AIR 2018*). Medgrocer and Aide are subsidiaries of Ayala Healthcare Holdings; Lifetrack is funded by Kickstart Ventures (a VC of the Ayala Group); and Konsulta MD is a subsidiary of Globe Telecom (a subsidiary of the Ayala Group). These start-ups are internally funded by the group.

3.5. DIGITAL REVOLUTION AND TECHNOLOGY SOLUTION COMPANIES IN ASEAN

The application of digital technologies (e.g. robotics, artificial intelligence, data analytics, cloud and 3D printing) in health care is changing the industry and in the delivery of care services to patients in the region. Actors that used and developed such technologies include foreign digital and health care MNEs and start-ups in ASEAN.

The use of such technologies in the provision of health care (e.g hospitals and clinics) in ASEAN is expanding because of positive externalities. They include improvements in health care efficiency and medical precision, better diagnostic and analytic capabilities, and better patient care outcomes (e.g. faster patient recovery with minimal incisions). Hospitals and other stakeholders in ASEAN are also using such digital technologies to improve administrative and marketing functions and to better reach out to customers, including in digitizing medical records for data analytics.

Major health care providers in the region have used digital technology to advance the quality of care and to provide greater access to care (box 3.8). For example, the Bumrungrad International Hospital (Thailand) has integrated the IBM Watson technology into the hospital’s oncology department to process patient data, access medical literature and provide guidelines to offer personalized treatments to cancer patients. The IBM Watson has a processing power of 80 teraflops and can access 90 servers, with data storage of more than 200 million pages.

The digital technology, equipment and solutions used by health care providers in the region are mainly supplied by MNEs from the United States, European countries and Japan through their sales and distribution subsidiaries based in ASEAN or through their local distributor partners. These companies include GE Healthcare, Intuitive Surgical, Stryker, Varian (all United States); Philips Healthcare (Netherlands); B. Braun, Fresenius, Siemens Healthineers (all Germany); Elekta (Sweden); and Olympus and Sysmex (both Japan) (table 3.23). Not many local companies have the capability and capacity to develop complex medical equipment such as magnetic resonance imaging (MRI) and X-ray machines and surgical robotics.

Many of these health care MNEs also have established a presence in the region to provide aftercare services, training and education in the use of such technologies and equipment. Some MNEs have also established related R&D centres in Singapore and data centres in a few Member States (e.g. Indonesia, Malaysia and Singapore) (*AIR 2018*).

ASEAN start-ups have also contributed to the development of the health care industry through their digital innovation in medical solutions in areas such as tele-health and telemedicine and other medical technologies (section 3.4.4).

Box 3.8. Applying digital technologies in health care

Hospitals in ASEAN are using or planning to use cloud technologies to improve efficiency. Such technologies are linked to cloud computing suppliers and data centres. Developed-country MNEs are the main actors in this segment (*AIR 2018*). Cloud technology can help hospitals achieve cost effectiveness, as it uses less electricity since data centres are running off-site and capital costs could be low because of less hardware needed. Cloud resources are scalable and provide flexibility, which facilitate easier management of growth and capacity-planning. It is more secure and could handle significant data storage requirements from off-site places.

Robotics technology and telemedicine improve patient engagement. There has been an increase in the number of companies and start-ups in this area, with cross-border operations in ASEAN. Such start-ups include EndoMaster (Singapore), DocDoc (Singapore) and BookDoc (Malaysia). Hospitals such as Bangkok Chain Hospital (Thailand) are using electronics medical records to offer better care services. The use of digital technologies in health care has contributed to improving efficiency and patient safety, and reducing health care costs.

Source: Adapted from interview record of CEO, Bangkok Chain Hospital (https://govinsider.asia/innovation/hospital-roundup-dr-chalerm-harnphanich-bangkok-chain-hospital/).

Table 3.23. Medical technology users and suppliers in ASEAN

ASEAN health care group	Technology	Application	Supplier	Nationality	Presence in ASEAN	Regional HQ of supplier
Mount Elizabeth Novena Hospital (member of the IHH Healthcare Group)	Karl Storz integrated operating room	Supports surgery procedures with Storz endoscope	Karl Storz	Germany	Singapore, Viet Nam	Singapore (Karl Storz Endoscopy Asia Marketing)
Mount Elizabeth Novena Hospital (member of the IHH Healthcare Group)	Biograph	Integrates MRI and PET functions	Siemens	Germany	Indonesia, Malaysia, Singapore, Thaland, Viet Nam	..
Mount Elizabeth Novena Hospital (member of the IHH Healthcare Group)	Hybrid operating room	Facilitates collaboration between surgeons and radiologists to provide care for patients	Philips	Netherlands	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam	Singapore
			Maquet	Germany	Singapore, Thailand	
Mount Elizabeth Novena Hospital and Mount Elizabeth Hospital (members of the IHH Healthcare Group)	MAKOplasty robotic knee surgery	Robotic technology for less invasive knee replacement procedure	Stryker	United States	Distributed by Transmedic	Transmedic is based in Singapore
Gleneagles Singapore (under the IHH Healthcare Group)	Robotic surgery with the Da Vinci technology	Robotic-assisted surgery	Intuitive Surgical	United States	Distributed by Transmedic	Transmedic is based in Singapore
Gleneagles Hospital Kuala Lumpur (member of the IHH Healthcare Group)	Magnetom Skyra 3T MRI	Allows many studies to be completed with patient's head outside the bore	Siemens	Germany	Indonesia, Malaysia, Singapore, Thaland, Viet Nam	..
Gleneagles Hospital Kuala Lumpur (under the IHH Healthcare Group)	Leksell Gamma Knife Perfexion	Allows a wider range of targets and more efficient treatment of patient	Elekta	Sweden	..	..
Gleneagles Hospital Kuala Lumpur (under the IHH Healthcare Group)	Robotic surgery with the Da Vinci technology	Robotic-assisted surgery	Intuitive Surgical	United States	Distributed by Transmedic	Transmedic is based in Singapore
Bangkok Phuket Hospital (Bangkok Dusit Group)	Robotic surgery with the Da Vinci technology	Robotic-assisted surgery	Intuitive Surgical	United States	Distributed by Transmedic	Transmedic is based in Singapore
Bumrungrad International Hospital (Bangkok Dusit Group)	Robotic surgery with the Da Vinci technology	Robotic-assisted surgery	Intuitive Surgical	United States	Distributed by Transmedic	Transmedic is based in Singapore
St. Luke's Hospitals (Manila)	Robotic surgery with the Da Vinci technology	Robotic-assisted surgery	Intuitive Surgical	United States	Distributed by Transmedic	Transmedic is based in Singapore
Bumrungrad International Hospital (Thailand)	2D X-ray with O-arm navigator	A robotic arm to assist spine surgeons with precise coordinates for screw placement in the spine	Medtronic	Ireland	Medtronic has manufacturing facilties in Singapore and Thailand and marketing, sales and distribution operations in major ASEAN Member States	Regional headquarters for Asia-Pacific

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Table 3.23. Medical technology users and suppliers in ASEAN (Concluded)

ASEAN health care group	Technology	Application	Supplier	Nationality	Presence in ASEAN	Regional HQ of supplier
The Medical City (Philippines)	Emprint microwave ablation	A technology that destroys tumors using heat generated by microwave energy	Medtronic	Ireland	Distributed by Transmedic	Both Medtronic and Transmedic regional headquarters are based in Singapore
National Heart Centre Singapore	HeartMate 3 pump	Relieves the symptoms of advanced heart failure, running on a new technology that reduces the risk of blood clots	Abbott	United States	Distributed by Transmedic	Both Medtronic and Transmedic regional headquarters are based in Singapore
Rsia Bunda, Jakarta (Indonesia)	Robotic surgery with the Da Vinci technology	Robotic-assisted surgery	Intuitive Surgical	United States	Distributed by Transmedic	Singapore
Vejthani Hospital (Thailand)	2D X-ray with O-arm navigator	A robotic arm to assist spine surgeons with precise coordinates for screw placement in the spine	Medtronic	Ireland	Medtronic has manufacturing facilties in Singapore and Thailand and marketing, sales and distribution operations in major ASEAN Member States	Regional headquarters for Asia Pacific
Universiti Malaya Medical Centre (Malaysia)	MRI and MR-guided focused ultrasound	..	GE Healthcare	United States	GE Malaysia	Singapore
University Kebangsaan Malaysia Medical Centre	Bi-plane angiography systems	..	GE Healthcare	United States	GE Malaysia	Singapore
Bumrungrad International Hospital (Thailand)	MRI 3.0 Teslad Model	..	GE Healthcare	United States	GE Thailand	Singapore
Sririraj Hospital (Thailand)	Revolution CT-512 slices scanner and MRI 3T Artchitect	..	GE Healthcare	United States	GE Thailand	Singapore
Addlife Clinic (Thailand)	128 Revolution EVO CT, Signa Explore 1.5T MRI	..	GE Healthcare	United States	GE Thailand	Singapore

Sources: ASEAN Investment Report 2019 research, based on media and company reports.

Foreign health care technology providers have marketing and distribution operations based in a few ASEAN Member States to supply customers. Their physical presence is necessary to provide aftercare services, education and training to clients. For example, GE Healthcare (United States) operates in seven ASEAN Member States and Siemens Healthineers (Germany) in eight Member States. Medtronic (Ireland) has its distribution partnerships with various medical technology dealers in Southeast Asia, Intuitive Surgical (manufacturer of the Da Vinci robotic surgery system) has Transmedic (Singapore) to market and distribute the technology in the region.[28]

3.5.1. Robotic applications

The intervention of robotic technology in health care can be grouped into three major areas: (1) health care intervention therapies (i.e. surgeries), (2) administrative and management operations as support staff, and (3) assistance to patients and elderly. All of these areas involve medical technology supplied and distributed by foreign companies and start-ups based in ASEAN.

Surgical robots

Health care service providers (hospitals, medical centres) in ASEAN are using robotic surgery technology. Bumrungrad hospital (Thailand) uses robotic technology in surgery supplied by Intuitive Surgical (United States). Several IHH Healthcare hospitals in Malaysia and Singapore use robotic surgery technology involving the Da Vinci surgical system by Intuitive Surgical (United States) (table 3.24).

Table 3.24. Hospitals in Malaysia, the Philippines and Singapore using the Da Vinci robotic surgery system
(Selected cases)

Hospital	Country	Application
Parkway Hospital Gleneagles Mount Elizabeth in Novena and Orchard Gleneagles	Malaysia Malaysia Singapore Singapore	Complex surgery
Urology Institute of the Kuala Lumpur Hospital	Malaysia	Performed Malaysia’s first prostate gland operation using the robotic surgeon, controlled by a specialist surgeon through a 3D computer screen from outside the operating theatre
Prince Court Medical Centre	Malaysia	Prostate cancer surgery
Subang Jaya Medical Center	Malaysia	Delicate and complex urologic surgeries
Sunway Medical Centre	Malaysia	Urology surgery (e.g. prostate, kidney and urology reconstructive surgery, colorectal surgery)
St. Luke’s Medical Centre The Medical City	Philippines Philippines	Advanced laparoscopic surgery in its Minimally Invasive and Robotic Surgery Center in Urologic, colorectal and gynecological operations
Vietnam National Children’s Hospital	Viet Nam	Children’s endoscopic operations since 2014
Bach Mai Hospital (Hanoi)	Viet Nam	Joint and neurological operations
Binh Dan Hospital and Cho Ray Hospitals (HCM City)	Viet Nam	Surgery on liver cancer patients

Sources: Media and company websites.

Other robotic technologies used by hospitals in ASEAN include the Modus V Synaptive II from Synaptive (Canada) and the Mako System supplied by Stryker (United States) (table 3.25). In Thailand, the Robodoctor (manufactured by Intouch Health (United States)) is used in a number of hospitals. The technology allows specialist doctors in hub hospitals to assist doctors in remote hospitals in diagnosing and treating patients with complicated conditions, such as stroke. The technology increases the result of more efficient diagnosis and treatment. Similarly, the Bangkok Hospital network also used Robodoctor in three of its hospitals (Bangkok Hospital, Bangkok Hospital Pattaya, and Bangkok Hospital Phuket). Bumrungrad hospital (Thailand) has also employed robotic technology to increase efficiency such as a robot pharmacist.

Robots are being tested in Singapore hospitals for porter services. An example is Rowa Vmax, manufactured by CareFushion (Germany). It retrieves medicine from a storage cabinet when a prescription has to be filled, automatically updates stocks and sends an alert when supplies are low. Hospitals in Singapore such as Tan Tock Seng and National University Hospital uses the Rowa Vmax.

While many of these medical robotic technologies are developed and supplied to ASEAN hospitals by MNEs from the United States, European countries and Japan, there are ASEAN-based start-ups developing surgical technologies too. They include EndoMaster (Singapore), with its robotic-assisted surgical system for endoscopy that enables surgeons to perform incision-less surgeries (section 3.6.3).

Robots have been developed and are used for elderly care and for recovering patients. These robots assist doctors and nurses in monitoring blood pressure and other health information. Robots can also help Alzheimer patients and provide companionship to the elderly in nursing homes.[29] Asia Robotics (Thailand) has developed the elderly care Dinsow Robot, which keep tracks of medications, video-phones relatives, exercises with the patient and recognizes the faces and voices of elderly patients (section 3.6.3). The company has supplied such robots to health care providers in Japan and is looking for business opportunities in ASEAN.

Table 3.25. Hospitals in the Philippines, Singapore and Viet Nam using Synaptive and Mako robotic technology

Hospital	Country	Technology	Manufacturer	Remarks
Asian Hospital	Philippines	Accuray tomotherapy	Accuray (United States)	Provides the flexibility to treat a spectrum of cancer cases from a single platform
Farrer Park Hospital	Singapore	Mako robotic-arm technology	Mako (subsidiary of Stryker (United States))	Helps in robotic hip replacement procedure
People's Hospital 115	Viet Nam	Modus V Synaptive II	Synaptive (Canada)	Used to assist in neurosurgeries[a]

Sources: Asian Robotic Review (https://asianroboticsreview.com/home57-html), company websites and media.
[a] Tuoitrenews, "Robot-assisted surgery trending in Vietnam's major cities", 28 February 2019.

3.5.2. AI solutions, tele-health and telemedicine

AI, machine learning and data analytics are increasingly being applied to develop new medical solutions, platforms and digital technology to help patient access to health care. Tele-health and telemedicine have been one of the fastest-growing areas of digital health in ASEAN and an area in which many start-ups have successfully secured VC investments.

AI adoption rates differ across ASEAN Member States, with Singapore in the lead.[30] For example, one of the biggest health care insurers in Singapore, NTUC Income, deployed IBM Watson to digitally process almost 15,000 monthly claims. Private medical group Parkway Pantai (a subsidiary of IHH Healthcare Group (Malaysia) uses AI to generate hospital bill estimates. Mount Elizabeth, Mount Elizabeth Novena, Gleneagles and Parkway East hospitals use AI and machine learning algorithms from Singapore-based start-up Ucare.AI to generate personalized bill estimates based on parameters such as the patient's medical condition and medical practices.

Many of the top 50 most funded health care start-ups are in tele-health and telemedicine to serve the underserved and to empower patients (section 3.4.4). The tele-health platforms in the region provide users with access to (i) health care treatment, professionals, services and products; (ii) health care personnel and treatment choices; and (iii) health care literature and information. These platforms also provide interactive connections between health care personnel, between doctors and patients, and between patients (as support community for some ailments). Examples of these start-ups include Medical Departures (Thailand), an online platform to find and book appointments with doctors across the globe; LinkDokter (Indonesia), a social media platform for health practitioners; Lifetrack (Philippines), a teleradiology solution that connects radiologists in the Philippines; DocDoc (Singapore), an online platform that enables patients to search and book appointments with doctors and health care professionals in Singapore and other ASEAN Member States (section 3.6.3). Global Urban Essentials provides platforms for users to access to health information and pharmaceutical prescriptions and delivery to home (section 3.6.3). Other tele-health companies include BookDoc (Malaysia), Halodoc (Indonesia) and Grab-Ping An Good Doctor (Singapore-China).

3.6. CASES OF COMPANIES

This section presents the cases of companies interviewed and researched for this report. The companies covered are involved in a wide range of health care services (hospitals, pharmaceuticals, and medical equipment and technology solutions), private equity firms and start-ups. Table 3.26 highlights some of their key features, regional investment activities, linkages with other companies and MNEs in health care, including technology suppliers. Some of the cases are associated with medical tourism and some companies offer their views on the implication of the ASEAN Economic Community on investment in health care.

The cases are arranged in the order of hospitals, pharmaceuticals, medical equipment and technology solution companies, and health care-focused private equity firms.

Table 3.26. ASEAN: Health care investors, providers and linkages with MNEs and foreign institutions, 2019 (Selected cases and indicators)

Name	Headquarters	Nature of business	Description	Investors	Investment in ASEAN	Specific features	Technology and equipment suppliers
					Hospital cases		
Bangkok Dusit Medical Services	Thailand	Hospital	• Integrated care provider • 47 hospitals (Thailand, 45; Cambodia, 2)	Wholly Thai-owned	• Cambodia: 2 hospitals • Myanmar: 2 joint ventures	• Medical tourism service • Involved in clinics, diagnostic laboratories, pharmacies and insurance	BC Platforms (Switzerland); Intuitive Surgical (United States); Varian Medical Systems (United States)
Capital Medica	Japan	Health care provider, private equity firm	• Owns and manages hospitals, polyclinics and elderly homes in Japan and ASEAN	• Joint venture partner: Sojitz (Japan)	Cambodia; Indonesia; Myanmar; Singapore; Thailand; Viet Nam	Acquired Green International Hospital (Viet Nam)	..
Columbia Asia Healthcare	Malaysia	Private equity firm (health care)	• Owns, manages and operates 18 health care facilities in ASEAN	• International Columbia (United States-based investment fund) • Mitsui (Japan)	Malaysia (12 hospitals); Viet Nam (2 hospitals and 1 clinic); Indonesia (3 hospitals);	..	..
IHH Healthcare	Malaysia	Hospital	Integrated care provider	• Mitsui (Japan) • Khazanah (Malaysia)	Hospitals and medical facilities: Brunei Darussalam (1); Malaysia (15) Myanmar (1 – under construction); Singapore (4)	Medical tourism service Medical clinics Medical education courses	Intuitive Surgical (United States) GE Healthcare (United States) Siemens Healthcare (Germany) Toshiba (Japan)
Lippo Group (Lippo Healthcare Services)	Indonesia	Conglomerate (with health care business)	Owns and manages hospitals, clinics and health-care-related properties through major health care subsidiaries in Indonesia, Singapore and Hong Kong (China)	Itochu Corporation (Japan) with investment in OUE Lippo Healthcare (Singapore)	Indonesia; Myanmar; Malaysia; Singapore	..	..
Metro Pacific Hospital Holdings	Philippines	Hospital	• Integrated care provider • Diagnostic laboratory	GIC (Singapore)	Domestic focus: 14 hospitals and 4 primary clinics	• Partnership with Marubeni (Japan) and LSI Medience for diagnostics • Partnership with Sanitas (Spain) for primary clinic • Medical tourism service	B Braun (Germany); Elekta (Sweden); Fresenius (Germany); General Electric (United States); Hitachi (Japan); Royal Philips (Netherlands); Siemens Healthcare (Germany); Varian (United States)
Raffles Medical Group	Singapore	Hospital	Integrated health care provider	..	• Joint ventures with Myanmar investors, with AEA International Holdings (Singapore) • Cambodia, Viet Nam (clinics) • Brunei Darussalam, Indonesia (representative office)	• Medical tourism services • Medical insurance and health care training institute	GE Healthcare (United States) Siemens Healthcare (Germany)
St. Frances Cabrini Medical Center	Philippines	Medical centre	Owned and managed by the Torres Group (Philippines)	Yazaki Corporation (Japan) is a joint venture partner of the Torres Group	Domestic focus	• Trains and sends nurses and care providers to hospitals in Japan • Collaborations with Japanese and American affiliations in technology and training resources	Diagnostics (Denmark); Elekta (Sweden); Fresenius (Germany); GE Healthcare (United States); Hitachi (Japan); Royal Philips Healthcare (Netherlands); Siemens Healthcare (Germany)
					Pharmaceutical, medical equipment and technology solution companies		
Dexa Medica	Indonesia	Pharmaceuticals	Manufacture and distribute pharmaceutical products	• Locally owned	Offices: Cambodia; Malaysia; Myanmar; Philippines; Singapore; Viet Nam	• Development and manufacturing of generic pharmaceutical products • Export products to Singapore, Cambodia, the Philippines, Canada and the United States • Involved in contract manufacturing	..

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Table 3.26. ASEAN: Health care investors, providers and linkages with MNEs and foreign institutions, 2019 (Selected cases and indicators) (Concluded)

Name	Headquarters	Nature of business	Description	Investors	Investment in ASEAN	Specific features	Technology and equipment suppliers
Kalbe Farma	Indonesia	Pharmaceuticals	Manufacture, distribute, conduct R&D on pharmaceuticals and medical devices	• Locally owned	Marketing office/ subsidiary: Cambodia; Malaysia; Viet Nam Marketing office, construction of a manufacturing facility: Myanmar Manufacturing and distribution: Philippines Subsidiary, research facility, marketing, clinical research: Singapore Marketing office, clinical test facilities: Thailand	• Strategic alliances and joint ventures in business activities with partners from Australia, Singapore, Japan, the Republic of Korea, and Spain • Three e-commerce ventures • Established Health Sciences Research Institute with Toyota Tsusho Corporation (Japan) • Involved in contract manufacturing	..
United Laboratories	Philippines	Pharmaceuticals	Manufacture and distribute pharmaceutical products	• Privately owned	Commercial presence: Cambodia; Lao People's Democratic Republic; Malaysia Myanmar; Singapore Manufacturing and commercial presence: Indonesia; Thailand; Viet Nam	• Involved in contract manufacturing	Bosch (Germany); Gemco and Cross (United States, Canada); Glatt (Germany); IMA Killian & Stokes (Germany, United States); Manesty (United Kingdom); Siebler (Germany) Uhlmann and Romaco (Germany)
DocDoc	Singapore	Tele-health	Network of more than 23,000 physicians, 600 clinics and 100 hospitals covering six ASEAN countries	Cyberport Macro Fund (Hong Kong, China) 500 Startups (United States) Jungle Ventures (Singapore)	Offices: • Singapore • Indonesia • Philippines Network: • Indonesia • Malaysia • Philippines • Singapore • Thailand • Viet Nam	• Raised $18.5 million through three funding rounds (excluding seed funds) in 2015, 2018 and 2019 • Partnership with Prudential Financial (United States)	Oracle Netsuite Oneworld
Endomaster	Singapore	Robotics	Manufacture of robotic-assisted surgical system for endoscopy	• VC Shanghai Runkun (China) • Hoya (Japan)	..	First flexible robotic system for endoluminal surgery	..
GE Healthcare	United States	Medical equipment and solutions	A key player in the supply of medical equipment and technology	A subsidiary of GE (United States)	Significant presence in ASEAN	Have provided medical equipment and technologies to many public and private hospitals, clinics and health care institutions.	..
Global Urban Essensial	Indonesia	Tele-health/ digital system	Uses AI and platforms to offer digital services	Indonesian investors	Collaborations with MNEs in health care and industry	Has a few digital health platforms offering a wide range of digital health services including medication prescription	..
Siemens Healthineers	Germany	Medical equipment and solutions	A key player in the supply of medical equipment and technology	A subsidiary of Siemens (Germany)	Significant presence in ASEAN	Have provided medical equipment and technologies to many public and private hospitals, clinics and health car e institutions.	..
Private equity investors							
TE Asia Healthcare	Singapore	Private equity (health care)	..	Back by TPG Capital	• Indonesia • Malaysia • Thailand	• Facilities on oncology • Aesthetic clinics • Medical tourism services	..
Quadria Capital	Singapore	Private equity firm (health care)	Independent health-care-focused private equity firm	Co-investors	• Malaysia (Lablink) • Singapore (MWH Holdings) • Vietnam (FV Hospital) • Indonesia (Soho Global Health)	• Uses business networks to help upgrade its investee companies • Medical tourism services	..

Sources: Based on interviews, annual reports and case studies of companies prepared for *ASEAN Investment Report 2019*.

3.6.1. Hospitals

Adventist International Health System

The Adventist International Health System (Philippines) is a group of 10 small and mid-sized hospitals, the first of which opened in 1917. In 2018, the group had about 1,000 beds, 1,651 doctors and specialists, 3,770 personnel (including nurses) and 66,700 registered patients. In 2017, it generated $60 million in revenue. The group is a non-stock, non-profit network.

Foreign participation and association

Foreign institutions are involved in Adventist's operations through collaborations, which include sharing of best practices and medical knowledge, acquisition of medical technology and equipment, and collaboration in medical research. It has benefited from exchanges of best practices and benchmarks, discussions of the latest medical technologies and improvements in the quality of health care service. The group cooperates with the Penang Adventist Hospital in Malaysia through knowledge and information exchange. The group also collaborates with foreign medical technology and equipment suppliers to leverage on packages and acquisition of devices (table 3.27).

ASEAN Economic Community

A regionally integrated market, through the AEC, can offer opportunities as well as challenges. Although it could facilitate entry of more hospitals, it may not help address the issue of access to affordable quality health care by the general public. With this in mind, the group continues to focus on providing lower-cost and affordable quality health care service, while embracing the greater competition that will be brought about by the AEC.

Table 3.27. Adventist International Health System (Philippines): Medical technology and equipment suppliers, 2018

Technology supplier	Headquarters	Technology and equipment
Siemens Healthcare	Germany	CT scan, ultrasound, portable X-ray, MRI
GE Healthcare	United States	Ultrasound, CT scan
Medtronic	Ireland	Covidien surgery-related products, and brain single-photon emission computed tomography
Fresenius	Germany	Haemodialysis or renal dialysis
B. Braun	Germany	Haemodialysis or renal dialysis
Abbott's Sapphire	United States	Laboratory and diagnostic equipment
Roche	Switzerland	Laboratory and diagnostic equipment
Zeiss International	Germany	Operating room microscope
Pentax	Japan	Endoscopy
Genoray	Republic of Korea	C-arm (surgical X-ray equipment)

Source: Interview with Adventist International Health System – Philippines, Inc.

The group welcomes foreign investment for the role that it can play in supporting the development of the local health care industry. For instance, some hospitals and health care facilities in the region could benefit from foreign investment support in terms of capital infusion for upgrading and acquiring facilities, technologies and equipment.

Bangkok Dusit Medical Services

Bangkok Dusit Medical Services (Thailand) is an integrated health care group. It has a large network of hospitals in Thailand (45) and 2 in Cambodia. Aside from hospital services, the group is involved in other health care related businesses such as clinics, medical equipment manufacturing and distribution, diagnostic laboratories, pharmacies and health insurance. It also has one subsidiary in Myanmar and two in Singapore. Bangkok Dusit hospital chains are classified into 6 groups: Bangkok Hospitals (21 hospitals), Samitivej Hospitals (6), BNH Hospitals (1), Phyathai Hospitals (5), Paolo Hospitals (6) and The Royal Hospitals (2). There are 3 other hospitals, which are partly owned but not directly managed by the group.[31]

Internationalization

The group invested and operates two hospitals in Cambodia (Royal Angkor International Hospital in Seam Reap, and Royal Phnom Penh Hospital in Phnom Penh). It also opened a private clinical laboratory (N Health Myanmar) in Myanmar in 2017, through a joint venture with two local partners in that host country. Bangkok Dusit owns 60 per cent of N Health Myanmar, which provides high-end genetic tests, allergy tests, diagnostic evaluation for tuberculosis, malaria and dengue virus, and other analytical services.[32]

Medical cooperation with foreign health care service providers

The group (BDMS) collaborates with other specialist hospitals, medical schools and research institutes in Australia, Japan, the United States and Europe to further advance the Group's medical practices through sharing of knowledge and best practices, trainings and standardized guidelines. The group and its various subsidiaries entered into cooperation and partnership agreements with overseas health care institutions and specialized centers. They include the following:[33]

- Sano Hospital (Japan) to collaborate on examination of gastrointestinal tract disease, and patient referrals between the two hospitals.
- MD Anderson (United States) Cancer Center of the University of Texas to collaborate on research and developments in safe and efficient treatment on cancer prevention and cure.
- Stanford University (United States) Department of Orthopedic Surgery to exchange knowledge and skills in the field of orthopedics with a focus on treatment of the musculoskeletal system.
- Heavy Ion Therapy (Japan) Wattanosoth Hospital to collaborate with Universal Strategy Institute (Japan) on establishment of a radiation center that uses “Heavy Ion Therapy” technology.

- Nagoya University (Japan) to collaborate on medical personnel exchanges for training in all fields of medicine and referrals of patients between the University and the group's hospitals.
- Doernbecher Children's Hospital (United States) to collaborate on knowledge to improve the quality and safety in children's health care.

Medical tourism

Many of Bangkok Dusit's hospitals in Thailand treats international patients. These hospitals include Bangkok Hospital Headquarter, Samitivej Sukhumvit Hospital, Samitivej Srinakarin Hospital, Phyathai 2 Hospital, Bangkok Hospital Pattaya, Bangkok Hospital Phuket, and Bangkok Hospital Chiangmai. International patients from Cambodia, China, Japan, Kuwait, Myanmar and United Arab Emirates were the significant contributors to the group's overseas patient revenues in 2018. On November 2018, the group entered into a strategic cooperation with China's Ping-An Good Doctor to increase the number of Chinese patients.

Capital Medica

Capital Medica (Japan) is a non-publicly listed health care provider platform. It provides integrated system and service solutions for health care providers. Capital Medica owns and manages about 40 hospitals, polyclinics and elderly homes in Japan.

International business

Capital Medica has a business presence in Asia, including in several ASEAN countries (Cambodia, Indonesia, Myanmar, Singapore, Thailand, Viet Nam) (table 3.28). It offers Japanese medical and nursing home know-how.

The company is also expanding internationally and in ASEAN. It acquired the Green International Hospital in Viet Nam in 2013. In 2014, it sold 7 per cent of its equity to Sojitz Corporation (Japan) through a capital and business tie-up.[34] In the joint venture, Sojitz and Capital Medica develop and promote the medical service business abroad using Capital Medica's proficiency in hospital management and Sojitz's international network. The joint venture aims to export

Table 3.28. Sojitz–Capital Medica health care business tie-up in ASEAN (Selected cases)

Year	Country	Remark
2015	Viet Nam	TMMC Healthcare[a] and Capital Medica–Sojitz formed a strategic health care partnership focused on professional training for medical and supporting staff, sharing knowledge and technology, transferring the latest technology and know-how in health care, providing evidence-based collaboration for treatment and clinical outcome management, and creating cross-border medical studies and research.
2016	Indonesia	Malaysia's KPJ Healthcare partnered with Sojitz Corp and Capital Medica to develop a $12 million oncology centre in Jakarta. The collaboration facilitates the sharing of medical technology and know-how between Japan, Malaysia and Indonesia partners.

Sources: Company websites and various media news.

[a] TMMC Healthcare is an integrated health care system in Viet Nam with four general hospitals and one polyclinic in Ho Chi Minh City, Nha Trang, Danang and Dong Thap.

and duplicate Japanese medical infrastructure and management systems. Currently, the companies are undertaking multiple projects in Indonesia, Viet Nam and Mongolia as a step towards expanding their medical service operations in Asia.

Columbia Asia

Columbia Asia Healthcare (Malaysia), incorporated in 1996, manages and oversees Columbia Asia (United States) health care interests in Southeast Asia. Columbia Asia is owned by International Columbia, an investment fund company based in the United States. It has 18 health care facilities (hospitals, clinics and extended care facilities) in ASEAN, of which 12 are in Malaysia, and 3 each in Indonesia and Viet Nam. The company established mid-size hospitals in cities with large population.

Investment expansion

Key factors influenced Columbia Asia's investment expansion in Asia include market opportunities and where demand for medical and health care services is growing (e.g. Indonesia, Malaysia, Viet Nam).

Investment partnership

Columbia Asia partners with Mitsui (Japan) in its health care operations in ASEAN and India. In 2016, Mitsui acquired stakes in Columbia Asia for $101 million. In 2018, Columbia Asia, raised $210 million from its existing investors to fund business expansion. Mitsui invested $140 million in the 2018 funding round, which increases Mitsui's share in the company by more than double.

IHH Healthcare

IHH Healthcare Berhad (IHH) is a leading health care provider in the home markets of Malaysia, Singapore, Turkey and India. It was incorporated in Malaysia in 2010 as a holding company for Khazanah's health care investments (Malaysia) in Parkway, Pantai, IMU Health and Apollo. During 2011, the company underwent an internal restructuring that resulted in the creation of Parkway Pantai Limited ("PPL"), an indirectly wholly owned subsidiary of IHH, and in the transfer of Pantai Irama ventures and in Parkway to PPL. IHH is a Malaysian public listed company, backed by two major shareholders with 26 per cent owned by Khazanah Malaysia and 32.9 per cent owned by Mitsui & Co. (Japan).

IHH offers a full spectrum of integrated healthcare services from clinics to hospitals to quaternary care and a wide range of ancillary services in ASEAN and outside the region. It is also involved with ancillary supporting services (e.g. laboratory and pathology facilities) including medical education courses in Malaysia (e.g. International medical college and International Medical University).

The group generated $2.8 billion in revenue in 2018 of which more than 50 per cent came from operations based in ASEAN (i.e. $496 million from Malaysia hospital operations, $966 million from Singapore hospital operations, $64 million from its International Medical University, and $33 million from ParkwayLife Reit).

Internationalization

The group has 199 subsidiaries and sub-subsidiaries, 9 associates and 19 joint ventures in 2018.[35] In ASEAN, it has 4 main subsidiaries (3 headquartered in Malaysia and 1 in Mauritius), 86 sub-subsidiaries (39 in Malaysia; 45 in Singapore and 1 each in Brunei Darussalam, Indonesia, Myanmar and Viet Nam). It operates 20 hospitals in ASEAN (1 in Brunei Darussalam), Malaysia (15), Singapore (4) and outside ASEAN (particularly in China, India Central and Eastern Europe, the Middle East and North Africa). In addition, IHH has over 50 clinics in Singapore and is targeting to open a hospital in Myanmar in 2023. Through a series of M&As, the IHH group has rapidly expanded its health care businesses in ASEAN and further afield.

Today, IHH has operations in ASEAN under the following hospital brands:

- Brunei Darussalam (Gleneagles)
- Malaysia (Parkway Pantai and Gleneagles)
- Singapore (Parkway Pantai, Mount Elizabeth, Gleneagles Hospitals/Medical Centers, Parkway Shenton Network of clinics and ParkwayHealth Ancillary Services)

Parkway Pantai owns a network of health care operations in Brunei Darussalam, Malaysia and Singapore (table 3.29), and also the Gleneagles health care operations.

Table 3.29. Pantai Healthcare operations in ASEAN, 2018

Type of operations	Brunei Darussalam	Malaysia	Singapore
Hospitals (under both the Parkway Pantai and Gleneagles brand)	**1** under the Gleneagles Brand (JV with Brunei Industrial Development Authority)	**15** (4 Gleneagles brand; 10 Pantai brand, 1 Amanjaya Specialist Centre)	**4** (1 Gleneagles; 1 Parkway East; 2 Mount Elizabeth hospitals)
Clinics		..	Over 50 (one of which is for Japanese patients/market)
Ancillary Services		**2** (1 rehabilitation center and 1 pathology)	**4** (3 laboratory/diagnostics and 1 college)

Sources: IHH (https://www.ihhhealthcare.com/) and Parkway Pantai (https://www.parkwaypantai.com/).

Investment motivations

IHH's expansion in ASEAN and outside the region is motivated by market opportunities in high growth markets (e.g. China and India) and mainly through greenfield project, M&As or joint ventures with local partners.

Foreign partnership

In 2011, Mitsui (Japan) bought a 30 per cent stake in IHH for $1.1 billion. The acquisition is one of the largest Japanese investments in health care in the region. Mitsui's partnership with IHH complements the former's business in retirement villages, medical information technology and medical devices in Japan and Asia. In 2018, Mitsui increased its stake in IHH to about 33 per cent. The deal was estimated at $2 billion.

Health digitization

IHH uses advanced medical technologies to increase efficiency and to provide better health care services to patients. The technology and equipment used and supplied by foreign MNEs include the following:

IHH acquired 55 per cent stake in Angsana Holdings (Singapore), a molecular diagnostic platform to introduce precision medicine to customize treatment plans for cancer patients. Angsana with multi-laboratory operations in Hong Kong (China), Malaysia and Singapore provide advanced molecular diagnostics facilities to support the group's integrated health care services. GE Healthcare (United States) supplied the GE Healthcare 3-D Mammogram equipment for genomics testing to Parkway Pantai's hospitals in Singapore.

Gleneagles Singapore has a nuclear medicine and position emission tomography (PET) centre, operated by another IHH subsidiary ParkwayHealth Radiology. The centre conducts tests on patients using various imaging technologies such as x-ray, computed tomography, magnetic resonance imaging, ultrasound, bone mineral densitometry, angiography, nuclear medicine and PET. Some of these equipment and technologies are supplied by Toshiba (Japan) and Siemens Healthcare (Germany).

Mount Elizabeth Novena Hospital in Singapore has partnered with IDS Medical Systems (Hong Kong, China) for acquisition of medical solutions and equipment. The latter is one of the largest integrated solution providers of medical equipment, supplies and services in Asia. It has an extensive distribution network covering various health care institutions including government and private hospitals, specialist and primary care clinics, laboratories and nursing homes. IDS operates in 6 ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam).

IHH has introduced tele-consultation for corporate patients to review their executive health screening report with doctors in Singapore. Singapore-based IHH hospitals (Mount Elizabeth in Orchard and Novena, and Gleneagles) use robotic surgery technology involving da Vinci surgical system, developed and manufactured by Intuitive Surgicals (United States).

Medical tourism

IHH network of hospitals and health care facilities in different ASEAN countries have played a role in facilitating the rise of medical tourism in ASEAN. Its international patient business is a growing segment of the group's operation. Many of the IHH hospitals serve foreign patients in Malaysia, Singapore, India and Turkey. In Malaysia, the hospitals include Gleneagles Kuala Lumpur Hospital, Gleneagles Penang Hospital, Pantai Ayer Keroh and Gleneagles Medini. In Singapore, the hospitals include Mount Elizabeth and the Gleneagles hospitals brand. In 2018, across the four hospitals in Singapore, foreign patient constituted 26 per cent of the Singapore operations revenue.

While the Group has key medical centres (Mount Elizabeth, Gleneagles, Pantai hospitals) in Singapore and Malaysia that caters to medical tourists, it also continues to invest in medical centres and facilities within and outside the ASEAN region to capture markets in these economies.[36] Parkway Pantai continues to expand its footprint across Asia to capture the region's growing health care markets.[37]

ASEAN Economic Community

The formation of the ASEAN Economic Community facilitates IHH regional operations, where the group has an extensive network of hospitals and primary health care facilities in the region. IHH expects rising competition from diverse sources, which include (1) improve public health care system in ASEAN countries, (2) emergence of other private service providers or existing ones ramping up their operations, (3) patients seeking lower cost treatments elsewhere and (4) new start-ups could disrupt the marketplace. IHH is continuously positioning its operations and presence to address all these challenges and AEC is seen as a useful development in reaching out regionally.[38]

Lippo Healthcare

The Lippo Healthcare Group is a member of the Lippo conglomerate (Indonesia). It operates health care services under the Siloam Hospitals brand in Indonesia, OUE Lippo Healthcare (Singapore) and Lippo China Resources (Hong Kong, China).

PT Siloam Hospitals (Indonesia) is an integrated health care provider with 34 hospitals in Indonesia, of which 25 serve National Insurance Program patients. OUE Lippo Healthcare is involved in the development and management of health care facilities in China and Japan. It is also expanding in Southeast Asia. The principal activity of Lippo China Resources is investment holding; it is involved in a portfolio of businesses including in health care and property development.

Investment in hospitals and clinics in ASEAN

The group has a significant presence in ASEAN through Siloam Hospitals, OUE Lippo Healthcare and Lippo China Resources.

PT Siloam International Hospitals

In 2015, the Lippo Healthcare Group expanded its hospital operations in the region with the opening of Pun Hlaing Siloam Hospital in Yangon, Myanmar, in partnership with First Myanmar Investments, a local conglomerate. The group is planning to establish hospitals in Cambodia and Viet Nam. In 2018, through its joint venture with First Myanmar Investment, the group purchased a majority stake in a southern Shan hospital, SEIN Hospital, for $4.9 million.[39] The hospital was renamed Pun Hlaing Siloam Hospital Taunggyi.

OUE Lippo Healthcare

OUELH was acquired by OUE in October 2017 and was renamed to OUE Lippo Healthcare Limited. The acquisition made OUELH part of the Lippo Group. Today, it owns 12 nursing homes in Japan, owns and manages hospitals in China, and invests in health care facilities in Indonesia, Malaysia and Myanmar. In 2019, OUELH acquired a 40 per cent stake in Yoma

Siloam Hospital Pun Hlaing Limited (YSHPH) and a 35 per cent stake in Pun Hlaing International Hospital Limited (PHIH). Each of YSHPH and PHIH are joint venture companies with First Myanmar Investment.

Lippo China Resources

In 2017, Lippo China Resources established its presence in Singapore through its wholly owned subsidiary Gentle Care, which acquired Healthway Medical Corporation. Healthway owns, operates and manages about 100 medical centres and clinics in Singapore.[40]

Investment motivations

Investment opportunities to provide affordable care with growing market demand in the region have been major factors driving the group's investment in health care. The Group's current investments and expansions are in (1) Japan, where there is a large elderly population requiring geriatric services; (ii) China, where demand for health care services is rapidly growing; (iii) Singapore, one of the leading medical tourism destinations; and (iv) Myanmar, a growing market for basic, affordable and accessible health care services.

Partnership with Itochu Corporation

In 2018, Itochu Corporation (Japan) made a strategic investment in OUE Lippo Healthcare. It acquired a 25.3 per cent equity interest in order to participate in the development of its health care business in Asia.[41]

Medistra Hospital

Medistra is a stand-along, mid-sized private hospital based in Jakarta that started operations in 1991. It has approximately 200 doctors and specialists, and 500 nurses, in 6 specialization centres and 40 outpatient clinics, with a total 192-bed capacity and an average of 8,000 inpatients per year.

Medistra is not part of a network of hospitals or companies engaged in health care related operations. Since its establishment, Medistra has focused on developing centers of excellence in cardiovascular disease, digestive disease and oncology. It continues to develop other centers of excellence in oncology, as well as pediatric and child development.

Foreign participation

Medistra is wholly owned by Indonesian investors; foreign entities are involved in its operation through strategic partnerships and collaborations. This involvement includes patient referrals, the acquisition of medical technology or equipment, and collaboration in medical knowledge and research.

Patient referral arrangements with a foreign-owned clinic group

Medistra has a medical partnership arrangement with International SOS Medika, a subsidiary of SOS Medica (Singapore), for patient referrals. International SOS Medika is a chain of clinics that provide primary care, emergency support and in-house pharmacy services in Indonesia (with two centres in Jakarta and one in Bali).

Medical technology

GE Healthcare (United States), through its Indonesia sales and distribution office, is a major medical technology and equipment supplier to Medistra. The specialized equipment supplied by GE is for cardiology, orthopedics and neuroscience. Medistra also uses medical equipment from Siemens (Germany) and Olympus (Japan).

Medical knowledge and research programme

Medistra's Digestive Disease and GI Oncology Center has established strategic cooperation in India with the Asian Institute of Gastroenterology in Hyderabad, and the Institute of Liver and Biliary Sciences in New Delhi. The cooperation involves the exchange of knowledge, and the sharing of medical treatment experiences and technology. Medistra is also collaborating with the University of Tokyo on oncology treatment.

Digitalization

Like other health care service providers, Medistra works with digital health care companies or start-ups to reach out to patients and to increase efficiency in the provision of care. It has a partnership arrangement with Halodoc, a healthtech platform that connects patients with doctors, insurance, laboratories and pharmacies in one simple mobile application.[42] The partnership is currently working on delivery of medicines to Medistra patients. In March 2019, Halodoc raised $65 million in Series B funding, led by UOB Venture Management (Singapore), to strengthen the development of its medical technology and infrastructure. Other investors in this financing round include Singapore Telecommunication's (Singtel) Innov8, Korea Investment Partners and WuXi AppTec (China).[43]

ASEAN Economic Community

The hospital recognizes that the AEC could lead to a bigger market for health care services but also that there could be challenges to domestically focused health care providers. Cognizant of the expansion of large regional health care service providers, Medistra is implementing a program to further strengthen its fundamentals in terms of cost, human resources, time-efficient operations, medical technology, and skilled doctors and specialists.

Metro Pacific Hospital Holdings

Metro Pacific Hospital Holdings (MPHH), headquartered in the Philippines, is engaged in the ownership, operation and management of hospitals, health care schools and other health care businesses. It is 86 per cent owned by Metro Pacific Investments Corporation (Philippines), whose ultimate parent company is First Pacific Company Ltd. (Hong Kong, China), and 14 per cent owned by GIC (Singapore).[44]

MPHH operates 14 hospitals with a total of 3,300 beds and four primary care clinics across the country. It has also established a central laboratory facility and a chain of cancer radiotherapy treatment centres in the Philippines. MPHH employs about 10,000 health care workers (excluding medical doctors, who are typically not employees of the hospitals in the Philippines) and generated more than $490 million in revenues in 2018.

MPPH does not have any overseas presence. Given the significant growth potential in health care services in the Philippines, the group's health care business focuses primarily on patients in the country.

Investment

MPHH hospital operations started in 2007 with an acquisition of a 34 per cent stake in Makati Medical Center, a tertiary hospital with 500 beds. MPHH's investments in hospital services are mainly through acquisitions of hospitals in the country. It plans to increase the number of hospital subsidiaries to 30 within the next five to 10 years.

Each hospital subsidiary has autonomy of operations in terms of advancing and developing its health care services. The group takes care of volume acquisitions of medical equipment, pharmaceuticals and technologies, all centrally negotiated with suppliers by MPHH. However, the group's hospital operations involve foreign participation and collaboration (table 3.30).

Table 3.30. Foreign companies' participation in MPHH hospital business

MPHH entity	Type of collaboration	Remarks
Holding company	Acquisition of technology, equipment and pharmaceuticals	MPHH deals and negotiates with foreign suppliers (cost, additions and incentives, and post-sale services). Suppliers to MPHH hospitals include the following: • B. Braun (Germany) • Elekta (Sweden) • Fresenius (Germany) • General Electric (United States) • Hitachi (Japan) • Royal Philips (Netherlands) • Siemens Healthcare (Germany) • Shimatsu (Japan) • Varian (United States)
Hospital level	Foreign institutions and hospitals for benchmarking, sharing of best practices, training, academic exchanges	In 2017, Makati Medical Center and Hong Kong Integrated Oncology Centre signed a partnership to share best practices through forums and symposiums. In 2019, Makati Medical Center and Parkway Hospitals Singapore (owned by IHH Malaysia) signed a partnership agreement on health care innovation through training programmes, joint courses and master classes. Both institutions will also engage in joint patient consultations and live surgery observations. In 2019, Makati Medical Center signed an agreement with the University of California, Davis Comprehensive Cancer Center. The partnership facilitates transfer of expertise as well as multidisciplinary and state-of-the-art collaborative care for patients who require complex and advanced levels of cancer care. In mid-2018, Cardinal Santos Medical Center (CSMC) entered into an agreement with Hualien Tzu Chi Hospital (Taiwan Province of China) to enable graduates of the CSMC residency training programme to go to the hospital for fellowship training. A partnership with Shearwater Health (United States) in 2019 enables the hospital to provide nurses to the United States.

Sources: MPHH and interview.

Other joint ventures and collaborations

Primary care clinics

MPHH established a 50-50 joint venture, Metro Sanitas Corporation, with Sanitas (Spain)[45] in 2016. The joint venture is building a chain of primary care clinics across the country to offer affordable services to patients. It operates four primary care clinics in Metro Manila.

Diagnostics laboratory

MPPH plans to set up centralized laboratory testing hubs in strategic cities in the country. It established Medi Linx Laboratory Inc., a joint venture with Marubeni Corporation (Japan, 30 per cent), and LSI Medience Corporation (Japan, 30 per cent), a wholly owned subsidiary of Mitsubishi Chemical Corporation (Japan) in 2017. The joint venture established a centralized laboratory to service Metro Pacific Hospital and other hospitals in Manila using high quality and advanced equipment and technology from the Japanese partners.

Health digitization and technology

MPHH acquires medical technology and equipment from various manufacturers and suppliers (table 3.31).

Table 3.31. Medical technology and equipment in MPHH hospitals, 2019 (Selected cases)

Hospital	Technology/Equipment	Supplier	Department
Makati Medical Center	Versa HD's Agility™ MLC	Elekta (United States)	Oncology
Cardinal Santos	Brachytherapy	Varian (United States)	Oncology
Cardinal Santos	Discovery TM BMD machine	Hologic (United States)	Diagnostics
Cardinal Santos	Dialog+ EVO Standard HD machine	B. Braun (Germany)	Kidney care
Cardinal Santos	Allura Xper FD20 and XPerFlex Cardio	Philips (Netherlands)	Catheterization laboratory
Cardinal Santos	Bransist Alexa Type C12L MiX Axiom Sensis, Combo 64 IECG	Shimadzu (Japan) Siemens (Germany)	Catheterization laboratory
Cardinal Santos	Discovery 710 64 slice	GE (United States)	Radiology (PET-CT)
Asian Hospital	Digital radiography system	Canon (Japan)	Medical imaging processing (radiology)
Asian Hospital	3D laparoscopy tower	Olympus (Japan) Storz (Germany)	Surgery and operating room
Asian Hospital	Accuray tomotherapy	Accuray (United States)	Oncology

Sources: Makati Medical Center, Asian Hospital and Cardinal Santos Medical Center.

Foreign suppliers of equipment are important stakeholders for MPHH. Their devices and equipment support the delivery of better medical services to patients. MPHH also collaborates with regional and trans-Pacific medical centres of excellence to optimize patient outcomes. Partnerships include visiting residency and fellowship programmes, and continuing professional education courses for physicians as well as nurses. Examples are the collaboration of Makati Medical Center with Parkway Hospitals in Singapore and with the UC Davis Comprehensive Cancer Center in the United States.

ASEAN Economic Community

MPHH welcomes the creation of an integrated economic community. However, it identified many challenges, which it hopes ASEAN governments can address. They include challenges related to mutual recognition of professional health care services and the ease of entry of medical equipment and devices between ASEAN countries. MPHH expects that the AEC will create more employment opportunities for health care professionals (doctors, nurses and other allied medical profession). A growing challenge will be retaining health care professionals within the Philippines, as many of them are leaving for North America, Europe and the Middle East. With a bigger employment market in ASEAN (particularly in those countries with a bustling medical tourism industry), Filipino health care professionals will not need to travel far to find employment.

Raffles Medical Group

Raffles Medical Group (RMG) is an integrated private health care provider headquartered in Singapore. It operates medical facilities (hospitals and clinics) in 13 cities in Asia, including in Cambodia, China, Japan, Singapore and Viet Nam. The group owns and operates hospitals and medical centres, insurance services and a health care training institute in Singapore. Aside from its clinics in Cambodia, Singapore and Viet Nam, the group also has representative offices in other ASEAN countries (i.e. Brunei Darussalam and Indonesia) for marketing and following up with patients.

RMG operates a number of key health care businesses. They cover (i) hospital and clinic services, which include medical laboratory, imaging centre and pathological laboratory service; (ii) health insurance in partnership with BUPA (United Kingdom); (iii) trading in pharmaceutical and nutraceutical products including diagnostic equipment such as medical home devices made by international firms (e.g. Omron (Japan)); (iv) provision of management and consultancy services to its medical centers in Asia (e.g. ASEAN countries, Hong Kong (China) and China) and (V) investment holdings including investment in health care properties. It also operates a health care institute for its staff development and third-party professionals. The group internationalizes primarily in Asia. In ASEAN, RMG has 24 subsidiaries (i.e. 20 in Singapore, 2 in Viet Nam, 1 each in Indonesia and Cambodia).

Medical tourism

Medical tourism is a major contributor to RMG's growth in the hospital services segment. More than 35 per cent of Raffles Hospital's patients in Singapore are foreigners from over 100 countries (including Indonesia, Malaysia and Myanmar). RMG has set up patient liaison offices in countries such as Indonesia, Cambodia and Viet Nam to support the growing foreign patient segment and to provide assistance relating to travel documents and medical bookings.[46]

Medical and digital technology

RMG uses medical technologies and equipment supplied by major MNEs that operate in health care segment. For instance, it is a major customer of GE Healthcare (United States).

RMG operates GE operating theater systems, image-guidance system, digital imaging equipment, and other GE health care technologies.[47] In 2014, RMG opened its state-of-the-art nuclear medicine centre, which uses Siemens (Germany) mCT (multi-cell positron trap) flow Positron Emission Tomography (PET) and Siemens Skyra 3T Magnetic Resonance Imaging equipment.

RMG leverages on technology to enhance the quality of patient care and to provide them with more connected health care. In 2019, RMG launched a 24-hour telemedicine platform to expand its market reach. It partnered with Singapore-based telehealth startup, Doctor World, to establish RafflesConnect that links Raffles Medical's doctors and services with its clients.

Knowledge collaboration

In 2015, RMG joined the Mayo Clinic Care Network. It benefits from the ongoing collaboration with Mayo Clinic for complex cases. RMG continues to focus on collaboration in developing capabilities to serve the needs of the ageing population in Singapore and in the region.[48]

St. Frances Cabrini Medical Center

St. Frances Cabrini Medical Center (SFCMC) is a private hospital owned and managed by the Torres Group, the Philippines joint venture partner of Yazaki Corporation (Japan). The medical centre was established in 1998. Today, it operates a 100-bed hospital, a cancer centre and a government-accredited research facility. In 2018 it employed about 440 personnel and 400 accredited medical staff and generated $7.7 million in revenue.

The centre works closely with its sister institution, Lyceum of the Philippines University – St. Frances Cabrini School of Health Sciences. Much of its research and development and its clinical testing is done in collaboration with foreign institutions through academic exchanges, benchmarking, training and placements. It has established many foreign collaborations and affiliations for technology supply, expertise and training resources.

Training and placement

SFCMC has been partnering with Seirei Hamamatsu General Hospital (Shizuoka, Japan) for the hospital to provide training and lectures at SFCMC facilities. Seirei Hamamatsu's medical staff also participate in cleft palate surgeries that SFCMC provides to local patients at no cost. In addition, SFCMC nurses have been deployed to Seirei Hamamatsu as registered nurses with licenses to practise in Japan. Filipino nurses undergo language training, skills and nurse licensure examinations in Japan. This effort has been supported by the Japan-Philippines Economic Partnership Agreement.

SFCMC and Lyceum of the Philippines University work together to provide caregiver courses and to train students for employment placement in the Nishiyama group of hospitals in Japan. Another Tokyo-based company, Medical Relation Management, provides human resources training in Japanese language and skills for Filipino caregivers. SFCMC also partners other foreign institutions such as Wesleyan University (Illinois, United States) for training of American undergraduate nurses at SFCMC hospital facilities. It also provides pre-surgical services to local patients with special training extended by Changgung Hospital (Taiwan Province of China).

Medical tourism

SFCMC is a PEZA-approved health care service provider for medical tourism. The management of SFCMC is of the view that the international medical tourism industry in the Philippines is not as competitive as in other leading countries in the region because the infrastructure network (airports, roads, traffic) in the capital city needs to be further developed. For example, it can be a challenge to transport patients from airports to medical centres on the congested roads. There is also a lack of investment incentives that promote medical tourism in relation to health care institutions in the Philippines.

SFCMC is connected with other charitable institutions abroad that are involved in providing medical equipment for charity services. An example is Wir Helfen eV (Germany), which in 2012 provided 10 dialysis machines for SFCMC's dialysis centre. To reach a broader segment of renal-failure patients, the centre offers dialysis treatment at an affordable rate.

Medical technology

SFCMC uses medical technology and solutions supplied by leading global health care technology manufacturers such as Siemens Healthcare, GE Healthcare and Royal Philips Healthcare (table 3.32).

Table 3.32. Medical technology and solutions used by SFCMC

Equipment	Manufacturer	Nationality	SFCMC Department
Automated blood chemistry	Hitachi	Japan	Diagnostics
CBC diagnostics	Sysmex	Japan	Diagnostics
Plasma cell separator	Fresenius	Germany	Diagnostics
Vitek 2	Biomerieux	France	Diagnostics
Dental panoramic X-ray scan	Rayscan	Republic of Korea	Imaging, Dental
CT scan	Royal Philips Healthcare	Netherland	Imaging
CT scan	GE Healthcare	United States	Imaging
MRI	Siemens Healthcare	Germany	Imaging
Laparoscopic/endoscopic equipment	Olympus	Japan	Imaging, Gastro-enterology
Haemodialysis	Fresenius	Germany	Renal
Mammography system	Siemens Healthcare	Germany	Diagnostics
Nuclear scanning machine	DDD Diagnostics	Denmark	Oncology
Linear accelerator	Varian	United States	Oncology
Flexitron brachytherapy	Elekta	Sweden	Oncology

Source: SFCMC.

ASEAN Economic Community

SFCMC management sees the AEC as providing investment opportunity for health care service providers and for patients to access quality health care in the region. However, it also sees challenges such as competition and recognition of skills and expertise by all Member States. SFCMC management thus hopes that private sector health care players and the Philippine government can work together to help the private institutions get ready for the AEC. For example, facilitation measures could be developed to support hospitals and medical centers in the Philippines in upgrading technologies by making sourcing and distribution of medical equipment easier.

3.6.2. Pharmaceutical companies

PT Dexa Medica

Dexa Medica has evolved from a small company to a large pharmaceutical group in Indonesia. It has manufacturing and commercial operations in Indonesia and other ASEAN countries. The group has 4,000 employees in Indonesia and representatives or agents in other ASEAN countries. Its export business contributes about 10 per cent of the group's revenues.

Dexa operates five international-standard manufacturing facilities in Indonesia (including one for oncology products), and is establishing a presence in other ASEAN markets, such as the Philippines and Singapore. It has established Dexa Laboratories of Biomolecular Sciences and the Dexa Development Center in Jakarta. Dexa serves different ASEAN countries through different strategies and modes of entry, such as authorized marketing agents, patent holders and importers.

The group is contributing to the development of the health care industry in Indonesia and ASEAN through the development of generic drugs, providing patients with access to quality low-cost medicines, as well as through partnerships with hospitals and in research and development.

Development of the generic pharmaceutical industry

Dexa develops and manufactures its own brand of generic pharmaceutical products for the Indonesian and South-East Asian markets. In producing and commercializing these products, Dexa collaborates with local suppliers (for raw materials), distributors and partners across the region (table 3.33).

Table 3.33. Dexa Medica: Corporate partners in ASEAN, 2019

Country	Partner company/agent
Cambodia	Dynamic Argon Co Ltd
Malaysia	Averroes Pharmaceuticals Sdn Bhd Pharmaforte Sdn Bhd Apex Pharmacy Marketing Sdn Bhd
Myanmar	Shwe Yadanar Myay, Co Ltd Mega Lifesciences Pty Ltd
Philippines	Oxford Distribution Inc
Singapore	Apoteca Marketing Pte Ltd Apex Pharma Marketing Pte Ltd
Viet Nam	King Powder Co Ltd Ever Neuro Pharma (Asia) Ltd

Source: Dexa Medica.

Research and development

Dexa develops off-patent generic pharmaceuticals and works with many multinational research-based companies through strategic alliances and collaborations. In Indonesia, it collaborates with several hospitals for clinical trials, especially with type A hospitals such as Rumah Sakit Cipto Mangunkusumo, Rumah Sakit Moh Husin Palembang, Rumah Sakit Kandao Manado and other hospitals across the country.

Dexa's product development is targeted to key therapeutic areas, such as anti-hypertension, oral anti-diabetes, lipid lowering agents, anti-pain, respiratory and antibiotic. Some of its bioactive fractions developed from the country's rich biodiversity (herbal, animal and marine) are exported to Cambodia, the Philippines, Singapore, Canada and the United States.

ASEAN Economic Community

An integrated ASEAN would offer investment and business opportunities for health care businesses. However, there are integration challenges that ASEAN governments need to address, with support from the private sector. The concept of one market in the pharmaceutical industry could translate into one stop-off point in any ASEAN country for pharmaceutical approval (i.e. an approval for a pharmaceutical company to produce and market a product in Indonesia would apply in other ASEAN countries as well). The development of ASEAN-owned generic pharmaceutical companies could contribute to developing the backbone of a strong, ASEAN-wide generic drug industry.

Dexa welcomes the efforts of the ASEAN governments towards an integrated region and believes in the importance of a public-private sector collaboration to realize such integration. The pharmaceutical market in ASEAN is poised for higher growth, and as such, Dexa is continuing to build on its presence in the region. It has been working closely with its local distribution partners in six ASEAN countries. With the AEC and regional integration, Dexa is examining opportunities to further internationalize in ASEAN. It is looking for opportunities to build facilities in other ASEAN countries such as Myanmar and/or the Philippines.

PT Kalbe Farma

Kalbe Farma is a leading Indonesian pharmaceutical group. It started as a small, garage-based operation in 1966. Today, it is involved in manufacturing, marketing, distribution, digital health activities, and research and development (R&D) of pharmaceutical products, medical devices and diagnostics. Kalbe Farma's operation involves four business divisions: prescription pharmaceutical (23 per cent), consumer health (17 per cent), nutritional products (30 per cent) and distribution and logistics (30 per cent).

Kalbe Farma has been internationalizing since the late 1990s. It operates in other ASEAN countries and farther afield (Nigeria and South Africa). It has 38 subsidiaries and employs more than 17,000 people. In 2018 it had a market capitalization value of $5.9 billion and a sales turnover of $1.5 billion.

Connecting ASEAN

The group connects ASEAN countries through its sales and marketing offices, subsidiaries, strategic partnerships and commercial presence in all ASEAN countries except for the Lao People's Democratic Republic (in which the business is handled by the Cambodia operation). It also outsources manufacturing of its products to contract manufacturers in other ASEAN countries such as Biofact Life in Malaysia.

Kalbe Farma continues to look out for investment opportunities in ASEAN through joint ventures and strategic collaborations with other health care companies. Its second wave of expansion in the region entails different market entry approaches (table 3.34).

Table 3.34. Kalbe Farma: Operations in ASEAN, 2019

Host country	Kalbe activities	Remarks
Cambodia	Marketing for Cambodia and the Lao People's Democratic Republic	The local Kalbe marketing team promotes the group's pharmaceutical products and brands. Distribution is conducted through a local third-party distributor.
Malaysia	Office subsidiary and marketing	Subsidiary handles outsourcing activities to local contract manufacturers. Local Kalbe Farma's marketing team promotes its brands and products. Distribution is done through local third-party distributor in the host country.
Myanmar	Marketing office and ongoing construction of a manufacturing facility	A manufacturing plant is scheduled to open in 2020 to serve the CLMV countries. It has a marketing office in Myanmar. Distribution is done through a local third-party company.
Philippines	A joint-venture subsidiary with Philippine's Zesto Group	The joint-venture subsidiary manufactures and markets Kalbe Farma's products in the host country. Distribution of some products is done through a local third-party company.
Singapore	Subsidiary, research facility, marketing operation, clinical research	A research facility (Innogene Kalbiotech), in collaboration with the National Cancer Centre of Singapore, has been operational since 2010. A marketing office promotes the company's brands and products in Singapore. A subsidiary was established for regional networking functions.
Thailand	Marketing office, clinical test facilities	Local Kalbe marketing team. Distribution is done through a local third party distributor.
Viet Nam	Marketing	Marketing office. Distribution is done through a local third-party company.

Sources: Interview, company's website and 2017 Annual Report.

The group has also established strategic alliances with international partners in R&D for development of cancer drugs, stem cells and biotechnology research. The strategic alliances have enabled the group to access state-of-the-art technology and knowledge to develop better products and services (table 3.35).

Kalbe Farma's distribution and logistics business is engaged in the marketing and distribution of medical devices and equipment of other manufacturers, such as Roche Diagnostics (Germany), Biomerieux (France) and Royal Philips Healthcare (Netherlands).

Table 3.35. Kalbe Farma: Overseas collaborations and partnerships, 2019 (Selected cases)

Foreign partners	Headquarters	Kalbe Farma entity	Remarks
National Cancer Centre in Singapore	Singapore	Innogene Kalbiotech	Oncology research
Health Sciences Research Institute	Japan	Innolab Sains Internasional	Kalgen Innolab Clinical Laboratory (Diagnostics and Pathology)
Genexined	Republic of Korea	PT Kalbe Genexine Biologics	Technology transfer on R&D of innovative biological drugs
Shandong Kexing	China	PT Kalbe Farma	Technology transfer in biological production
mAbxience	Spain	Innogene Kalbiotech	Technology transfer in oncology
Medistra Medical Centre, University of Indonesia School of Medicine, Cipto Mangunkusumo Hospital	Singapore/ Indonesia	Stem Cell and Cancer Institute	Stem cell research and clinical research
John Hopkins Hospital	Facility in Singapore	Innogene Kalbiotech	Research in oncology
Veterans Hospital	Philippines	Innogene Kalbiotech	Research in oncology
RS Dharmais	Indonesia	Innogene Kalbiotech	Research in oncology
Blackmores	Australia	PT Sanghiang Perkasa (Kalbe subsidiary)	Established a joint-venture (PT Kalbe Blackmores Nutrition) to manufacture and distribute vitamin and health supplement products in Indonesia.

Source: Kalbe and company's website.

Digitalization

The group is involved in digital health activities, in particular through the establishment of three dedicated e-commerce ventures. They are www.kalbestore.com (a nutrition store), www.klikdokter.com (a health information source, where visitors receive health tips and advice from health professionals), and www.klik-apotek.com (a drugstore).

Kalbe Farma is leveraging its digital platforms to build a comprehensive health care ecosystem. Through these efforts, it is linked with 13 hospitals of Mitra Keluarga, a sister company, and with more than 1,000 pharmacies and doctors in Indonesia.[49] The group continues to expand into digital health. In March 2019, Kalbe signed a memorandum of understanding with Grab Indonesia to improve joint services in the health sector, to build synergy between their online and offline services. As part of the collaboration, Grab will support Kalbe's operational activities in the following areas:

- Product delivery services to consumers
- Promotional offers for Kalbe health products in the Grab application, for Grab and Kalbe consumers
- Automation of Kalbe's operational activities for greater efficiency, starting with the use of Grab transportation services for Kalbe employees and for document delivery.

Business linkages

Through outsourcing, the group has established arrangements with contract manufacturers in other ASEAN countries. The group's products are distributed by a network of distributors in other ASEAN countries (table 3.36).

Table 3.36. Kalbe Farma: Distributors in other ASEAN countries, 2019

Host country	Distributor (Selected cases)
Brunei Darussalam	M.S. Makmur Trading Co
Cambodia	Alliance Pharma Cambodge Sarl DKSH (Cambodia) Ltd Intermedica Yul Diversity
Malaysia	Ranbaxy Malaysia Sdn Bhd Kalbe Malaysia Sdn Bhd (Delfi Malaysia) Antah Pharma
Myanmar	Mega Lifesciences Ltd Zizawa AA Medical Products Ltd Grand Pharma Royal Ruby Co Ltd
Philippines	Globo Asiatico Enterprises, Inc Lakeside Pharmaceuticals Philippines, Inc Ecossential Foods Corporation Metro Drug Delex Pharma International, Inc
Singapore	Zyfas Medical Co Apotheca Marketing Pte Ltd Integrated Market Services Asia Singapore
Thailand	Diethlem Keller Logistic (DKLL) Kitjimaya (Thailand) Co Ltd
Viet Nam	Mega Products Ltd DKSH Vietnam Co Ltd Ho Chi Minh City Medical Import-Export Joint Stock Co

Source: Kalbe Farma.

Research and development

Kalbe Farma partners with universities, institutions and research centres in Indonesia and other ASEAN countries in the development of pharmaceutical products. The group provides funding and research support to universities and research centres, supporting the health care ecosystem. It also organizes access to hospitals and other health care service providers for clinical testing and procurement of technology equipment for its R&D partners. For example, it provides funding support and partners with the University of Indonesia Medical School on R&D in stem cell. Kalbe Farma's clinical researches are mainly in ASEAN through Indonesia, the Philippines, Singapore and Thailand.

ASEAN Economic Community

Kalbe Farma welcomes ASEAN's regional integration, which will promote competition and economies of scale. However, there are still challenges in establishing the AEC given that non-tariff barriers in ASEAN Member States (e.g. mutual recognition of the quality and standards of products and requirements for manufacturing processes) remain to be addressed. The group is nevertheless hopeful, seeing the AEC as benefiting companies and people.

United Laboratories

United Laboratories (Unilab), headquartered in the Philippines, is a pharmaceutical company engaged in the manufacturing (including toll manufacturing), sales and distribution of nutritional and pharmaceutical products. Since its establishment in 1945, Unilab has built an extensive network of manufacturing facilities and commercial operations overseas, especially in ASEAN Member States (other than Brunei Darussalam) (table 3.37).

The group is one of the largest pharmaceutical companies in the Philippines, with about 6,000 employees, including 3,500 working in overseas operations. It commands about 20 per cent of the market, a share it has consistently maintained for more than 30 years.[50] It is estimated to generate annual revenues of more than $1 billion.

Table 3.37. Unilab: Presence in ASEAN

Affiliate	Host country (Type of operations)
United Pharma (Cambodia) Co Ltd	Cambodia (commercial)
PT Darya–Varia Laboratoria Tbk	Indonesia (manufacturing and commercial)
Medifarma Laboratories	Indonesia (manufacturing and commercial)
Lao Interpharma	Lao People's Democratic Republic (commercial)
UNAM Corp (M) Sdn Bhd	Malaysia (commercial)
United Pharma (Yangon) Co Ltd	Myanmar (commercial)
Far Eastern Drug Co Ltd	Singapore (commercial)
Blue Sphere Singapore Pte Ltd	Singapore (investment company, others)
Great Eastern Drug Co Ltd	Thailand (manufacturing, commercial)
United Pharma (Viet Nam), Inc	Viet Nam (manufacturing, commercial)

Source: Unilab and Darya-Varia.

Unilab also has subsidiaries in China (Shanghai United Cell Biotechnology Co Ltd) and Hong Kong (China) (Unam Corporation Ltd). In addition to its six production facilities in the Philippines, it has manufacturing facilities in Indonesia, Thailand and Viet Nam as well as China.

Manufacturing and distribution operation

Unilab manufactures products for its own pharmaceutical and nutritional brands, and it also engages in toll manufacturing for its affiliates and for third-party customers. For example, the two manufacturing plants of Darya–Varia in Indonesia focus on manufacturing the group's own brands, as well as toll manufacturing products for its affiliates in Malaysia, Myanmar, the Philippines, Singapore and Hong Kong (China)[51] and for its national and multinational principals, for both local and export markets.

Another Indonesian affiliate, Medifarma Laboratories, manufactures and exports its products to Unilab affiliates in Cambodia, Malaysia, Myanmar, the Philippines, Singapore, and Hong Kong (China).[52] In addition, a Thai affiliate, Great Eastern Drug Co Ltd, manufactures and markets mostly for the domestic market. It has an on-ground field team of drugstore and medical representatives across the country. It has extensive reach across retail drugstores in Thailand, penetrating most drugstores in the country. Great Eastern Drug has access to both specialty care and primary care products and antibiotics, covering both government facilities and private hospitals and clinics.[53]

Business partners and suppliers

Unilab also operates through its business partners, which include global companies such as Dr. Falk Pharma GmbH & Co (Germany), IBSS Biomed (Poland), PT Boehringer Ingelheim Indonesia (a subsidiary of Boehringer Inghelheim, headquartered in Germany), Neostrata (United States), PT Procter & Gamble (a subsidiary of United States-headquartered Procter & Gamble), Takeda Netherlands (Netherlands), PT Servier Indonesia (a subsidiary of French pharmaceutical firm Servier).

Unilab's manufacturing facilities use state-of-the art machinery and supplies sourced from international companies such as Glatt (Germany), Bosch (Germany), Manesty (United Kingdom) and Uhlmann and Romaco (Germany).

3.6.3. Medical equipment and technology solution companies

DocDoc

DocDoc is a major tele-health company in ASEAN. It offers a range of digital health services, including AI-powered doctor discovery (matching patients with the most relevant doctor based on patient's needs and doctor's unique expertise), tele-health solutions (telemedicine consultation with a general practitioner), and cashless settlements. DocDoc's AI-powered doctor discovery engine, HOPE (Heuristic for Outcome Price and Experience) uses artificial intelligence (AI) and predictive analytics to match patients to doctors who are most relevant for their particular condition or requested procedure. The company's service is available to insured patients through insurance firms and large employers, and it works with such firms to settle bills.

DocDoc has a network of more than 23,000 physicians under contract, 600 clinics and 100 hospitals in Asia; of which 5 are in ASEAN (i.e. Indonesia, Malaysia, the Philippines, Singapore and Thailand). The company has served more than 13 million patients since its founding. In addition to its headquarters in Singapore, it has offices in Indonesia, Philippines and Hong Kong (China).

Internationalization

Several factors influenced DocDoc's efforts to internationalize. They include (i) growing demand for quality health care among Asians; (ii) widespread information asymmetry in health care – limited availability of information regarding medical practitioners' backgrounds and health care facilities; (iii) the growing influence of digitally active millennial population demanding easy access to personalized information (iv) the increasing usage of telemedicine; (v) the vibrant medical tourism industry in Southeast Asia (in particular Singapore, Malaysia and Thailand); and (vi) the influence of the digital revolution and the growth of digital health activities in ASEAN.

With growing income, Southeast Asians are demanding better-quality health services. However, the information asymmetry in health care and the state of the health care infrastructure combined with limited resources in the region continue to pose challenges in meeting demand. Digital health platform provides patients with a consultation facility to search for the most relevant doctor. Such platform also provides patients in remote areas of a country to gain access to medical facilities and doctors.

Artificial intelligence application

HOPE (Heuristics for Outcome, Price and Experience) is DocDoc's AI-powered doctor discovery engine and consists of hundreds of data points per doctor. HOPE applies a knowledge model and learning algorithms to proprietary data on health care quality collected from the

DocDoc network. It helps patients find the right care by matching a specific patient's needs to a suitable physician.

Partnership

DocDoc has established partnerships and alliances with several groups of health care service providers and payers in the region. They include doctors, hospitals, insurance companies, and corporations. DocDoc's medical concierge leverages HOPE to provide data-driven advice and customized panels of recommended physicians to an individual insurance policyholder. Each panel of recommended physicians is uniquely customized to suit the medical needs of the policyholder's condition or requested procedure.[54]

DocDoc partners with insurance companies to provide policyholders with value-added services. Insurance firms pay to use DocDoc's services. DocDoc does not charge doctors, clinics and hospitals to avoid conflict of interest and to ensure transparency.[55] It has partnered with leading global insurance companies in Indonesia, Singapore, China and Hong Kong (China).

Funding and investors

DocDoc has raised $24.6 million through three funding rounds in 2012, 2015 and 2019 (including seed funding), which involved different investors (table 3.38).

ASEAN Economic Community

DocDoc has established a presence in many ASEAN Member States in a short span of time. The AEC presents an opportunity for digital start-ups such as DocDoc to grow and expand to other ASEAN Member States. In particular, users in the region can benefit from DocDoc's AI-powered platform and data analytics solution, including access to its telemedicine services platform.

Table 3.38. DocDoc: Investors and funding rounds, 2019

Date	Amount raised	Investors	Remarks
2012 (seed funding)	$3 million	500 Start-ups (United States), Jungle Ventures (Singapore)	Funding was used to expand operations, including through a merger with a competitor, DoctorPage.[a]
27 April 2015 (Series A)	$8.6 million	Vectr (Hong Kong, China), Sparklabs Global Ventures (United States) Hong Leong Financial Group (Malaysia)	Expands DocDoc's presence to eight economies (Indonesia, Singapore, Malaysia, Thailand, the Philippines, Hong Kong (China), the Republic of Korea and India), and in new markets.
6 August 2019	$13 million	Cyberport Macro Fund (Hong Kong, China)[b], Adamas Finance Asia (Hong Kong, China)	Supports DocDoc in expanding its market presence and scaling up its doctor discovery platform. DocDoc opens an office in Cyberport Hong Kong (China), builds on Cyberport's facilities, infrastructure and network to provide data-driven doctor discovery services to insurance policyholders.

Sources: Media, Crunchbase, Techcrunch and e27.

[a] *thenextweb*, "Singapore's DocDoc and DoctorPage merge to expand web-based doctor bookings across Asia, 12 June 2013.

[b] Cyberport, a wholly owned entity of the Hong Kong SAR government, is a digital community in the economy. It is an innovation hub with a vision to develop digital technology industry as a key economic driver for Hong Kong (China).

EndoMaster

EndoMaster is a medical robotics company that developed a robotic-assisted surgical system for endoscopy. It started out as a research project at Nanyang Technological University (Singapore) in 2004. It was established as a company in 2011 and launched its product in 2018. It raised about $15 million from venture capitalists in a funding round in 2017. The company has 25 full-time staff members, of which 80 per cent are engineers.

Funding

Investors in EndoMaster include Shanghai Runkun (China) and Hoya Corporation (Japan), a supplier and manufacturer of health care products.

Technological development

EndoMaster's robotic surgical system is expected to be an advance on current endoscopic surgeries and enable surgeons to perform surgeries without incisions. The system can remove gastrointestinal cancer tumours without the need for incisions in the body or organ of the patient.[56] It enables physicians to perform such minimally invasive surgery with greater precision and in less time. The company's endoluminal system would reduce operation time for open and keyhole surgeries from two hours to just 45 minutes.

Plans

EndoMaster plans to take its technology further by building devices that can take advantage of the body's other natural orifices such as the mouth, nose and ears to treat other ailments. The company's advanced technological breakthroughs in both the robotic and algorithmic elements mean that the procedure is sufficiently differentiated from other robotic offerings on the medical technology circuit. It plans to launch its medical solution in Singapore, China, Europe and the United States.

GE Healthcare

GE Healthcare (United States) is a global medical technology company. It is a division of the General Electric (United States) or GE conglomerate and has an extensive presence in ASEAN. The company provides a broad portfolio of medical equipment, solutions and services used in the diagnosis, treatment and monitoring of patients, to public and private hospitals, including other health care providers in the region.

Health care is one of GE's fastest growing businesses in ASEAN and GE Healthcare is one of the region's most active partners for health care development. Its presence and activities in the region vary by country and scope of operation. Some examples include the following:

Indonesia

The company has installed more than 25,000 medical equipment and technologies in public and private hospitals across Indonesia. In 2012, it introduced a handheld, pocket-sized screening device with ultrasound technologies, adapted to meet local requirements for use by Indonesian medical general practitioners and nurses located in rural areas. In 2018, it established a strategic agreement to support the hospital expansion plans of Mayapada Healthcare Group, one of the leading hospital operators in Indonesia. In this partnership, GE Healthcare provides Mayapada Healthcare with equipment, clinical and technical capacity building for its staff, hospital and workflow design for its hospitals, and lifecycle management for Mayapada's equipment.

Malaysia

The company partners and supplies ministries, hospitals, other health care providers, and research and training facilities with equipment and health care information systems. GE Healthcare works closely with the Malaysian Government to leverage the country's radiology resources to offer teleradiology diagnostic services.

Myanmar

The company has supplied imaging equipment including magnetic resonance, digital X-rays and ultrasound technology to Myanmar's public and private hospitals, including one of the country's biggest teaching hospitals.

Philippines

The company has supplied many major public and private hospitals with equipment to improve health care access throughout the country. This ranges from diagnostic imaging technology such as CT, MRI scanners to a suite of technologies that support the workflow of various care departments such as oncology and cardiology.

Singapore

The company partners with public and private hospitals, national specialty centers, government bodies and other health care providers in the development of the health care industry.

GE Global Research has a research collaboration with A*STAR (Agency for Science, Technology and Research) since 2014 to co-create innovative medical technologies that will aid health care providers worldwide to deliver faster and more accurate diagnoses, improve treatment strategies, and achieve greater productivity in workflow. In 2014, it established the ASEAN Clinical Care Solutions Services Hub as an anchor point for repair solutions for the region. The centre forms an integral service delivery arm to provide faster repair turnaround time for customers in ASEAN.

Thailand

The company has been providing transformational medical technologies and services throughout Thailand's public and private health care systems. It has installed more than 4,200 units of GE Healthcare diagnostic imaging and ultrasound medical equipment. GE Healthcare has also partnered with some of Thailand's leading hospitals to inaugurate some of the region's most advanced technologies, such as MR-guided focused ultrasound. GE Healthcare has helped one of Thailand's leading medical universities establish a research collaboration, contributing insights on ASEAN patient demographics to the global medical research community.

Viet Nam

The company works closely with the government, private sector and industry associations to drive improvement around health care access and health care service standards through relevant technology and training catered to the varied needs of Tier 1 and Tier 2 city customers. It has a strategic partnership with Vinmec, a well-known health care provider in Viet Nam, to promote science and technology application, optimize infrastructure as well as improve health care capacity building tied to international practices. GE Healthcare also contributes to grooming the country's next generation of clinicians, working with associations and local medical teaching universities to establish anesthesiology simulation labs and training in digital solutions such as enterprise imaging software.

PT Global Urban Essensial

Global Urban Essensial (GUE) is an Indonesian digital health care start-up established in 2016. It provides a platform for users to gain access to doctors, patients, pharmacies, allied medical professionals and health insurance providers. GUE provides online consultation, referrals and home delivery of medication. It has five health care platforms that serve as the backbones of the company's health care digital system (table 3.39). GUE has 100 employees. Although GUE's business is focused on the Indonesian market, it aspires to expand into other ASEAN markets in the next five years.

Foreign collaboration

GUE has partnered with various MNEs in the FMCG, health care and insurance industry. It is the sole distributor in the Indonesian market for Dnurse Technology (China), a medical device company that makes a glucose monitor. The handheld device is a lower-cost alternative to other international brands and can be purchased from GUE's digital platform, Teman Diabetes.

Table 3.39. Global Urban Essensial: Digital health platforms

Platform	Description	Users	Remarks
GueSehat (Guesehat.com)	An online health media platform complete with symptom checker and Indonesian-centric tools, such as a calorie counter that includes Indonesian cuisine, health information that caters to the Indonesian market, and medical experts who are based in Indonesia. Launched in 2017.	• 20,000 doctors in database • 100,000 users	Provides users with information for finding and contacting health care service providers such as doctors, hospitals, clinics, health clubs and laboratories.
Teman Bumil App (powered by Guesehat.com)	A pregnancy and parenting mobile phone app (App Store and Play Store) that is used during the first 1,000 days of a baby's life.	• 520,000 installs • 123,00 followers on Instagram	Uses digital technology to run the application and provide insight to mothers, as well as offer information and literature.
Teman Diabetes App (powered by Guesehat.com)	A mobile phone application (App Store and Play Store) tailor-made for diabetics in Indonesia to monitor their blood glucose levels and receive guidance.	• 34,000 users	Key features: 1. Detect: Users gain ease in measuring blood glucose levels using the Dnurse or any other brand portable glucose test device. The app has a program that can read the portable device when it is plugged into phones. 2. Educate: Users can mine or search information on the management and treatment of diabetes and other related data.
GoApotik.com	A website and mobile app for purchasing health products, including prescription medication, online.	• 400 registered pharmacies and wholesalers in 13 key cities	Key features: 1.Users can search for the nearest drugstore and can purchase online. Purchases are delivered to user's location or home. 2.The app makes 400 pharmacies and health care product wholesalers, more accessible to users and buyers.
D2DD App	Engaging doctors digitally. D2D enables online medical education and connection to patients.	• 9,000 app installs • Covers 7% of total population of doctors	..

Source: Global Urban Essensial.

Siemens Healthineers

Siemens Healthineers is the health care subsidiary of Siemens (Germany). It is a leading provider of health care equipment, technologies and solutions to hospitals and medical institutions in ASEAN. It also provides clinical consulting services and trainings to clients in the region.

Siemens Healthineers is constantly innovating its portfolio of products and services in its core areas of diagnostic and therapeutic imaging, including in laboratory diagnostics and molecular medicine. It is also actively developing its digital health services and enterprise services.

The company has an extensive presence in ASEAN (e.g. Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam) and has supplied many types of medical equipment, technologies and solutions to hospitals and medical institutions (e.g. medical centres, clinics) across the region. For instance, in Indonesia alone, it has installed more than 3,000 units of Siemens health care technology solutions and equipment at 900 hospitals and 300 laboratories in 2017.[57]

Aside from technology solutions and medical equipment, Siemens Healthineers has R&D activities in the region (primarily in Singapore). It also provides training and capacity building programmes to medical institutions to operate and maintain the medical equipment and systems it supplied in the region.

Over the years, it has played an important role in the development of the health care industry in ASEAN through distribution, manufacturing, technical service and R&D activities. With more than 900 employees and about 9,000 installations, Siemens Healthineers is not only providing health care solutions in the region, but is also hand-holding the community through educational programmes such as hands-on workshops, product trainings and clinical fora.

Trendlines Medical

Trendlines Medical (Singapore) was established in 2016 by the Trendlines Group (Israel) and B. Braun (Germany) one of the world's leading medical device manufacturers. Trendlines Medical is Trendlines Group's third technology start-ups incubator. It discovers, invests in, incubates and provides a range of services to nurture and develop Singapore-based start-up companies in medical devices and technologies. Table 3.40 provides some start-ups associated with the company.

Trendlines Medical Singapore actively engages and develops the Medtech ecosystem in Singapore and has established partnerships with the National Healthcare Group and A*ccelerate[58] to discover and develop companies.

Table 3.40. Trendlines Medical Singapore Projects (Selected cases)

Start-up Name	Description	Nationality	Year	Technology source	Collaboration partners (in Singapore)
Avir Medical	Development of a novel endotracheal tube to reduce ventilator-associated pneumonia	Singapore	2018	Singapore	Tan Tock Seng Hospital
Ayzer Sense	Development of a low-cost, Smart Automated Body-Pressure Redistributor (SABPR) to prevent pressure ulcers (pressure sores)	Singapore	2018	Singapore	Tan Tock Seng Hospital, National Skin Centre
Continale Medical	Development of a device to alleviate stress urinary incontinence	Singapore	2018	Israel	Singapore General Hospital
InterVaal	Development of a catheter to address the widespread problem of catheter-associated urinary tract infections	Singapore	2017	Israel	Khoo Teck Puat Hospital
Medulla Pro	Development of a ultrasound-guided, real-time imaging system for lumbar puncture	Singapore	2018	Singapore	Tan Tock Seng Hospital, Khoo Teck Puat Hospital

Source: Trendlines Medical.

3.6.4. Health care focused private equity companies

TE Asia Healthcare Partners

TE Asia Healthcare Partners (Singapore) is a private equity company with health care operations primarily in ASEAN. It is backed by TPG Capital. TE Asia Healthcare invests, owns and manages health care facilities, with a focused in specialty centres and hospitals. Some of its specialty facilities include oncology, cardiology, orthopedics, aesthetics and dermatology.

Since its establishment in 2014, TE Asia Healthcare has 4 oncology centers in ASEAN (i.e. Indonesia, Malaysia, Philippines and Viet Nam) (table 3.41) and 1 in Hong Kong (China). It also has invested in a chain of aesthetic clinics through a partnership with APEX Profound Beauty, headquartered in Thailand.

Table 3.41. TE Asia Healthcare: Investments and ownership of health care facilities in ASEAN

Investment	Year	Country	Arrangement	Remarks
Hung Viet Cancer Hospital	2019	Viet Nam	..	TE Asia Healthcare aims to launch new facilities and services related to oncology. The hospital will have access to the regional network of radiology and oncology expertise.
Adi Husada Cancer Center	2018	Indonesia	A partnership with Adi Husada Hospital	Provides new and modern cancer treatment facilities.
The Cancer Center at Mother Teresa of Calcutta Medical Center	2018	Philippines	A partnership with Mother Teresa of Calcutta Medical Centre	Provides new and modern cancer treatment facilities.
APEX Profound Beauty	2017	Thailand	TE Asia Healthcare has a 45 per cent stake	APEX aims to increase its footprint in ASEAN especially in Myanmar and Viet Nam. It expects to benefit from TE Asia Healthcare's strong network in Southeast Asia and China.
Cardiac Vascular Sentral Kuala Lumpur (CVSKL)	2015 (opened in November 2017)	Malaysia	$69 million to build the hospital	CVSKL also treats patients from abroad. Most of its overseas patients came from Indonesia, Bangladesh, Myanmar and Viet Nam.

Sources: TE Asia Healthcare, media news and company websites.

TE Asia Healthcare has announced plans to expand the number of oncology centres in Indonesia to serve Indonesian patients in their country. It plans to open 8 to 10 such centres in the next 2-3 years.[59]

Quadria Capital

Quadria Capital (Singapore) is an independent health care-focused private equity firm with more than $1.8 billion assets under management across South and Southeast Asia. Quadria invests in and manages over 100 hospitals across ASEAN and South Asia, serving over 1.4 million patients annually. Through co-investments with government and global institutional investors, Quadria Capital has invested in health care delivery, life sciences, and associated health care services. Table 3.42 highlights its past and current investments in ASEAN.

Table 3.42. Quadria Capital: Co-investments in health care companies in ASEAN

Investee company	Host country	Remarks	Date
Lablink	Malaysia	Established in 1989 as a wholly owned subsidiary of KPJ Healthcare (Malaysia) before Quadria's investment. Quadria acquired a 49 per cent stake in 2018 and has transformed it into a leading hospital laboratory chain with more than 400 full-time staff and a network of 26 laboratories covering 10 states across East and West Malaysia.	2018
MWH Holdings	Singapore	One of the leading multi-specialty care groups in Southeast Asia, with core expertise such as in cardiology, gastroenterology, urology and interventional radiology. It operates under four flagship brands: Singapore Heart, Stroke and Cancer Centre; Singapore Medical Specialists Centre; Singapore Centre for Medical Imaging; and Face, Body and Skin Aesthetics Medical Centre. MWH also partners with local medical facilities across Southeast Asia to offer highly specialized health care services.	2017
FV Hospital	Viet Nam	A tertiary JCI-accredited hospital in Ho Chi Minh City that caters to patients from the CLMV countries and is working on plans to expand through greenfield and brownfield investments.	2017
Soho Global Health	Indonesia	A large integrated pharmaceutical and health care distribution businesses founded in 1946. Manufactures consumer and prescription products, and has an extensive in-house marketing and distribution platform, covering more than 95 per cent of hospitals and pharmacies in the country.	2015
Hoan My Corporation	Viet Nam	A leading private health care network in Viet Nam with over 14 hospitals and 6 clinics.	2011 (exited)
Parkway Holdings	Singapore	One of the largest pan-Asia private hospital operator with a network of more than 60 hospitals and medical centers in Malaysia, Singapore, and China, India, Hong Kong (China), Turkey and United Arab Emirates.	2010 (exited)

Source: Quadria Capital, Annual Report 2018.

FDI motivations

Quadria Capital believes that the ASEAN health care presents one of the most attractive investment opportunities in the world. The region's rapidly growing population, emerging middle class, and under-invested health care systems for chronic diseases, provides a compelling motivation for private health care investments.

Quadria invests in companies with substantial growth potential across all segments of health care. They include the following:

- Health care delivery (e.g. hospitals, clinics and diagnostic laboratories)
- Life sciences (e.g. pharmaceuticals, including clinical testing and drug development)
- Medical technology (e.g. medical equipment, devices and IT-enabled health services systems)
- Associated health care services (e.g. pathology, diagnostic services, retail and distribution)

Collaborations and networks

As one of Asia's largest healthcare funds, Quadria leverages its in-house health care ecosystem and expertise in supporting its investment in the region. At FV Hospital, it facilitated a strategic partnership between FV hospital and Healthcare Global Enterprise, the largest oncology hospital chain in India, to support the upgrading of FV's Oncology center. Through the partnership, Healthcare Global Enterprises provides FV Hospital with full support in terms of technical advice, procurement, training, and sharing of clinical and operational know-how, as well as recruitment of clinical technicians, paramedical staff and doctors.

At Soho Global Health, Quadria capitalizes on its proprietary relationship with global pharmaceutical companies to help Soho in-license over 30 exclusive drugs for the Indonesian market. In addition, Quadria is involved in the entire in-licensing process from product screening to marketing and distribution. For example, Soho was chosen by a leading global biotechnology firm as the exclusive local partner for Hepatitis treatment in Indonesia.

3.7. CONCLUSION

The ASEAN health care landscape is changing because of rapid growth in demand, increasing private participation, an improving investment environment and the advancement of digital revolution and medical technologies on the delivery of care. The development of the health care industry, however, varies between countries (chapter 4).

The growing population, changing demographics and increasing middle class are contributing to the health care demand challenge. With limited resources, the public sector cannot meet this challenge alone. The private sector, including FDI, can play a role by complementing the efforts of the public sector in developing the health care industry and in delivery of affordable services.

FDI and foreign participation in health care in ASEAN are rising. Foreign companies are contributing to the development of the health industry through equity investment, strategic partnership and non-equity forms of participation across the different segments of the health care value chain. Foreign companies and institutions collaborate or establish alliances with ASEAN health care providers (hospitals) in training, education, R&D activities and knowledge exchange. This relationship, through equity and non-equity forms, is important for the development of an efficient health care ecosystem in the region.

There are various categories of actors in the health care industry. Homegrown ASEAN health care companies (hospitals, pharmaceutical companies and start-ups) have also internationalized to other ASEAN Member States to grow, diversify markets and take advantage of emerging opportunities. Both private hospital groups and PEs are major investors in hospitals in the region. Some major hospital groups have foreign investment stakes in them.

Major global pharmaceutical MNEs are present in ASEAN, operating in multiple locations and with multiple business functions. Many global pharmaceuticals and insurance MNEs have long had business ties with countries in the region. They continue to expand operations, driven by investment opportunities, cost advantages and market potential.

In general, FDI across the health care value chain (from hospitals, clinics and pharmaceuticals to insurance) is market-seeking. Engaging in a joint venture with local partners is a common feature of MNEs' participation in the region's pharmaceuticals segment, especially in marketing and distribution functions. Local knowledge, distribution channels and business networks of local partners are important considerations. Contract manufacturing is another key feature. This segment involves ASEAN and foreign companies as contract manufacturers to local firms and also to other MNEs. The vibrant contract manufacturing sector increases the competitiveness of ASEAN Member States in attracting pharmaceuticals FDI (for both market-seeking and efficiency-seeking motives).

The advent of digital technologies has led to the emergence of new types of actors with business models that are transforming the delivery of health care and access. Medical start-ups in the region such as in tele-health, telemedicine and medical equipment are growing because of increasing attention and investment interest by VCs and PEs. These start-ups are also partnering with larger firms to scale up and to expand market reach across the region – thereby contributing to the development of the health care industry and broader access to health care facilities.

Local and foreign health care actors across the value chain can help improve the efficiency and quality of care in ASEAN through the health infrastructure they build and manage, pharmaceuticals manufacturing and distribution (generating import substitution and export promotion effects), the supply of modern medical equipment and devices, alliances in sharing of knowledge and best practices, and provision of health insurance. Although international insurance MNEs are major actors in the insurance segment, ASEAN health care providers such as hospitals are also involved in providing health insurance coverage.

ASEAN hospitals and clinics are using modern medical technologies and equipment (e.g. robots for surgery) supplied by foreign health care companies through their agents and distributors based in the region. Some ASEAN companies have developed robotic medical equipment and solutions including telemedicine that have expanded health care activities to more people.

Another key feature of the health care industry in the region is the rise in medical tourism. Some Member States have witnessed a rapid growth in medical tourism because of their affordable and better quality medical care environment, which is the result of targeted and coordinated national policies and efforts (chapter 4). The rise has translated into opportunities for private hospitals to invest in and upgrade facilities. The increasing list of JCI accredited hospitals has also helped these countries develop the medical tourism industry.

The prospects for private investment and FDI in health care in the region are promising. There is growing interest by ASEAN companies, hospital groups, MNEs, PEs, VCs and other stakeholders to increase investments in health care in the region because of the significant market potentials and opportunities. New types of companies are emerging, especially medical technology start-ups. As they internationalize to other ASEAN Member States, they contribute to the growth in intra-ASEAN investment and a larger pool of ASEAN companies in the health care ecosystem.

NOTES

[1] Based on WHO data.

[2] Deloitte, "A prespective of future healthcare landscape in ASEAN and Singapore (https://www2.deloitte.com/).

[3] World Economic Forum, "The cost of healthcare is rising in ASEAN. How can nations get the most for their money?", 31 August 2018).

[4] People with disposable incomes of $16-$100 a day.

[5] ASEAN Post, "ASEAN's middle-class is fueling the F&B industry", June 2018.

[6] Amit Varma, Asian Hospital and Healthcare Management, "Planning for healthcare demand and growth in Southeast Asia" (https://www.asianhhm.com/healthcare-management/healthcare-demand).

[7] The compound annual growth rate of the current health expenditure per capita (current US$) over 2000–2016 was 9.9 per cent.

[8] Patients Beyond Borders, "Medical tourism statistics and facts" (https://patientsbeyondborders.com/medical-tourism-statistics-facts).

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[17] KPJ Healthcare Berhad, 2018 Annual Report, pages 8-10.

[18] Vietnam Economic Times, "Japanese medical service opens in Vietnam", 9 April 2015.

[19] IVI-RMA is currently the largest medical group specializing in assisted reproductive technologies worldwide, with more than 70 clinics spread mainly across Europe and the Americas (https://ivi-fertility.com/specialists/).

[20] Business Times, "Thomson Medical and IVI-RMA to form assisted reproduction platform in Singapore", 27 July 2018.

[21] Based on data of KOTRA.

[22] Globe Newswire, "Chembio completes acquisition of Malaysia-based RVR diagnostic", 10 January 2017.

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[25] Vietnam News, "Novartis plans community activities in Vietnam", December 2018.

[26] Vietnam Investment Review, "Fear of losses keeps M&A in pharma humble", 8 August 2018.

[27] CyberAgent Capital is a VC that provides financial support for start-ups specializing in internet businesses.

[28] Transmedic was founded in 1980 with the aim of becoming the top specialist in the advanced medical technology arena in Southeast Asia. Headquartered in Singapore, it has a presence in five other ASEAN Member States (Indonesia, Malaysia, the Philippines, Thailand and Viet Nam).

[29] Engadget, "Robot caregivers are saving the elderly from lives of loneliness", 29 August 2017.

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[42] Crunchbase, Halodoc: Overview (https://www.crunchbase.com).

[43] Healthcare Asia Magazine.com, “Healthcare startup Halodoc raises US$65m in a series B funding round”, 13 March 2019.

[44] GIC was established in 1981 by the Singapore government to manage the country’s foreign reserves. It is a global long-term investor with well over $100 billion in assets in more than 40 economies worldwide (https://www.gic.com.sg/).

[45] Sanitas is engaged in operating primary care clinics and has extensive networks in Colombia, Spain, Mexico, Peru and Venezuela, and some parts of the United States and Indonesia.

[46] NUS Invest, “Raffles Medical Group Ltd.: Equity Research Report, 23 September 2015.

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[57] Siemens, “Improving Quality of Life, Siemens Indonesia: Business to Society”, p7. September 2017.

[58] *A*ccelerate is formerly known as ETPL, the commercialization arm of the Agency for Science, Technology and Research (A*STAR), Singapore’s lead agency for fostering scientific research and talent.

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CHAPTER 4

Health Care Investment Environment and Policies in ASEAN

4.1. INTRODUCTION

Regional development and cooperation among the ASEAN Member States have contributed to the improvement of the region's investment environment. MNEs and ASEAN companies operating in the health care industry in the region need to evaluate the changing health care landscape, which is continuously shaped by national development and implementation of regional health-care-related policies. Stakeholders should monitor the health care investment environment as ASEAN continues to integrate through the ASEAN Economic Community (AEC) Blueprint 2025. By 2025, the AEC is expected to become a single market of nearly 700 million people in a $4.7 trillion economy. It will also further strengthen the competitive production base, which is characterized by free flows of goods, services, investment, capital and skilled labour as well as a more strongly connected region.

Following from the analyses of chapter 3, this chapter analyses the importance of the regional and national investment environments in relation to FDI in health care. The chapter highlights regional health care cooperation (economic aspects) and the implications of economic agreements for health care investment. It also presents key aspects of investment policy and health care development in ASEAN Member States, including efforts undertaken to attract foreign investment. The focus is on policies to stimulate and regulate cross-border investment, including intraregional investment, in the health care industry.

4.2. REGIONAL COOPERATION IN HEALTH CARE

Health care is an important area of social and economic cooperation in ASEAN. Regional cooperation has evolved from addressing social and public health issues to incorporating economic aspects of health, with implications for investment and the development of the health care industry.

Over the years, ASEAN's economic integration has resulted in significant agreements, measures and institutional development. Major ASEAN economic agreements have improved the region's investment environment for health care. They include the ASEAN Comprehensive Investment Agreement (ACIA), the ASEAN Framework Agreement on Services (AFAS), the ASEAN Trade in Goods Agreement (ATIGA), Mutual Recognition Arrangements (MRAs) as well as other aspects of the development of the AEC.

The implementation of these agreements has affected the investment environment in terms of liberalization (e.g. market opening, foreign equity ownership), facilitation and cross-sectoral linkages. Ongoing efforts to harmonize health regulatory issues, including through the MRAs, have implications for investment, business operational strategy and the efficiency of the health care environment.

During AEC 2015, health care cooperation was accorded importance as one of the 11 priority sectors identified for accelerated integration. Monitoring and understanding regional commitments and development in health care is imperative for players and other stakeholders to operate efficiently. As Member States open up their health care markets and as regional agreements push for further liberalization as well as harmonization of standards, opportunities for health care FDI in ASEAN will continue to grow.

4.2.1. Development context

Health care cooperation in ASEAN started in 1980. It initially focused on technical cooperation on public health issues with ministerial meetings that took place every three to four years. Stronger regional health care cooperation started in the mid-2000s with more frequent ministerial meetings (at least every two years) to address the threat of infectious diseases (e.g. severe acute respiratory syndrome (SARS) and avian influenza) and to mitigate the economic impact of such threats (e.g. disrupted working hours, productivity and tourism).

In 2006, the ASEAN health ministers addressed the need to enhance competitiveness in health-related products and services, strengthen capacity for good clinical practice and clinical trials, and promote healthy lifestyles.[1] As ASEAN cooperation on social aspects of health care has strengthened over the years, cooperation on economic aspects has also gathered strength.

Under AEC 2015, the economic aspect of health care development involved elimination of import tariffs, opening-up of health services trade, and harmonization of standards and technical regulations for health and medical devices. Health care integration has been given specific attention under the AEC Blueprint 2025, which involves sector-strategic action plans and measures.

Over the years, ASEAN-wide efforts related to health care have transformed from initial sectoral cooperation mainly on public health issues to include cross-sectoral arrangements with social and economic dimensions. Health care features prominently in major ASEAN economic agreements, attesting to the significance of the industry and of health care development to the region.

4.2.2. Health care in major ASEAN economic agreements

Several major economic agreements and strategic action plans that form the building blocks of the AEC also affect investment in the health care industry. ASEAN is also implementing facilitation measures that include the ASEAN Agreement on Movement of Natural Persons and MRAs on several professional services, including health care services. The region has identified and is harmonizing some regulatory issues (e.g. common technical dossiers for registration of pharmaceutical products and regulation of medical devices). Once fully implemented, these measures will increase the efficiency and the competitiveness of the region for private health care activities.

Work on harmonization and market opening in health care is ongoing under the AEC and the implementation of sectoral agreements and strategic action plans. Under the AFAS, ASEAN Member States have already relaxed foreign equity ownership restrictions in health care. In most cases, 100 per cent foreign ownership in hospitals is allowed under the AFAS 10th package (AFAS-10) (table 4.1). The implementation of the various economic agreements (e.g. the AFAS, ACIA and ATIGA) has contributed to improving the investment environment for health care in the region (table 4.2).

Table 4.1. Foreign equity ownership allowed under AFAS commitments, 2008, 2010, 2016 and 2018 (Per cent)

	Hospital services		Health insurance	
	2010 (AFAS-8)	2018 (AFAS-10)	2008 (AFAS-4)	2016 (AFAS-7)
Brunei Darussalam	100	100	100	100
Cambodia	100	100	100	100
Indonesia	70	70	..	49
Lao People's Democratic Republic	100	100	100	100
Malaysia	70	70	51	100
Myanmar	51	70	..	..
Philippines	100	100	60	100
Singapore	70	100	49	49
Thailand	70	70	25	25
Viet Nam	100	100	100	100

Source: ASEAN Secretariat, AFAS commitment.
Note: AFAS = ASEAN Framework Agreement on Services and commitments made by the ASEAN Member States at the mentioned rounds of negotiation.

Table 4.2. ASEAN economic agreements and their implications for health care (Selected cases)

Major economic agreement	Year signed	Objectives and history	Relation to health care development and investment
ASEAN Framework Agreement on Services and subsequent Protocols	1995	• Facilitates free flow of intra-ASEAN trade in services and substantially eliminates restrictions on trade in services. • Since 1995, the AFAS has covered 10 packages of commitments for further market liberalization and elimination of barriers to trade in services. • Under the AFAS, market limitations (e.g. market access and national treatment) to the three modes of supply (cross-border supply, consumption abroad and commercial presence) are gradually eliminated.	• Health care services (e.g. specialized medical services, dental services, specialized nursing services, private hospital services and other human health services including pharmacy services, welfare services for the elderly and handicapped) are covered under the AFAS and its subsequent protocols. • As Member States liberalize their commitments under the AFAS (e.g. relaxation of foreign equity ownership and elimination of investment barriers), the investment environment of the region and that of the Member States is expected to further improve. MRAs also contribute to improvement to the regulatory environment for health care business and investment in the region (see MRAs at the end of the table).
ASEAN Trade in Goods Agreement (ATIGA)	2009	• Facilitates free flow of goods in the region through deeper economic linkages among Member States and elimination of trade barriers. • The ATIGA replaces the 1992 Common Effective Preferential Tariff scheme for ASEAN Free Trade Area agreement that saw significant elimination of tariffs to 0-5 per cent on most tariff lines for intra-ASEAN trade. • Through the ATIGA, Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand have eliminated intra-ASEAN import duties on 99.6 per cent of tariff lines. Cambodia, the Lao People's Democratic Republic, Myanmar and Viet Nam have reduced import duties to 0 to 5 per cent on 98.9 per cent of tariff lines. • With little intra-ASEAN tariff to reduce, the ATIGA focuses on addressing non-tariff measures to improve the region's environment for trade and business activities.	• Health care products (e.g. pharmaceuticals, raw materials for manufacturing of pharmaceutical products, and medical devices and equipment) are all covered under the ATIGA in terms of the movement of these products within ASEAN. • An integrating ASEAN with almost 0 per cent tariffs facilitates trade and sourcing activities. It also provides a large health care market of 650 million people in a combined $2.4 trillion economy. The market size and movement of goods across ASEAN under the ATIGA help lower costs and help companies reap the advantages of economies of scale to improve business efficiency.
ASEAN Comprehensive Investment Agreement (ACIA)	2009	• A main economic instrument to realize a free and open investment regime. It aims to create a liberal, transparent and competitive investment environment in ASEAN. It replaces the predecessor ASEAN Investment Agreement.	• The agreement covers manufacturing activities (including pharmaceutical and medical devices manufacturing). It also involves services incidental to manufacturing. • Work under the ACIA relates to liberalization, promotion, facilitation and cooperation on investment. Work on elimination of investment barriers is to be undertaken. The ACIA covers also manufacturing services including in pharmaceuticals and other health care products. • Health care manufacturing companies could take advantage of the competitive cost environment in the region for efficiency-seeking and market-seeking reasons.

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Table 4.2. ASEAN economic agreements and their implications for health care (Concluded)

Major economic agreement	Year signed	Objectives and history	Relation to health care development and investment
ASEAN Single Window (ASW)	2005	• Connects and integrates the national single windows of participating ASEAN Member States to expedite electronic exchange of trade and customs-related documents for trade within the region.	• The arrangement covers related products such as pharmaceuticals and medical devices. The single window expedites custom clearance, lowers cost and increases efficiency in movement of goods across ASEAN. • The ASW is now operational and involves six participating ASEAN Member States (Brunei Darussalam, Indonesia, Malaysia, Singapore, Thailand and Viet Nam) in exchanging the e-ATIGA Form D. • The ASW provides a regional facility to enable a seamless, standardized and harmonized routing and communication of trade and customs-related data among the National Single Windows (NSWs) to expedite customs clearance and release. • For health care manufacturing companies, goods can flow more smoothly; for health care service providers, goods, equipment and devices can be sourced more swiftly; and for patients, the health care service environment can be more efficient.
ASEAN Common Technical Dossier (ACTD) for Pharmaceuticals	2016	• A common technical dossier for submission to ASEAN regulatory authorities for the registration of pharmaceuticals for human use.	A common dossier will help expedite registration by pharmaceutical companies of products for distribution in the region. Companies need to prepare only one format for all Member States, thus reducing time and resource costs. It will also facilitate the preparation of electronic document submission.
ASEAN Medical Device Directive (AMDD)	2015	A legal and institutional framework to harmonize medical devices regulation in the region. A key objective of the AMDD is to ensure the flow of safe, effective and good quality medical devices in ASEAN. Harmonization in AMDD includes several elements: • Definition of medical device • Risk-based classification • Standards (for a similar level of quality assurance) • Common submission dossier template • Essential principles of safety performance • Post-marketing alerts system • Registration of product • Licencing of establishment	• The directive covers harmonization of medical device regulations and the establishment of common technical documents for use in operating in the ASEAN medical device market. • ASEAN Member States such as Indonesia are transiting licencing procedures to online systems that connect with customs to expedite transactions. The AMDD will set a unified system of rules and four categories for medical devices, ranging from low-risk devices such as tongue depressors to high-risk devices, such as heart valves.a • Harmonization will ease access to the ASEAN market.
Mutual Recognition Agreements (MRAs) on Medical and Dental Practitioners	2009	The objectives of the MRAs include the following: • Facilitate mobility of health services professionals within ASEAN • Enhance exchange of information and expertise on standards and qualifications • Promote adoption of best practices for professional health services • Provide opportunities for capacity-building and training of health practitioners	Improved mobility of medical and dental practitioners in ASEAN could more efficiently facilitate technology transfer, sharing of knowledge and best practices, exchange of information and training. It would help health care providers move medical and dental specialists or personnel within the region to increase efficiency of services.
Mutual Recognition Agreement on Nursing Services	2006	The objectives of the MRA include the following • Facilitate mobility of nursing services professionals within ASEAN • Enhance exchange of information and expertise on standards and qualifications • Promote adoption of best practices for professional nursing services • Provide opportunities for capacity-building and training of nurses	Subject to investment and regulatory requirements, cooperation in this area helps health care providers such as hospitals, medical centres and clinics invest in (set up a presence, expand or form a joint venture) or source nursing services.

Source: *ASEAN Investment Report 2019* research, based on information from ASEAN website and InvestASEAN.

[a] Cekindo, "A growing market for medical devices in Indonesia" (https://www.cekindo.com)

4.2.3. Moving from AEC 2015 to AEC 2025

At the end of 2015, ASEAN formally declared the establishment of the AEC (box 4.1). Building on the significant achievements of AEC 2015, the region is moving towards realizing the goals of AEC 2025. The AEC Blueprint 2025, adopted in 2015, provides broad direction and the implementation of a set of strategic measures between 2016 and 2025 to achieve a more economically integrated and connected region.

Box 4.1. ASEAN Economic Community: Features and achievements

The AEC is the realization of the region's end goal of economic integration, represented by a single market and production base, a highly competitive region with equitable economic development and a region that is strongly integrated with the global economy. The AEC enables free movement of goods, services, investments and skilled labour and freer flow of capital.

Box figure 4.1.1 presents the four key pillars of the AEC, each with significant economic programmes. The region has implemented the AEC Blueprint 2015 (between 2008 and 2015) with significant achievements, which led ASEAN to formally declare the establishment of the AEC in December 2015. AEC 2015 has substantively achieved many economic aspects of integration. Some of them include the following:

- Eliminating nearly all tariffs for intraregional trade and instituting measures facilitating trade (e.g. the ASW, easier and faster customs clearance)
- Advancing the services trade agenda (with the implementation of the 10th package of AFAS on further market liberalization and facilitation)
- Liberalizing and facilitating investment
- Facilitating skilled labour mobility through a series of MRAs and harmonization of regulatory requirements
- Strengthening ASEAN's relationship with external parties (which led to the conclusion of a series of free trade agreements with partners)

Box figure 4.1.1. The four key pillars of the AEC

ASEAN Economic Community 2015

Single Market and Production Base	Competitive Economic Region	Equitable Economic Development	Integration Into Global Economy
• Free Flow of Goods • Free Flow of Services • Free Flow of Investment • Free Flow of Capital • Free Flow of Skilled Labour • Priority Integration Sectors • Food, Agriculture & Forestry	• Competition Policy • Consumer Protection • Intellectual Property Rights • Free Flow of Capital • Infrastructure Development • Taxation • E-Commerce	• SME Development • Initiative for ASEAN Integration	• Coherent Approach towards External Economic Relations • Enhanced Participation in Global Supply Networks

Source: ASEAN Secretariat, "A Blueprint for Growth – ASEAN Economic Community 2015: Progress and Key Achievements", November 2015.

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Box 4.1. ASEAN Economic Community: Features and achievements (Concluded)

AEC 2015 has generated greater business and investment confidence in the region. Evidence of this growth in confidence are the growing production networks, strengthening regional value chains and increasing trade volumes, expanding operations of MNEs, continuously rising FDI including intra-ASEAN investment across industries, and rising favourable investment sentiments about the region (*AIR 2017, 2018*). AEC 2015 has also influenced many MNEs and indigenous companies to begin operating in ASEAN as a single market.

The second phase of AEC development under the AEC Blueprint 2025 (2016–2025) entails implementation of some activities carried over from AEC 2015 and enhanced programmes and plans to realize the goal of a more strongly and comprehensively integrated region. AEC 2015 has led to remarkable achievements in ASEAN in trade, investment, production, services and business vibrancy. AEC 2025 is expected to bring about a much more strongly connected ASEAN with more opportunities for investors big and small, both existing ones and newcomers. In less than seven years, with the ongoing work on eliminating non-tariff barriers, strengthening connectivity, deepening liberalization and providing more facilitation measures, the AEC landscape is expected to be one where goods, investments, services, capital and skilled labour move without barriers.

Source: Based on ASEAN Secretariat, “A Blueprint for Growth – ASEAN Economic Community 2015: Progress and Key Achievements”, November 2015.

AEC Blueprint 2025: Consolidated Strategic Action Plan (Health care)

A Consolidated Strategic Action Plan (CSAP) was formulated to achieve the goals set out in AEC Blueprint 2025. Table 4.3 presents some of the health-care-related measures of the Blueprint. The CSAP contains indicative timelines for actions to be undertaken by the responsible ASEAN sectoral bodies and facilitates stakeholders’ feedback to the ASEAN economic integration processes.

The key strategies and corresponding measures are focused on facilitation actions and promotion of investment opportunities. Facilitation actions include harmonization and standardization of health care products and services. Other measures include creation and promotion of investment opportunities, PPPs, medical tourism and start-ups in health care tech.

AFAS: the 10th package of market liberalization and facilitation measures

ASEAN is implementing its 10th and final AFAS package, which further liberalizes and facilitates trade and investment in a wider range of services (which include health care). Building on the past achievements and the need to move forward with development, ASEAN concluded the ASEAN Trade in Services Agreement (ATISA) in 2019. Implementation of the ATISA will further strengthen trade in services, reduce barriers and provide for the transition from a positive list to a negative list approach for market liberalization.

ACIA

The Fourth Protocol amending the ASEAN Comprehensive Investment Agreement was signed in April 2019. It will further improve the investment environment in the region.

Table 4.3. AEC Blueprint 2025: Measures supporting health care development (Selected cases)

Strategic measures	Key actions	Timeline	Sectoral workplan and sectoral body
Open up private health care market and promote public-private partnership (PPP) investments in provision of universal health care in the region	Promote PPP investment in health care through Traditional hospital services and equipment • New forms and applications • Public sector uses for PPPs in pursuit of universal health coverage, including public insurance and large-scale primary care • Private sector partners, including training institutes, life science firms and multinational companies	2016–2025	Strategic Action Plan for Services 2016-2025: Coordinating Committee on Services
Harmonize standards and conformance of health care products and services (e.g. common technical documents required for registration processes and nutrition labelling)	**Services** • Establish core competencies and standards of practice in general dental practice • Develop and strengthen the individual country nursing curriculum through mapping of the AMS nursing curriculum	2020	Strategic Action Plan for Services 2016-2025: Coordinating Committee on Services
	STRACAP[a] • Implementation of ASEAN Common Technical Dossier (ACTD)/ ASEAN Common Technical Requirements (ACTR) • Implementation of Sectoral MRA on Good Manufacturing Practice (GMP) Inspection for Manufacturers of Medicinal Products • Implementation of ASEAN Medical Device Directive (AMDD)	2016–2025	ASEAN Standards and Conformance Strategic Plan 2016-2025 ASEAN Consultative Committee for Standards and Quality (ACCSQ)
Promote sectors with high growth potential such as health tourism and e-health care services Promote strong health insurance systems in the region	Develop concept on health tourism and e-health services	Ongoing	Strategic Action Plan for Services 2016-2025 Coordinating Committee on Services (CCS)
Further facilitate the mobility of health care professionals in the region	• Establish ASEAN Health Care Services Secretariat • Establish mechanisms of mobility for health professionals for each ASEAN Member State under ASEAN MRAs	2017 2017 and 2018	Strategic Action Plan for Services 2016-2025 Coordinating Committee on Services
Further develop ASEAN regulatory framework on traditional medicines and health supplements Establish new health care product directives to facilitate trade in health care products in the region	• Finalize legally binding instruments on traditional medicines and health supplements. • The ASEAN Agreement on Regulatory Framework for Health Supplements and ASEAN Agreement on Regulatory Framework for Traditional Medicines are targeted for finalization in February 2020	2017–2018	ASEAN Standards and Conformance Strategic Plan 2016-2025 ASEAN Consultative Committee for Standards and Quality (ACCSQ)

Sources: AEC Blueprint 2025 Consolidated Strategic Action Plan and 2018 ASEAN Economic Ministers Joint Press Statement.
[a] The term STRACAP refers to standards, technical regulations, conformity assessment procedures, accreditation, scientific and legal metrology, and market surveillance.

The protocol introduces additional disciplinary measures prohibiting the imposition of performance requirements on investment.

4.3. HEALTH CARE POLICIES AND DEVELOPMENT IN ASEAN MEMBER STATES

Health care services vary widely among ASEAN Member States. A common feature is that the provision of health care services remained a major challenge given limited public budgets, growing populations, demographic changes and the rise in the incidence of non-communicable diseases. Some Member States have underdeveloped and insufficient medical facilities from years of underinvestment. In the face of the lack of better-quality facilities and equipment, patients in Member States such as Indonesia, Cambodia, the Lao People's Democratic Republic, Myanmar and Viet Nam travel to neighbouring countries for medical services on an out-of-pocket payment basis.

All Member States have plans for universal health care coverage. By 2030, citizens in all ASEAN Member States are expected to have access to health care. The progress made towards universal health coverage in 2018 varied significantly by country. Some have already achieved more than 80 per cent coverage (UHC index), while others, such as the Lao People's Democratic Republic, currently have low coverage rates.[2]

Some Member States have emerged as major destinations for regional and global medical tourism (e.g. Malaysia, the Philippines, Singapore and Thailand). They have lengthening lists of hospitals accredited by the Joint Commission International (JCI), which means that they meet a certain level of international standard of care and have a more developed health care ecosystem. In some cases, strong institutional support and targeted policies promoting medical tourism played an important role in the success of these Member States in attracting medical tourists (chapter 3). Some, like Viet Nam, are also receiving an increasing flow of foreign patients from neighbouring countries.

Health care spending in the region has been relatively low compared with that of the OECD countries, suggesting room for further expenditure and investment to develop and upgrade the health care industry. The level of private sector participation in the industry varies between countries. In some, participation is as low as about 15 per cent, while in others the private sector accounts for more than 50 per cent of the country's hospital establishments or hospital beds. Insufficient human resources (doctors, nurses and other qualified health care providers) and medical technology are major challenges for the development of the health care industry in the region.

All ASEAN Member States have recognized the important role of the private sector in health care. PPPs are encouraged, to support health care development. Member States are promoting foreign investment in health care, such as in the establishment of hospitals as well as the manufacturing of pharmaceuticals and medical equipment. Some health care subsectors are closed to foreign investment, such as small hospitals (in some Member States this applies to those with fewer than 50 beds) and the manufacturing of traditional herbal medicines.

Most Member States import proportionately more pharmaceutical products and medical devices than they export. Many are encouraging the development of domestic capacity and industry in areas such as pharmaceutical production for local markets as well as for export. Some Member States are actively promoting private investment in more advanced areas of health care such as biomedical, life sciences and R&D.

Many Member States have in recent years further opened up the health care industry to FDI and are allowing completely foreign-owned operations in hospitals and other health care subsectors, such as the manufacturing of pharmaceuticals and medical equipment. However, such operations must meet certain requirements, such as thresholds for investment capital. Investment incentives are provided to approved health care projects, which generally include tax holidays and exemptions from import duties for equipment. Health care investment projects located in special economic zones (SEZs) also receive additional investment incentives.

The following subsections detail the state of health care services and investment in them in each ASEAN Member State.

4.3.1. Brunei Darussalam

Public health care services are either free or heavily subsidized by the Government. The out-of-pocket payment per capita is relatively low. When public hospitals are unable to provide specific services, the Government coordinates and pays for citizens to be treated overseas. Some citizens also seek advanced medical services outside the country, specifically in Singapore and Thailand. The country has one of the highest ratios of hospital beds per 1,000 people in the region (2.7 in 2015).

The population has grown from 401,000 in 2010 to 428,960 in 2018, and is expected to reach 478,000 by 2025. It is also ageing, with 4.9 per cent of the population aged 65 or older in 2018. This figure is expected to climb in future years and will further increase demand for health care services.

Table 4.4. Brunei Darussalam: Public and private health care facilities (Number)

Health care facility	Public	Private
Hospitals	4	2
Health centres	14	1
Health clinics	2	33

Source: Brunei Darussalam Ministry of Health: Health Information Booklet 2017 (revised as of January 2019).

Role of private sector

Although the Government is the main provider of health care, the private sector plays an important role in the country's health care system, with two of six hospitals in the country privately owned. Some 64 per cent of all health care establishments are run by the private sector (table 4.4).

The two private hospitals are Jerudong Park Medical Center and Gleneagles JPMC (a joint venture between the Government and Parkway Group Healthcare, owned by IHH (Malaysia)).

Health plan

The Government has established a Master Plan for the Health System and Infrastructure, which sets out 20 years of strategic actions to develop the country's health care system. It covers seven efforts[3]:

(i) Promote service excellence.

(ii) Support health management and a healthy lifestyle.

(iii) Ensure sustainability of the health system and maintain universal access.

(iv) Enhance policies, regulations and operations to ensure protection and quality of care.

(v) Support proactive and transparent governance of health care.

(vi) Strengthen mission and capacity and upgrade all government hospitals and health care facilities.

(vii) Strengthen the health centre network throughout the country.

Brunei Darussalam has high coverage of essential services with relatively low out-of-pocket spending. The WHO Universal Health Coverage (UHC) index of the provision of essential health services without causing financial hardship to citizens stood at more than 80 per cent in 2018.[4]

Policy encouraging FDI in health care

FDI in health care is permitted. Companies incorporated in Brunei Darussalam are allowed to have 100 per cent foreign ownership. Investment incentives are provided for investment activities in five priority areas: (i) halal, (ii) technology and creative industries, (iii) business services, (iv) tourism and (v) downstream oil and gas activities. Manufacturing activities related to health care (e.g. pharmaceuticals and health supplement products) and provision of health care services are covered under the halal or tourism (medical tourism) priority areas.

Brunei Darussalam welcomes FDI in halal-related industries, which include the production of pharmaceuticals and health supplements. A 174-hectare Bio-Innovation Corridor has been established to support the development of such industries.

The Government promotes health care manufacturing activities in the following areas:

(i) Medical equipment and supplies:

- Supply and delivery of medicines for the Department of Pharmaceutical Services
- Supply and delivery of medical items for the Central Sterile Services Department
- Supply and delivery of laboratory test kits for Clinical Chemistry Laboratory

(ii) Medical devices and infrastructure upgrades. As part of the plan to consolidate and realign the government health care services, major upgrades are required for hospitals and health centres across the country.

Private investment and participation are encouraged in these areas.

Medical tourism

International companies are encouraged to develop tourism-related activities, including medical tourism.

4.3.2. Cambodia

The health care industry in Cambodia is underdeveloped and inadequate. There is less than one hospital bed per 1,000 people, a much lower ratio than in neighbouring countries. Some segments of the population travel to neighbouring countries (e.g. Singapore, Thailand and Viet Nam) to seek medical treatment. Private health care providers play an important role. In addition to investment in hospitals, there is growing foreign investment interest in the country's health-care-related manufacturing activities.

About 60 per cent of health expenditure during 2008–2016 was through out-of-pocket payments.[5] This is one of the highest shares in ASEAN. Another 20 per cent of the expenditure comes from the public sector, with the remaining 20 per cent contributed by development partners. Health spending as a share of GDP ranged between 5 and 7 per cent between 2007 and 2016. It increased from $1 billion in 2012 to $1.2 billion in 2016, driven mostly by increased out-of-pocket expenditures.[6] The out-of-pocket payment per capita in Cambodia is high compared with other countries in the region. It rose from $28 in 2010 to $46 in 2016, suggesting a greater use of private facilities.

The Government is increasingly spending more on health care, in infrastructure as well as in human resources, and is building health care capacity. It set a target of increasing expenditure from 1.3 per cent to 2 per cent of GDP in 2018. Despite this growing contribution, the financial gap in funding the Third Health Strategic Plan (2016–2020) is estimated at $1.1 billion.[7] Foreign investors can play a role in filling the gap and contributing to the development of the health care industry in the country, especially in hospitals and in the pharmaceutical and devices industry.

The medical device market is small, and production of medical devices is negligible. The pharmaceuticals market was valued at $255 million in 2015, as compared with $215 million in 2011.[8] The Ministry of Health is the largest purchaser of medical supplies.

Role of private sector

The private sector is an important provider of health care services. Although the public sector is the prominent provider of preventive services and inpatient admissions, the private sector dominates in curative care. It also accounts for the significant share of total health care spending.

In 2016, the private sector accounted for 62 per cent of hospitals in the country. With increasing FDI in hospitals in recent years, the number of foreign-owned or managed hospitals has also increased.

As of the end of 2015, there were 8,488 licensed private facilities (excluding pharmacies), ranging from nursing care rooms, to pregnancy care rooms, and from consultation cabinets to clinics, polyclinics and hospitals.[9]

Health plan

The health policy goals of Cambodia are to improve health outcomes and increase financial risk protection across the population (Third Health Strategic Plan 2016–2020). These overarching goals are supported by a set of health development goals (improving reproductive health; reducing maternal, newborn and child mortality and malnutrition among women and young children; reducing morbidity and mortality caused by communicable diseases; reducing morbidity and mortality caused by non-communicable diseases and other public health problems; and making the health system more accountable and responsive to the population health needs).

Various programmes (e.g. Health Equity Fund, Community-based health Insurance and Social health Insurance) provide coverage for part of the population, especially the poor and vulnerable.

Cambodia aims to have universal health coverage. Under the National Social Policy Protection Framework (2016–2025), the Government aims to provide health care to all citizens by 2025. In 2018, the country's UHC index stood at 55 per cent.

Policy encouraging FDI in health care

In supporting the development of health care, the Government encourages FDI in the industry. The country has a liberal foreign investment regime. The 1994 Law on Investment, the 2003 Amended Law on Investment and related sub-decrees govern FDI. Foreign equity ownership of 100 per cent is allowed in health care, including in hospital activities.

Investment incentives in health care

Investment incentives are provided to health care projects that meet certain conditions and requirements. Sub-decree No. 111 sets out the investment conditions that are not eligible for investment incentives. There are no special incentives for investment in the health care industry. General incentives include corporate tax holidays of up to eight years, a 20 per cent corporate tax rate after the incentive period ends, duty-free import of capital goods and no restrictions on capital repatriation. Projects in SEZs enjoy additional incentives such as zero rate value added tax and import duty exemption for raw materials, machinery and equipment.[10]

Foreign investment in health care

Investors from Member States such as Singapore and Thailand as well as from Japan have been investing in the health care industry in Cambodia since the 1990s. Raffles Medical Phnom Penh, owned by Raffles Medical Group (Singapore), has been in operation since 1992. Other foreign-owned health care facilities include MW Medical Cambodia, operated by the MW Clinic chain (Singapore), as well as the Royal Angkor International Hospital and the Royal Phnom Penh Hospital – both managed and operated by Bangkok Dusit Medical Services Group (Thailand), and the Sunrise Japan Hospital, in which three Japanese companies (JGC Corporation, Innovation Network Corporation and Kitahara Medical Strategies International) have invested through a joint venture. Kitahara Medical Strategies International also manages and operates the Kitahara Neurosurgical Institute and the Kitahara Japan Clinic. AJT Holdings (Singapore) owns the Singapore Medical Centre.

In the pharmaceuticals segment, some European companies – DKSH (Switzerland), Bayer (Germany), Sanofi (France) and GlaxoSmithKline (United Kingdom) – have a presence in Cambodia. New investors that have established a presence include VTSIX Group (India), which set up a factory in the Phnom Penh SEZ, and Zuellig Group (Hong Kong, China), which opened a second warehouse in Phnom Penh in 2017.

Underdeveloped and unmet medical needs present opportunities for private investment. Demand for international-standard health care facilities, better-quality medicine and medical devices is on the rise. There is also potential for health insurance investment, given the high out-of-pocket payments and the demand for a better quality of care.

4.3.3. Indonesia

Public health expenditure has been increasing and the population is ageing (table 4.5). Public health expenditure per capita rose from \$63 in 2010 to \$162 in 2016. Out-of-pocket health care expenditure has declined from 57 per cent of total health expenditure in 2010 to 37 per cent in 2016, suggesting an increase in the provision of public health facilities to the population.

The health care system in the country continued to face challenges in 2018. Although public expenditure has increased, health care services remain inadequate and unevenly distributed. The lack of a skilled workforce also limits the development of the health care industry.

To reach more of the population, including in remote areas, future reforms are likely, especially in the use of digital technology or new medical technology (e.g. telemedicine or e-health). Other reforms could cover more innovative ways of addressing the challenge of the distribution of the health workforce, including contracting in by local governments; and dealing with the implications of removal of restrictions on free movement of the health workforce under the ASEAN commitment.[11]

Table 4.5. Indonesia: Health indicators, various years

Selected indicator	2010	2018
Population (million)	241.8	267.7
Percentage of population over age 65	4.85	5.45
Number of hospital beds (per 1,000 people)	0.6	1.2 (2015)
Domestic general government health expenditure per capita, purchasing power parity (current international dollars)	63	162 (2016)
Out-of-pocket expenditure per capita, purchasing power parity (dollars)	139	135 (2016)
Out-of-pocket expenditure (percentage of current health expenditure)	60	37 (2016)

Source: World Bank Data and WHO database.

Role of private sector

The role of the private sector is significant. Private hospitals accounted for 47 per cent of hospital beds and 64 per cent of hospitals in 2017 (table 4.6). However, the private sector actually contributes about 41 per cent of hospital beds in the country, if public health centres with some patient bed facilities are taken into account.

Table 4.6. Indonesia: Public and private hospitals, 2017

	Number of hospitals[a]	Number of beds[b]
Public	1,009	143,403
Private	1,767	128,499
Total	2,776	271,902

Source: Directorate General of Health Services, Ministry of Health, cited in “Indonesia Health Profile 2017”, Ministry of Health, Republic of Indonesia (2018).

[a] Covers general and specialized hospitals.

[b] General hospitals.

Health plan

Indonesia introduced the goal of a universal health coverage system in 2014, and the Government aims to cover the entire population by 2019.[12] However, only about 76 per cent of the population was covered under the national health insurance in 2018. With limitations on the public sector supply side, the goal of universal coverage provides opportunities for further PPPs.

Policy encouraging FDI in health care

In general, Indonesia encourages FDI in health care, but there are some subsectors that are still closed. Foreign investment is not allowed in medical clinics, delivery clinics, specialized clinics and dental clinics.[13] However, foreign investment is allowed in large hospitals (those with at least 200 beds), including specialty or subspecialty hospitals. Foreign investment in small- to medium-scale health facilities is prohibited. Foreign investors may build a new hospital or operate an existing hospital through a joint venture with a local investor.

In some health care subsectors (e.g. manufacturing of pharmaceuticals), the Government has further liberalized investment, and 100 per cent foreign equity ownership is allowed, particularly in activities that produce raw materials for medicines and clinical laboratories.[14] Foreign equity ownership in clinics and certain-sized hospitals is restricted (e.g. investment is not allowed in hospitals with capital or numbers of hospital beds below certain thresholds). The Government continues to regularly update the lists of sectors that are open and restricted.

Investment incentives

The Government provides various types of investment incentives for approved projects in health care. These include the following:

(i) Tax allowances (Government Regulation No. 9/2016) and reduction of corporate net income tax for six years (5 per cent each year).

(ii) Import duty exemptions for machines and raw materials for production (MOF Regulation No. 176/PMK.011/2009, Juncto No. 199/PMK. 010/2015): two years of import duty exemption or four years of exemption for companies using locally produced machines.

Foreign investment in health care

Pharmaceuticals

Indonesia's pharmaceuticals market is expected to grow significantly, to reach 12-13 per cent growth per year by 2021.[15] In 2016, it was worth over $6 billion, and that figure is expected to more than double by 2020.

Of the more than 210 pharmaceuticals manufacturers in Indonesia, 70 per cent are domestic.[16] About 75 per cent of Indonesia's medication needs are provided by these companies. Half of the medications available in the market (including those requiring a prescription) are sold through private practices, general stores, street vendors and supermarkets.

The remaining 25 per cent of Indonesia's medication needs are provided by foreign pharmaceuticals MNEs. These companies have invested over $1 billion in Indonesia's pharmaceuticals market in recent years. For example, in 2016, Bayer (Germany) further expanded a plant in Cimanggis, West Java, that it acquired in 2005. About 25 per cent of Bayer products produced in Indonesia are for the domestic market, with the rest exported to 26 countries. Since 2015, Merck (United States) has also invested in packaging and manufacturing facilities in Indonesia.[17] Other foreign pharmaceuticals companies operating in Indonesia include Abbott Laboratories (United States), Astellas Pharma (Japan), AstraZeneca (United Kingdom), Bayer (Germany), Boehringer Ingelheim (Germany), GlaxoSmithKline (United Kingdom), Johnson & Johnson (United States), Meiji (Japan), Merck (Germany), Mitsubishi Tanabe Pharma (Japan), MundiPharma (Germany), Novartis (Switzerland), Otsuka (Japan), Pfizer (United States), Sanofi (France), Servier Laboratories (France), Taisho (Japan) and Takeda (Japan).

Although most essential medications are produced locally, some 90 per cent of active ingredients are imported.[18] Indonesia imported over $800 million worth of pharmaceuticals products in 2016, compared with $710 million in 2014. In 2016, the United States was the largest exporter of pharmaceuticals to Indonesia ($114 million), followed by Germany ($95 million), France ($71 million), Switzerland ($61 million) and the United Kingdom ($58 million).[19]

Medical devices

Owing to the absence of local capabilities, Indonesia imports almost all medical devices used in the country.[20]. A majority of the device registrations in the country (90 per cent in 2013) are made by foreign manufacturers. [21] The medical device market was worth $1 billion as of 2018.

Information technology and healthtech

Electronic medical records (EMRs) are starting to be adopted in Indonesian hospitals, but the transition is moving slowly. There is currently no legal regulation that governs the use of electronic health records nor is there a national guideline for it. Hospitals are, however, free to adopt or develop their own EMR.[22]

With increasing interest from venture capital firms and the influence of digital technology, medtech and digital start-ups in the country have been growing rapidly in recent years, contributing to the development of the country's health care ecosystem and health delivery coverage. Opportunities in digital health and information technology (IT) are expanding, given the widespread use of mobile phone technology in the country, the urgent need for a coordinated and integrated system of all the public health centres, and efforts towards universal health care coverage. Medical start-ups include PesanLab (a pooling service for laboratory testing), Homecare24 (on-demand home care services), GueSehat (a tele-health platform that connects patients, doctors and pharmaceuticals), Alodokter (a tele-health portal with facilities for interaction with qualified Indonesian doctors) and ProSehat (a platform that provides home health services from vaccinations to physiotherapy served by health professionals). Indonesian ride-hailing unicorn Go-Jek has branched into health care in partnership with Halodoc (a tele-health platform provider).

4.3.4. Lao People's Democratic Republic

The health care system in the Lao People's Democratic Republic is underdeveloped and inadequate, and faces challenges in meeting growing demand. It has transitioned from a centralized system providing free health services to a system that increasingly relies on out-of-pocket payments by patients.[23] The public sector is the main provider of health care services but has a limited budget. Provision of health services thus continues to rely on out-of-pocket spending and on external financing.

Between 2011 and 2016, the county's public health expenditure more than doubled, from $183 million to $386 million. As a share of total health expenditure, public spending increased from 21 per cent in 2010 to more than 32 per cent in 2016. However, total health expenditure as a share of GDP and government expenditure on health as a share of total government expenditure remain low compared with other countries. In 2016, total government health expenditures accounted for 2.4 per cent of GDP, and all expenditures on health, including external funding, accounted for 5.9 per cent. Nonetheless, health expenditure is expected to rise as the economy grows.

Access to health care services is also unevenly distributed, with most facilities concentrated in major cities. Because of the lack of facilities and the low quality of care, some citizens travel to neighbouring countries (e.g. Thailand and Viet Nam) for medical treatment, which they finance with out-of-pocket payments.[24]

The country depends on international aid in the form of vaccines, training for medical professionals and staff, and strengthening of maternal and child health. In recent years, foreign aid (e.g. from China and Japan) has contributed to building hospitals and clinics. Private sector participation has been limited, but recent years have witnessed increasing interest by foreign investors in privately owned and managed hospitals.

Role of private sector

Both domestic and foreign private investment in the health care industry is still low. The private sector accounts for about 20 per cent of the country's health care establishments, which include hospitals, clinics and health care centres. At the end of 2015, there were 13 private hospitals and 1,053 private clinics.[25]

Some investors have come from neighbouring countries such as China, Thailand and Viet Nam. Bidiphar, a leading pharmaceutical company in Viet Nam, established a presence with a local partner as long ago as 1994. More recently, in 2018, the Bangkok Chain Hospital Group (Thailand) established a private hospital worth $40 million with a local firm.[26] The Ministry of Health has received investment proposals to open private hospitals in the country from investors in China, Singapore, Thailand and Viet Nam, as well as other countries.

Health plan

The Government aims to achieve universal health coverage by 2025. The objectives of the Eighth Five-Year National Socio-Economic Development Plan (2016-2020) include increasing health insurance coverage to 80 per cent of the population. The current health insurance programme covers only 20 per cent.[27]

Policy encouraging FDI in health care

The Government encourages PPPs and foreign investment in health care. Despite the small market, there are opportunities for foreign investors, especially in the provision of high-quality health care facilities, affordable medicine and medical devices. However, challenges in the country's efforts to develop the health care industry include the shortage of skilled professionals (e.g. doctors, nurses) and of pharmaceutical capacities.

The amended Law on Investment Promotion 2016 is the governing law of investment in the Lao People's Democratic Republic. It stipulates that health care is one of nine business sectors that are entitled to investment incentives, subject to meeting certain requirements (e.g. minimum capital investment). In particular, it includes the development of modern hospitals, pharmaceutical and medical equipment factories, and traditional medicine production and treatment.

Investment incentives

Investment incentives listed in the Law on Investment Promotion include exemption from profit tax, exemption from import duties and value added taxes, and land-use-related incentives. Investment in approved health care projects enjoys a longer period of exemption from profit tax.

Restrictions on foreign investment in health care

In general, foreign investors can invest in any sector or business except in cases the Government deems to be detrimental to national security, national health or national traditions, or to have a negative impact on the national environment. Foreign investment is allowed in some private hospital services (modern hospitals with more than 100 beds, in big cities only). Under the AFAS, 100 per cent foreign equity ownership is allowed for hospital services and health insurance. The retail industry was also fully liberalized in 2015, which means foreign investors can engage in the retail pharmaceutical business.

4.3.5. Malaysia

The health care industry in Malaysia has remained an important driver of economic growth. The Government promotes health care development that involves collaboration between relevant ministries, agencies and the private sector. Key features of the industry are the co-existence of the public and private health systems and PPPs. The Government also incentivizes health care providers to provide better-quality and affordable health care.

The country's health expenditure increased from $293 per capita in 2010 to $361 per capita in 2016. In local currency terms, health care expenditure rose by 23 per cent between 2014 and 2017 (table 4.7). The private sector accounted for more than 50 per cent of the expenditure.

Table 4.7. Malaysia: health expenditure
(Billions of ringgit)

	2014	2015	2016	2017	2018
Total expenditure (public and private sectors)	46.8	50.2	52.0	57.4	..
Ministry of Health budget	22.2	23.3	23.0	24.8	26.6

Source: Ministry of Health, Malaysia.

Role of private sector

The private sector complements government efforts to provide good-quality health care in the country. The private sector accounted for 24 per cent of the country's hospital beds in 2017. Under the 11th Malaysia Plan, the Government is strengthening the role of the private sector in service delivery, expanding capacity to increase accessibility (e.g. the private sector will be encouraged to collaborate and set up more health care facilities that cater to the needs of low- and middle-income households), and intensifying collaboration with the private sector to increase health awareness.

Health plan

Health care as a National Key Economic Area (2010–2020)

Health care is one of the 12 National Key Economic Areas identified for development. In these areas, the development of health care focuses on encouraging public-private collaboration and attracting investment in key manufacturing and service industries, including fostering a homegrown pharmaceutical industry, providing care services for the elderly and realizing a world-class facility for health care and bioscience.

Eleventh Malaysia Plan (2016–2020)

The Eleventh Malaysia Plan (2016–2020) aims to increase the number of beds in both public and private hospitals by 25 per cent, to 73,000, in 2020. The Government is committed to achieving universal access to health care during the Eleventh Plan, which covers delivery by public and private providers.

E-health strategy

A key area that requires attention is the transformation of information and communication technology for health. The Malaysian National e-Health plan has five main focus areas: developing the appropriate enterprise architecture, integration and a health data warehouse;

strengthening the current health system with robust information and communication technology infrastructure and systems; developing a lifetime health record for patients (one person, one record); building the capacity of the health IT workforce; and promoting collaboration and smart partnerships. The plan recognizes the ability of the confluence of big data, cloud technologies, and managed and shared services to increase the efficiency of the health care.

The Ministry of Health plans to implement an EMR system in stages at hospitals and clinics throughout the country within the next three years. With EMRs, the process of sharing and transferring patients' information will be easier.

Policy encouraging foreign investment in health care

Malaysia promotes FDI in health care. In general, FDI is encouraged through a joint venture between Malaysian and foreign investors. Under the World Trade Organization commitment, foreign equity ownership in a private hospital cannot exceed 30 per cent and the facility must have a minimum of 100 beds. Under the AFAS-10, up to 70 per cent foreign equity ownership is allowed in private hospital services. Private hospital services, medical specialist services and dental specialist services are promoted by the Government.

Investment incentives

Various types of investment incentives are provided. The Government offers tax incentives for private hospitals and ambulatory care centres as part of the country's medical tourism promotion strategy. Other tax incentives include an investment tax allowance for private health care facilities (i.e. 100 per cent tax allowance on qualifying capital expenditures incurred within a period of five years) and double deduction tax incentives on expenses incurred in obtaining recognized accreditation for hospital operations (e.g. JCI).

Incentives are also provided for health care activities established in SEZs. For instance, health care activities operating in the Iskandar Development Region enjoy the following benefits:

(i) Exemption from compliance with the withholding tax provisions on payment of royalty and services fees to non-residents for a period of 10 years from commencement of operations

(ii) Unrestricted employment of foreign knowledge workers

(iii) Flexibilities under the foreign exchange administration rules (e.g. make and receive payments in foreign currency with residents, borrow any amount of foreign currency from licensed onshore and non-residents).

Aged care facilities

Malaysia's total population of older people in 2012 was 2.4 million (8.2 per cent of the population of 29.3 million). By 2020, it is estimated that the number of older people will be 5.5 million and by 2030, Malaysia will be in the category of ageing nations, with older people constituting more than 15 per cent of the population.

As of 31 December 2017, only 22 nursing homes (a total of 700 beds) were licensed by the Ministry of Health – not enough to cater to the current elderly population. In 2018, the

Government enacted the Private Aged Healthcare Facilities and Service Act to improve the standard of care among nursing home operators.

Health care SEZ

The Iskandar Development Region is a Malaysian SEZ established in 2006. Health care is one of the six services-based sectors targeted for promotion in the SEZ. Companies in the SEZ enjoy the following incentives:

(i) Exemption from the Foreign Investment Committee rules

(ii) Flexibilities under the foreign exchange administration rules as follows:
  a. Make and receive payments in foreign currency with residents
  b. Borrow any amount of foreign currency from licensed onshore and non-residents
  c. Invest any amount in foreign currency assets onshore and offshore
  d. Retain export proceeds offshore

(iii) Unrestricted employment of foreign knowledge workers

(iv) Eligibility for tax incentives

Tax incentives available for companies in the SEZ are as follows:

(i) Exemption from corporate income tax for a period of 10 years, in respect of statutory income derived from qualifying activity. Such activities must begin on or before 31 December 2015.

(ii) Exemption from compliance with the withholding tax provisions on payment of royalty and services fee to non-residents for a period of 10 years from commencement of operations.

Foreign investment in health care

Malaysia has attracted many major MNEs in health care, covering hospital services, manufacturing of pharmaceutical products and medical equipment, distribution of pharmaceuticals and health insurance (table 4.8).

Foreign companies have made significant contributions to the development of the health care industry in Malaysia. They include (i) capital investment (e.g. new establishments require an investment in the range of RM 200 million to RM 400 million), (ii) employment generation (for graduate doctors, nurses, pharmacists and medical-related courses), (iii) modernization of hospital infrastructure and systems (e.g. EMRs), and (iv) technology and specialized medical equipment, which includes robotic devices for surgery procedures. Foreign investment in health care has led to new medical technology in the country, which has improved efficiency in the health care industry.

Medical device industry

The medical device industry is a fast-growing, export-oriented sector of the economy. Exports of medical devices have doubled in recent years, from RM 6.4 billion in 2013 to RM 12.6 billion in 2018. Malaysia continues to evolve as a manufacturing hub for medical devices. Medical device MNEs in Malaysia include Abbot Laboratories, Agilent, Alcon, Boston Scientific, Fresenius Medical Care, Haemonetics, Baxter, Terumo and Varian.

Table 4.8. FDI in health care in Malaysia (Selected cases)

Company	Home economy	Activity	Year	Remarks
		Hospitals and specialized centres		
Island Hospital Sdn Bhd	Singapore	Development of a private hospital	2018	Expansion of an existing hospital to an integrated health care complex (hospital) in Penang
Thomson Medical Sdn Bhd	Singapore	Development of a private hospital	2015	Expansion project.
Tawau Specialist Sdn Bhd	Japan, Hong Kong (China), Canada, Singapore	Private hospital	2017	..
Kesington Green Specialist Centre	Singapore	Private hospital	2018	..
Regen Rehabilation Sdn Bhd	Singapore	Ambulatory care centre	2018	..
		Manufacturing of medical equipment and devices		
B. Braun Medical Industries Sdn Bhd	Germany	Medical devices, pharmaceutical sterile intravenous (IV) solutions, surgical instrument and implant	2017	An expansion project by a foreign-owned company at its current facility in Penang
ABio Orthopaedics Sdn Bhd	Malaysia/ Singapore	Surgical instrument, external fixation devices, internal fixation devices, artificial joints and dental implant.	2013	A new project with investment by a Malaysian-Singaporean-owned company to manufacture and to undertake research and development (R&D)
Haemonetics Malaysia Sdn Bhd	United States	Blood and apheresis devices	2013	A new project, wholly foreign-owned company
Pentax Medical (Penang) Sdn Bhd	Japan	Endoscopy and peripheral products	2018	A new project, 100 per cent Japanese-owned
		Manufacturing of pharmaceutical products		
Biocon Ltd	India	An integrated insulins manufacturing facility at the Biotech Park in Johor	2012	An investment of about $275 million
Fresenius Medical Care Production Sdn Bhd	Germany	Manufacturing of hemodialysis concentrates, peritoneal dialysis solutions and automated dialysis solutions	2013	A new project by a foreign-owned company
Oncogen Pharma (Malaysia) Sdn Bhd	United Arab Emirates	Research, development and manufacturing of oral solid dosage, lypholized and liquid injectables for oncology products	2015	A project to help strengthen the ecosystem for oncology drugs and active pharmaceutical ingredients (APIs) in Malaysia by leveraging the company's expertise in the formulation, development and manufacturing of complex and high-quality APIs
Hovid Bhd	Malaysia	Pharmaceutical products in the form of tablets	2013	An expansion project by a joint venture between a local and a foreign investor
		Distribution of medical equipment and devices		
B Braun Medical Industries Sdn Bhd	Germany	International procurement centre	2013	..
Cardinal Health Malaysia 211 Sdn Bhd	United States	Regional distribution centre	2018	..
Halyard Malaysia Sdn Bhd	United States	Principal hub	2017	..
Ansell Global Trading Centre (Malaysia) Sdn Bhd	Australia	Global procurement, trading centre and principal hub	2017	..

Source: Malaysia Investment Development Authority.

Medtech companies such as Ansell, Cochlear, ResMed, Biocon, Aurum Healthcare and Visco Vision have contributed to the development of the local supply chain. The presence of companies such as Stereo (owned by Chemogas), Bemis, DuPont, Jacob Holm, Multivac, Prent, STERIS and Tomae has contributed to the development of the device manufacturing industry.

Malaysia is also a hub for contract manufacturing of medical devices, with the presence of international companies such as CCB Medical Devices, Engineered Medical System, Ascatec, Flex, Integer, Jabil Healthcare, KMWE, Paramit, Plexus, Sanmina, SteriPack Contract Manufacturing, Straits Orthopaedics and Tecomet. Strong ecosystems in the semiconductor, mechanical and electrical, electrical and electronics, metal stamping and plastics industries have contributed to the procurement of parts and components to support the manufacturing of medical devices.

Pharmaceuticals industry

MNEs such as Pfizer, GlaxoSmithKline and AstraZeneca are attracted by government incentives and access to the large regional market. The Ministry of Health also encourages foreign investment by offering off-take agreements to pharmaceuticals companies, such as the agreement signed with Biocon (India) to supply insulin to state hospitals and clinics.

Major MNEs such as GlaxoSmithKline, B.Braun, Y.S.P Industries, Ranbaxy and Sunward Pharmaceutical have established production facilities in Malaysia. Pharmaniaga, CCM Pharmaceutical, Kotra Pharma, Hovid and Xepa-Soul Pattinson represent homegrown companies. Responding to the growing demand for such products in the region, leading Malaysian pharmaceuticals companies are moving into the production of biologics, oncology drugs and high value added generic compounds.

Challenges

There are challenges in attracting FDI in health care, especially in recruiting talent to support emerging health care industries or products and in developing raw materials for pharmaceuticals production. For instance, strict policy and regulations on hiring foreign doctors, which limit opportunities for investment from other countries. Strong competition from neighbouring countries in health care services is posing a challenge in medical tourism.

New expertise and skills for complex products need to be developed. The medical devices and pharmaceuticals industries require (i) skilled personnel in specific areas such as biomedical, mechatronic, mechanical, advanced materials and nanotechnology devices and (ii) industrial pharmacists and production and process engineers.

Raw materials availability could be improved. This challenge relates to the following:

(i) Necessary imports of certain main raw materials such as APIs, titanium and medical-grade resin, as no local manufacturers exist

(ii) Import substitution, as the Government encourages local companies to scale up and diversify operations to supply to industry players

(iii) A strict and tedious process for approval of licences and permits by relevant ministries, agencies and authorities

Table 4.9. Health care travellers and revenue, 2013–2017 (Number; millions of ringgit)

	2013	2014	2015	2016	2017
No. of health care travellers (in thousands)	881	882	859	922	1,050
Revenue generated (Millions of ringgit)	726	777	914	1,123	1,274

Source: Malaysia Healthcare Travel Council.

Medical tourism

Since 2009, Malaysia has emerged as a competitive provider of high-quality, affordable and accessible health care services. It is a major destination for medical tourists. Medical tourism is growing at a compound annual growth rate of 18.5 per cent and has contributed to generating increased revenues (table 4.9).

The Government has put in place a dedicated policy supporting the development of medical tourism and a system involving coordinated institutional support, led by the Malaysia Healthcare Travel Council. Under the Eleventh Malaysia Plan 2016-2020, medical tourism is recognized as a key initiative and as a growth sector under the National Key Economic Area plan.

4.3.6. Myanmar

Health care services in Myanmar are underdeveloped and insufficient following years of underinvestment. The country also faces a shortage of professionals and wide geographical disparities in access to health care. The public sector is the dominant supplier of care services. As Myanmar embraces economic reform and liberalization in 2011, private sector participation in the health care industry has improved.

The public sector is planning more investment in health care. With a limited budget, the Government is encouraging the establishment of PPPs to develop the industry and to meet increasing demand. Some citizens travel to neighbouring countries such as Thailand for medical care.

Government expenditure on health care increased from 0.2 per cent of GDP in 2009 (one of the lowest in the world) to 1.2 per cent in 2018. It also grew from K 381 billion (about 3 per cent of the government budget) in fiscal year 2012/2013, to over K 1 trillion (5.2 per cent of the government budget) in fiscal year 2017-2018.[28] Health care spending is expected to rise further, from $1.5 billion in 2017 to $2.4 billion in 2022.[29]

Role of private sector

Private sector involvement in the health care industry has grown in recent years but remains small. The private sector accounted for 15 per cent of all health facilities at the end of 2016.[30] There were only 193 private hospitals as of 2015, compared with 1,120 public hospitals. About 90 per cent of private hospitals have fewer than 100 beds; they are mainly concentrated in major cities (e.g. Yangon and Mandalay). The Government is also encouraging private investment in health care to help the country achieve universal health care coverage by 2030.

The pharmaceuticals market in Myanmar is dominated by imports, with only a handful of domestic producers. Pharmaceutical sales in 2017 amounted to $456 million, and that figure is expected to grow by 7 per cent through 2022. Most medical devices are imported because of the lack of local manufacturing capacity. The health insurance subsector is also small, as the health insurance scheme was only introduced in 2015. State-owned Myanma Insurance is the main service provider, with 11 private insurers offering basic coverage on costs incurred in publicly run health care facilities. This insurance scheme does not allow coverage for treatment in private hospitals and other private facilities.[31]

Health plan

The Myanmar National Health Plan (2017–2021) aims to achieve universal health coverage by 2030. The country is working with development partners such as the World Bank and WHO to develop essential packages of health care to provide to the entire population by 2020. In 2015, the country's UHC index stood at 60 per cent.

Policy encouraging FDI in health care

Until 2014, foreign investors were restricted from investing in the health care industry. The new Myanmar Investment Law 2016, which replaces the Myanmar Citizen Investment Law 2013 and the Myanmar Foreign Investment Law 2012, liberalized the industry for investment. It also streamlined the process for investment applications.

Foreign investment into private hospitals, clinics, diagnostic services, production of pharmaceuticals and medical devices, and private medical and health-related education institutions, is allowed subject to approval requirements. Under the AFAS, foreign ownership in investment in hospitals is allowed up to 70 per cent. Importation and resale of medical equipment is permitted to foreign investors in joint venture with a Myanmar partner. Some activities are restricted, such as health centres for the elderly and domestic laboratory research.

Investment incentives

Certain subsectors in health care, such as hospital services, medical laboratories and clinics are promoted through investment incentives. Investors in these subsectors are eligible for tax exemptions for a period of three, five or seven years, depending on the location of the investment. Additional incentives are provided for projects in SEZs.

In response to the severe shortage of medical devices, regulations on import and resale of medical equipment provide a most-favoured-nation duty rate of 1.5 per cent and an exemption from commercial tax. The import licence fee is exempted on 67 kinds of medicines and pharmaceutical raw materials used in the manufacture of medicines.

Foreign investment in health care

With the liberalization of the health care industry since 2015, interest by foreign investors has been growing, especially foreign investors from neighbouring countries. In 2015 Lippo Group (Indonesia) formed a joint venture with First Myanmar Investments to develop hospitals in Yangon. Lippo plans to build 20 hospitals in the country over the next 10 years.[32] IHH Healthcare (Malaysia) has invested in a hospital in Yangon. Other foreign investors in hospital services that have started operation include Bumrungrad Hospital, Vejthani Hospital, Thonburi Hospital Group (all Thailand) and Tan Tock Seng Hospital (Singapore).

Other health care subsectors have also seen an increase in foreign investment. Apollo Group (India) launched a telemedicine service in Yangon in 2012, which enables Myanmar patients to consult Indian doctors and gain access to treatment without a physical presence at Apollo Hospitals in India. Foreign medical equipment suppliers such as GE (United States) have launched operations in the country to provide advanced imaging equipment to both public and private hospitals.

Foreign pharmaceutical companies have also established a presence in the country. In the distribution segment they include DKSH (Switzerland), Maxxcare (Thailand), Zuellig (Hong Kong, China), Sanofi (France), GSK (United Kingdom) and Novartis (Switzerland). In addition, many generic pharmaceuticals brands from India, China, Thailand and Viet Nam are present; they account for a significant share of the generic drugs market in the country.

4.3.7. Philippines

Demand for health care in the Philippines is increasing because of population growth, urbanization and the rising middle class. The increase in the incidence of non-communicable diseases (e.g. cardiovascular disease, cancers, chronic obstructive pulmonary diseases) and the Government's efforts to implement a universal health care plan have also contributed to the increase.

Health care expenditure remained stable in 2016 (the latest available data) at 4.4 per cent of GDP (compared with 4.3 per cent in 2010), with out-of-pocket payments accounting for 54 per cent of expenditures. Health expenditure per capita grew from $92 in 2010 to $129 in 2016, an increase of 40 per cent.

Investment in health care has been low. There is a lack of both health care infrastructure (hospitals) and human resources (doctors), which is putting a strain on the health care delivery system. Private hospital services are dominated by domestic hospital groups. The ratio of hospital beds to population has remained low compared with that of other Member States. There was on average one hospital bed per 1,000 people in 2016.

Role of private sector

The private sector plays an important role in the development of the health care delivery system in the Philippines. Private hospitals, pharmaceutical producers, and health care IT companies are expanding in the country.[33] According to the Department of Health, the private sector comprises 50 per cent of the country's health system. The hospital network is a hybrid public-private system.[34] As of 2018, there were 1,071 licensed private hospitals and 721 public hospitals. On the basis of these numbers, the private sector accounted for 60 per cent of hospital services in 2018 and 53 per cent of all beds in 2016.

FDI in hospitals is small. However, recent years have witnessed increasing attention by foreign investors to the country's health care industry. The Government of Singapore Investment Corporation has a 14 per cent stake in Metro Pacific Hospital Holdings (MPHH), and Clermont Group (Singapore) owns part of The Medical City in Manila. Metro Pacific operates 14 hospitals with a total of 3,300 beds across the country. MPHH established a 50-50 joint venture with Sanitas (Spain)[35] in 2016. In 2017, MPHH established a joint venture with Marubeni Corporation (Japan) and LSI Medience Corporation[36] (Japan), a wholly owned subsidiary of Mitsubishi Chemical Corporation (Japan).

Health plan

In February 2019, the Philippine President signed into law a universal health care bill (Republic Act No. 11223) that automatically enrols all citizens in the National Health Insurance Programme and prescribes complementary reforms in the health system.[37] This coverage provides citizens access to health services without causing financial hardship to them. At the end of 2018, more than 98 per cent[38] of the population was covered, with 100 per cent to be covered by 2020.

The law also expands the coverage of the Philippine Health Insurance System (PhilHealth) to include free medical consultations and laboratory tests. It designated PhilHealth as the national purchaser of medicines, health goods and services for individuals. Strategic engagement of the private sector and improvement of the delivery of health services were also emphasized.[39]

According to the law, PhilHealth members are classified into two groups: contributory (premium contributors from payroll) and non-contributory (fully subsidized from tax collections). The funding of the previous universal health coverage programme was accomplished through subsidies and contributions from employers and employees.[40]

The country is promoting e-health to reach more people and to make more use of digital technology in health care. It has developed an e-Health Strategic Framework and Plan (2014 to 2020), which aims to use information and communication technologies in the health care industry to support the delivery of more efficient health services. This is in line with providing universal health coverage to all Filipinos.

Policy encouraging FDI in health care

The Government is promoting FDI in health care, including in health ecozones. The Foreign Investments Act of 1991 (Republic Act No. 7042) liberalized the entry of foreign investment into the country. Up to 100 per cent foreign equity ownership in health care is allowed unless restricted by the Constitution or other special laws or listed in the Foreign Investment Negative List (table 4.10).

Ecozones

The Philippine Economic Zone Authority (PEZA) is promoting foreign investments in health and wellness and medical tourism hubs as special ecozones, particularly if they are located in areas identified by PEZA for development. As of December 2018, only three medical centres have been approved by the Philippine Government as PEZA-registered medical tourism zones. Two of which are highlighted in table 4.11.

FDI in the manufacturing of medical devices and pharmaceuticals located in ecozones (under the jurisdiction of PEZA) is allowed 100 per cent foreign equity ownership provided that the manufacturer exports 100 per cent of production. Most of the foreign health-care-related manufacturers that have located in Philippine ecozones or SEZs are Japanese (table 4.12).

Table 4.10. Philippines: Foreign equity ownership in health care

Investment activities	Foreign equity participation
Establishment of health care facilities	60% Filipino and 40% foreign-owned
Manufacturing of Medical devices Medical supplies Medicines	Up to 100% foreign equity ownership, provided export requirement of at least 50% of output is met
Establishment of health information management enterprise	Up to 100% foreign equity ownership, provided that exports are at least 50% of revenue

Source: Philippine country presentation at the UNCTAD–ASEAN Consultative Forum on Investment in the Health Care Industry in ASEAN, 20–21 June 2019, Bangkok.

Table 4.11. Medical tourism parks

Name of economic zone	Developer/operator	Land area (hectares)	Activity	Nationality
St. Luke's Medical Center Bonifacio Global City	St. Luke's Medical Center, Inc	1.67	Medical tourism zone	Philippines
Saint Frances Cabrini Medical Tourism Park	Saint Frances Cabrini Medical Center, Inc	1.20	Medical tourism park	Philippines

Source: PEZA database.

Foreign investment in health care

In promoting FDI, the Government encourages PPPs, which can take various forms (e.g. technology transfer, training, funding and optimizing operational efficiencies). An example is the La Union Medical Centre joint venture for access to medical equipment. Under this agreement, private investors provided a haemodialysis machine and other laboratory equipment to the centre. The investors pay the necessary staff, rental and other costs, and share 15 per cent of the revenues with the Centre. This approach was also adopted by the Southern Philippines Medical Centre, a tertiary referral hospital in Davao City. Its management implemented a PPP under which private partners publicly bid to consign medical equipment such as dialysis machines, computed and digital radiography machines, and haematology, chemistry and immune-assay analysers.[41] Another example is GE Heathcare's partnership with the local government of Banna, in Ilocos Norte. GE brought its Vscan technology to improve maternal care in the small town in 2016.[42]

Table 4.12. Philippines: medical device manufacturers in SEZs

Enterprise name	Economy	Busines orientation	SEZ	Activity
Arkray Industry	Joint venture Japan (99.99%)	Export	First Philippine Industrial Park	Manufacture of urine diagnostic reagent
Aso International	Joint venture Japan (99.99%)	Export	Cavite Economic Zone	Manufacture and export of dental and orthodontic products, devices and supplies
Atomed Cebu	Japan	Export	Mactan Economic Zone II	Manufacture of single-use/disposable medical devices and equipment
Bioteque Medical	Taiwan Province of China	Export	Hermosa Ecozone Industrial Park	Manufacture and export of medical devices and medical disposables for hemodialysis access, endovascular treatment and other medical applications, electronic and other products
BP Dental Instruments	Joint venture Japan (99.98%)	Export	Mactan Economic Zone II	Manufacture of dental forceps
C World KSG Corporation	Republic of Korea	Export	Golden Mile Business Park	Manufacture of contact lenses
Cebu Dentas International	Joint venture Japan (99.84%)	Export	Mactan Economic Zone	Manufacture of retainers for orthodontics, prostheses and tools for dental technicians
Cebu Nisico Corporation	Joint venture Japan (99.99%)	Export	Mactan Economic Zone	Manufacture of high-precision optical elements of lenses
Cozo Filters	Joint venture Japan (99.99%)	Export	Mactan Economic Zone	Manufacture/processing of finished optical glass filters with or without mount and other optical components
Ehs Lens	Joint venture Netherlands (70.1%)	Export	First Philippine Industrial Park	Manufacture and assembly of optical lenses and other optical-related devices including importation of semi-finished lenses
Empress Dental Laboratories	Joint venture Germany (99.98%)	Export	Light Industry & Science Park I	Manufacture of dental prostheses and appliances
Ivoclar Vivadent	Joint venture Liechtenstein (99.99%)	Export	Light Industry & Science Park I	Manufacture of artificial porcelain teeth
JMS Healthcare	Joint venture Japan (99.98%)	Export	First Philippine Industrial Park - SEZ	Manufacture and assembly of medical devices and disposables, particularly infusion sets
Merasenko Corporation	Japan	Export	Mactan Economic Zone II	Manufacture of medical disposable devices such as blood tubing circuits for dialysis and its components, surgical knife sharpeners and other medical products
Optical Technology Specialists	Japan	Export	Mactan Economic Zone II	Manufacture and processing of condenser lenses for electronic, medical, optical, photographic, communication and general industrial applications
Somnomed Philippines	Joint venture South Africa (47%), Australia (47%) and local partner	Export	Allegro Center	Manufacture of dental and orthopedic equipment
Terumo Corporation	Japan	Export	Laguna Technopark	Manufacture of disposable syringes and intravenous catheters
Tokai Medical Products	Joint venture Japan (99.99%)	Export	First Philippine Industrial Park II	Manufacture/assembly of medical catheters
Zir-Con Labs Inc	Joint venture United States (86.67%)	Export	Light Industry & Science Park I	Manufacture of zirconium blocks, crowns, bridges, orthodontics and other appliances for restorative dentistry

Sources: PEZA database.

Opportunities are emerging for foreign health care players to get involved in the spectrum of the health care value chain:

(i) Health care infrastructure. There is an undersupply of hospital infrastructure in the country.

(ii) Diagnostics. The level of infrastructure development varies across the country, opening possibilities for regional diagnostic centres that operate hub-and-spoke models for community outreach (e.g. collect test samples and send them back to a central hub).

(iii) Telemedicine and remote health: Companies specialized in telemedicine and remote health care monitoring, including Internet-of-Things health care solutions that can improve access to care, can address challenges posed by the terrain and the needs of remote areas, where the population is underserved.

(iv) Health care and medical technologies. The country is heavily reliant on imports of medical devices and equipment.

Generic pharmaceutical products are evolving into a huge market due to both the demand for low-cost medicine and the strong government support. Production of raw materials for medicines is now 100 per cent open to foreign ownership.[43]

Foreign investment in health care

Foreign pharmaceutical companies have been in the Philippines for more than three decades. They include MNEs such as Abbott (United States) (1938), Johnson and Johnson (United States) (1956), GlaxoSmithKline (United Kingdom) (1963) and Bayer (Germany) (1962) (chapter 3). In line with the Government's focus on development of generic drugs, foreign companies such as Getz Pharma (Pakistan), Novartis (Switzerland) and Orient Europharma (Taiwan Province of China) have been expanding in the country.

Because of the lack of a local industry, the Philippines imports medical devices and equipment from major MNEs. Some of these MNEs have also established a presence in the country to supply medical equipment to public and private hospitals. They include GE (United States), Siemens Healthcare (Germany), Medtronic (Ireland), Terumo (Japan), 3M (United States), Fresenius (Germany), B. Braun (Germany), Elekta (Sweden) and Royal Philips Healthcare (Netherlands) (chapter 3).

In the hospital/medical centre diagnostics industry, local and foreign health care players are forming joint ventures and/or working partnerships and cooperation for more synergistic alliances. The foreign health care player usually brings in the technology and expertise, while the domestic partner takes on the day-to-day management of the facility. St. Frances Cabrini Medical Center (SFCMC) partners with Seirei Hamamatsu General Hospital (Japan) in providing lectures and training at SFCMC facilities. Nursing staff from the SFCMC have been deployed to Seirei Hamamatsu General Hospital as registered nurses with licenses to practise in Japan. MPHH established a 50-50 joint venture with Sanitas (Spain) in 2016 to build a chain of primary care clinics across the country that will offer affordable services to patients. It operates four primary care clinics in Metro Manila.

Medical tourism

The Philippines is also a destination for medical tourism, although the number of medical tourists to the country is low compared with those in Malaysia, Thailand and Singapore. The Philippines was ranked the 19th most popular destination in the 2016 Medical Tourism Index.44 Approximately 80,000 to 250,000 foreign visitors come to the Philippines each year for medical tourism. They are mainly from the Pacific Islands (Guam, Palau, Marshall Islands and Micronesia) or are Filipinos who are based abroad.45 A combination of factors have helped the country attract medical tourists. They include the country's five JCI-accredited hospitals, skilled physicians, English-speaking nurses and affordable care.

4.3.8. Singapore

Demand for health care in Singapore is increasing, driven in part by the rapidly ageing population and the prevalence of chronic diseases. The Government is increasing its expenditure on health care by investing in providing access, improving affordability and delivering better-quality care services to all citizens.

The public sector accounted for 54 per cent of the country's health expenditures in 2016, up from 42.7 per cent in 2010. Total health expenditure increased from 3.2 per cent of GDP in 2010 to 4.5 per cent in 2016, and per capita health expenditure rose by 64 per cent, from $1,502 in 2010 to $2,462 in 2016.

Role of private sector

The private sector complements the public efforts in the provision of health care services and in developing the health care industry. It accounted for 89 per cent of all health care establishments in the country in 2018 and has been playing an important role in the development of the country's medical tourism segment (table 4.13). In terms of hospital facilities alone, the private sector accounted for 29 per cent.

In 2016, the Minister for Health stated that the private sector accounted for nearly 20 per cent of acute bed capacity and an even larger share of specialist outpatient care. Private general practitioners constitute 80 per cent of the primary care physician workforce and serve 80 per cent of primary care visits.

Table 4.13. Singapore health care facilities, as of 2018

Facilities	Public	Not-for-profit	Private
Acute hospitals	10	1	8
Psychiatric hospitals	1	-	-
Community hospitals	4	4	-
Nursing homes	21	23	28
In-patient hospices	-	2	-
Clinics	20 (polyclinic)	-	2,222 (general practitioner)
Dental clinics	245	-	876
Pharmacies	68	-	190

Source: Health Facilities, Ministry of Health, https://www.moh.gov.sg/resources-statistics/singapore-health-facts/health-facilities.

Health plan

Singapore is implementing its Beyond Healthcare 2020 plan: "from hospital to community", "from quality to value" and "from healthcare to health". The plan is a transition from a traditional hospital-centric model to a broader community-based one that builds stronger links between tertiary institutions and the primary, intermediate, long-term and home care segments, to better deliver care to Singaporeans.[46] The Government is setting aside a S$6.1 billion fund to subsidize health care for Singaporeans born in the 1950s, through subsidies for outpatient care and Medisheld Life premiums, as well as Medisave top-ups for five years.[47]

The country has a high universal health coverage index, greater than 80 per cent in 2018. A number of national insurance programmes support the funding of heath care in the country (table 4.14).

Table 4.14. Singapore Government's major health care financing schemes (Selected cases)

Type of coverage	Description
MediShield Life	A basic health insurance plan that helps to pay for large hospital bills and se-lected costly outpatient treatments, such as dialysis and chemotherapy for cancer. It is structured so that patients pay less MediSave cash for large hos-pital bills.
CareShield Life	A new basic long-term care insurance scheme that features higher payouts that increase over time with no cap on payout duration, to provide better protection and assurance against the uncertainty of long-term care costs if one becomes severely disabled.
MediSave	A national medical savings scheme that helps an individual put aside some income to pay for personal or approved dependents' hospitalization, day sur-gery and certain outpatient expenses, as well as health care needs in old age.
CHAS (Community Health Assist Scheme)	A scheme that enables Singapore citizens from lower- to middle-income households, as well as Pioneers, to receive subsidies for medical and dental care at participating general practitioner and dental clinics.
ElderShield	A programme introduced in 2002 as a basic long-term care insurance scheme targeted at severe disability, especially during old age.
MediFund	An endowment fund set by the Government to help needy Singaporeans.

Source: Singapore Ministry of Health, "Financing schemes and subsidies", https://www.moh.gov.sg/cost-financing/healthcare-schemes-subsidies.

Policy encouraging FDI in health care

Singapore has a liberal investment regime, including for health care. The Government encourages FDI across the health care spectrum, and 100 per cent foreign ownership is allowed. In developing a competitive health care industry, the Government also gives attention to attracting FDI in biomedical, life sciences, R&D and the development of medical technologies. Singapore offers global health care companies a competitive health care ecosystem. Local and foreign investors are subject to the same basic laws. The Government screens investment proposals to determine eligibility for various incentive regimes. Qualified investors are offered investment incentives such as low-income tax, a research incentive scheme, intellectual property development incentives and training grants. The Government grants a Pioneer Certificate Incentive and a Development and Expansion Incentive, which both aim to encourage companies to expand their capabilities and conduct new or expanded economic activities in Singapore. Companies that carry out global or regional headquarters activities of managing, coordinating and controlling business activities for a group of companies may also apply for the Pioneer Certificate or Development and Expansion Incentive for the headquarters activities.

Foreign investment in medical insurance is allowed, subject to the rules and regulations of the Monetary Authority of Singapore.

Foreign investment in health care

Major MNEs in health care, particularly in pharmaceuticals, medical devices and insurance, have a presence in Singapore. Table 4.15 provides a very short indicative list of health-care-related MNEs in the country. Many of them have established multiple business functions, including R&D activities and regional headquarter functions, in Singapore.

Table 4.15. Singapore: MNEs in health care (Selected cases)

Health care category	Foreign companies
Hospitals	Concord International Hospital (owned by China-headquartered Concord Medical Services Holdings Ltd), John Hopkins Sin-gapore International Medical Centre (joint venture with United States-based John Hopkins Medicine and Singapore's National Healthcare Group)
Pharmaceuticals	Amgen (United States), AstraZeneca (United Kingdom), Bayer (Germany), GlaxoSmithKline (United Kingdom), Johnson & Johnson (United States), Merck (Germany), Novartis (Switzerland), Sanofi (France), Takeda (Japan)
Medical devices	Argon Medical Devices (United States), Baxter International (United States), Becton Dickinson (United Sates), Fresenius (Germany), GE Healthcare (United States), Medtronic (Ireland), Philips Healthcare (Netherlands), Siemens Healthcare (Germany)

Source: List of 100 Pharmaceutical and Medical Device Companies (https://dpseng.com.sg/definitive-singapore-pharma-job-website-directory/) and official websites of the companies.

Dedicated life sciences hubs

In facilitating health care FDI and MNE operations, the Government has also established dedicated parks and hubs to support life sciences and R&D activities. These infrastructure facilities include Medtech Hub, Biopolis and Tuas Biomedical Park. The Biopolis and the Tuas Biomedical Park are dedicated to supporting the biomedical R&D cluster, including medical technologies. The Tuas Biomedical Park primarily focuses on manufacturing activities, while the Biopolis aims to attract R&D activities. The R&D complex at the Biopolis is also located near research institutes and universities.

More than 30 medical technology companies and seven of the world's top 10 biopharma-ceuticals companies have a manufacturing presence in the country (table 4.16). Local start-ups such as HealthSTATS and Veredus Laboratories also operate in these hubs.[48]

Medical tourism

Singapore is one of the top medical tourism destinations in the world because of the large number of JCI-accredited hospitals in the country and its efficient health care industry. The country has 21 hospitals and medical facilities that are JCI accredited;[49] a quarter of all JCI-accredited facilities in Asia are in Singapore.[50] The 2016–2017 Medical Tourism Index ranked Singapore fourth, after Canada, the United Kingdom and Israel, with an overall score of 73.6.[51]

Table 4.16. Singapore: MNEs with activities in dedicated health care hubs

Location	MNEs
Tuas Biomedical Park	Abbott (United States), Amgen (United States), Becton Dickinson (United States), GlaxoSmithKline (United Kingdom), Kaneka (Japan), Lonza (Switzerland), MSD (United States), Novartis (Switzerland), Pfizer (United States), Roche (Switzerland), Sanofi (France)
BioPolis	Abbott (United States), ABSciex (Switzerland), AstraZeneca (United Kingdom), Boston Scientific (United States), Chugai (Japan), Hill-Rom (United States), Mesoblast (Australia), Novartis (Switzerland), Roche (Switzerland), Takeda (Japan), ThermoFisher Scientific (United States), Vetter (Germany)
Science Park	AMRI (United States), Medtronic (Ireland), Quintiles (United States)
Kent Ridge Campus	Johnson & Johnson (United States), ThermoFisher Scientific (United States), PerkinElmer (United States)
Others	Biotronik (Germany), Essilor (France), Fluidigm (United States), Philips (Netherlands), Siemens (Germany)

Source: CICOR "Singapore: Supporting the Growth of Medtech Companies in Asia" 2016, (https://www.cicor.com).

In 2018, the Bloomberg health care efficiency scorers ranked Singapore second, after Hong Kong (China).[52]

The Singapore Tourism Board has a number of programmes to promote private health care companies. It plays a key role in developing and nurturing referral networks in countries where there is a demand for the medical services that Singapore offers. International Patient Service Centres have been established specifically for medical tourists and expatriate patients. These centres are attached to hospitals to provide information and assistance for international patients. The centres provide hospital pricing to patients and coordinate appointments with health care specialists.[53]

4.3.9. Thailand

Thailand's health care industry is expanding because of the growing population, rising medical tourism, universal health coverage efforts, investments by foreign companies in manufacturing of pharmaceutical products and devices, and the Government's efforts to develop the country into a significant medical hub.

Thailand's universal health coverage programme started in 2002. It is financed by three sources of public health insurance (i.e. civil servant medical benefit scheme, social health insurance and a basic universal health coverage arrangement), which today covers almost all of the citizens.

The public sector is the main provider of health care services, complemented by services provided by an active private sector. The national expenditure on health care has been increasing, from $172 per capita or 3.4 per cent of GDP in 2010 to $222 or 3.7 per cent of GDP in 2016. Out-of-pocket expenses have remained relatively stable at $25 per capita in 2010 and $27 in 2016, suggesting an increasing use of public facilities.

Thailand's health care industry has faced some challenges. They include the limited supply of skilled professionals and the rapidly ageing population. The proportion of citizens over age 60 is one of the highest in ASEAN. By 2045, Thailand's elderly population is expected to exceed that of other regions such as Europe and the United States.

Role of private sector

The private sector plays an important role in the development of the country's health care industry, contributing some 30 per cent of the country's health resources or facilities.[54] This share is much higher in urban areas such as Bangkok, where the private sector accounted for a 60 per cent share. The private sector accounted for 20 per cent of hospital beds in 2015.

Many private Thai hospitals participate in providing health care services to medical tourists, contributing to the development of the medical tourism industry. The private sector also participates in supporting the Government's universal health care coverage.

Health plan

Thailand has a national plan for the development of the country's health care. The National Strategic Plan for Public Health (2017–2036) provides the national strategies and guidelines. The country also has an e-health strategy (2017–2026), which encourages innovation, supports the use of technology to increase the efficiency of health care, provides guidelines on health care data security and addresses some of the challenges of public health.

Policy encouraging FDI in health care

The Office of the Board of Investment (BOI) offers a wide range of tax and non-tax incentives for both Thai and foreign investment projects in the health care industry. Activities in the health care industries that are eligible for investment promotion from the BOI include the following:[55]

- Manufacture of medical food or food supplements
- Manufacture of medical devices or parts
  - Manufacture of high-risk or high-technology medical devices, (e.g. X-ray machine, magnetic resonance imaging machine, computed tomography scan machine and implants) or medical devices that are commercialized from public sector research or collaborative public-private sector research
  - Manufacture of other medical devices (except for medical devices made of fabrics or fibres)
  - Manufacture of medical devices made of fabrics or fibres, e.g. gowns, drapes, caps, face masks, gauze and cotton wool
- Manufacture of active pharmaceutical ingredients
- Manufacture of medicine (conventional and traditional medicines)
- Medical services
  - Traditional Thai medical public services
  - Specialty medical centres
  - Hospitals56
  - Transportation services for patients, doctors or medical equipment (maritime, land or air transport)

- Other supporting activities; e.g. R&D, the Trade and Investment Support Office, scientific laboratories, biotechnology etc.

Investment incentives are offered to approved health care activities. They include tax and non-tax incentives.

Tax incentives

- Exemption from corporate income tax on the net profit and dividends derived from the promoted activity for up to eight years
- Exemption/reduction from import duties on machinery
- Exemption from import duty on raw or essential materials imported for use in production for export products
- Exemption from import duties on materials imported for R&D
- Double deduction of the costs of transportation, electricity and water supply
- Additional 25 per cent deduction of the cost of installation or construction of facilities

Non-tax incentives

- Permit for foreign nationals to enter the Kingdom for the purpose of studying investment opportunities
- Permit to bring into the Kingdom skilled workers and experts to work in investment-promoted activities
- Permit to own land
- Permit to take out or remit money abroad in foreign currency

Foreign equity ownership

Thailand welcomes FDI in health care, particularly in manufacturing of pharmaceuticals and medical devices. FDI in hospitals and specialized centres is generally restricted (table 4.17).

Foreign investment in health care

Many international pharmaceutical companies and medical device manufacturers have established a presence in the country (table 4.18). Some have been in the country for a few decades and continued to expand their production capacities. They are involved in manufacturing and distribution of pharmaceutical products and devices. FDI in hospitals and specialized medical centres is restricted.

Foreign investors have contributed to the development of the health care industry. Siemens Healthineers (Germany) has provided innovative technologies in diagnostic and therapeutic imaging, laboratory diagnostics and molecular medicine as well as digital health to the industry. Essilor (France) has contributed to the manufacture of prescription lenses for patients with medical conditions related to eye or vision disorders, Roche (Switzerland) focuses on developing medicines for specific diseases (e.g. breast, ovarian, lung, colorectal, and lymphoma cancer;

Table 4.17. Thailand: Foreign equity ownership in health care segments

Health care segment	Foreign equity ownership (%) 2018	Remarks
Hospital	Foreign majority share ownership is not allowed, unless permission is obtained from the Director-General of the Department of Business Development with the approval of the Foreign Business Commission (List 3 Foreign Business Act) or obtaining the Board of Investment's investment promotion approval.	• The general manager must have a Thai medical licence. • The business must be operated in accordance with the domestic laws and regulations.
Specialized centre	Foreign majority share ownership is not allowed, except upon obtaining permission from the Director-General of the Department of Business Development with the approval of the Foreign Business Commission (List 3 Foreign Business Act) or obtaining the Board of Investment's promotion approval.	• The general manager must have a Thai medical licence. • The business must be operated in accordance with the domestic laws and regulations.
Digital health care facilities (telemedicine)	Investment is not allowed.	This business is prohibited by law. Medical services must be provided only in health care facilities.
Manufacturing of pharmaceuticals	Foreign majority share ownership is allowed.	• Except "extraction of Thai medicinal herbs", which is restricted only for Thai nationals. • The business must be operated in accordance with the domestic laws and regulations.
Manufacturing of medical equipment	Foreign majority share ownership is allowed.	The business must be operated in accordance with the domestic laws and regulations.
Distribution and/or marketing of pharmaceutical products	Foreign majority share ownership is not allowed, except upon obtaining permission from the Director-General of the Department of Business Development with the approval of the Foreign Business Commission (List 3 Foreign Business Act).	• Pharmaceutical products need to be registered with the Food and Drug Administration (FDA) (Time for registration varies between one and two years). • The Thai Food and Drug Administration (FDA) under the Thai Ministry of Public Health regulates pharmaceutical registration and grants import licences. • Pharmaceutical importers need to be registered with the Customs Department. • A local presence through an agent/distributor or subsidiary is the most common sales model in Thailand. • The business must be operated in accordance with the domestic laws and regulations.
Distribution and/or marketing of medical equipment	Foreign majority share ownership is not allowed, except upon obtaining permission from the Director-General of the Department of Business Development with the approval of the Foreign Business Commission (List 3 Foreign Business Act)	• Medical devices need to be registered with the Food and Drug Administration (FDA) (product registration for general medical devices takes between four and six weeks). • Imported medical devices need to be classified, registered and approved by the FDA before their importation into Thailand. • Only new medical devices are allowed to be imported into Thailand. • Product registration is valid for two years and issued to medical devices importers in Thailand. • Medical devices importers need to register with the Customs Department. • Establishing a local presence through an agent/distributor or subsidiary is the most common sales model in Thailand. • The business must be operated in accordance with the domestic laws and regulations.
Health insurance	• Foreign share ownership is allowed up to 25%. • Foreign share ownership from 25% to 49% is allowed upon approval from the Office of Insurance Commission. • Foreign majority share ownership is allowed upon approval from the Minister of Finance (the allowance is only for special circumstances; e.g. the company is	The business must be operated in accordance with the domestic laws and regulations.
Health care IT-BPO: e.g. - Call centre - Accounting - Patient database management - Software development	Foreign majority share ownership is not allowed, unless upon obtaining permission from the Director-General of the Department of Business Development with the approval of the Foreign Business Commission (List 3 Foreign Business Act) or obtaining the Board of Investment's investment promotion approval (in case the activities are promoted e.g. software development).	The business must be oper-ated in accordance with the domestic laws and regulations.
Medical R&D	Foreign majority share ownership is not allowed, except upon obtaining permission from the Director-General of the Department of Business Development with the approval of the Foreign Business Commission (List 3 Foreign Business Act) or obtaining the Board of Investment's investment promotion ap-proval.	The business must be operated in accordance with the domestic laws and regulations.

Source: Board of Investment, Thailand.

Table 4.18. FDI in health care (Selected cases)

MNE	Country	Activity/product
Nipro	Japan	Blood tubing sets, PTA balloon catheters, hypodermic needles, syringes
Hoya Optics	Japan	Glass moulded lenses, glass polished lenses
Kawasumi Laborato-ries	Japan	Hemodialysis, plasmapheresis, blood banking and transfusion
Meditop	Thailand	Diagnosis products, cardiovascular products, ventilators, renal product group
GE Medical	United States	Ultrasonography, radiography, mammography, mater-nal-infant products
Eyebiz Laboratory	..	Ophthalmic lenses
Infus Medical	..	Bone cement mixing, blood transfusion products, apheresis products
GSK	United Kingdom	Distribution of pharmaceutical products
Novartis	Switzerland	Distribution of pharmaceutical products
Sanofi	France	Distribution of pharmaceutical products
Roche	Switzerland	Distribution of pharmaceutical products
Pfizer	United States	Distribution of pharmaceutical products
Merck	Germany	Distribution of pharmaceutical products
Takeda	Japan	Manufacture of pharmaceutical products
Meiji	Japan	Manufacture of pharmaceutical products
Berlin	Switzerland	Manufacture of pharmaceutical products
Olic	Japan	Manufacture of pharmaceutical products
Mega	Uruguay	Manufacture of pharmaceutical products

Source: Board of Investment, Thailand.

hepatitis B and C) and diagnostic services (diabetes care, molecular solutions). Novartis (Switzerland) provides innovative products that treat illness.

There are investment opportunities in medical devices and the pharmaceutical industry because of strong growth in demand for devices and pharmaceuticals (including for export).

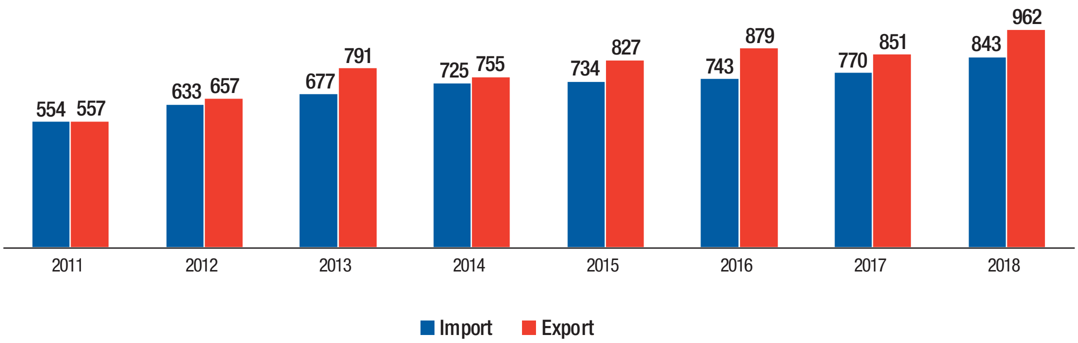
Medical devices

The value of medical devices imported into Thailand grew from $557 million in 2011 to $962 million in 2018 (figure 4.1). Over the same period, the value of exports of medical devices increased from $554 million to $843 million. This trend reflects the growing size of the domestic market and the country's importance as an export base.

Pharmaceuticals

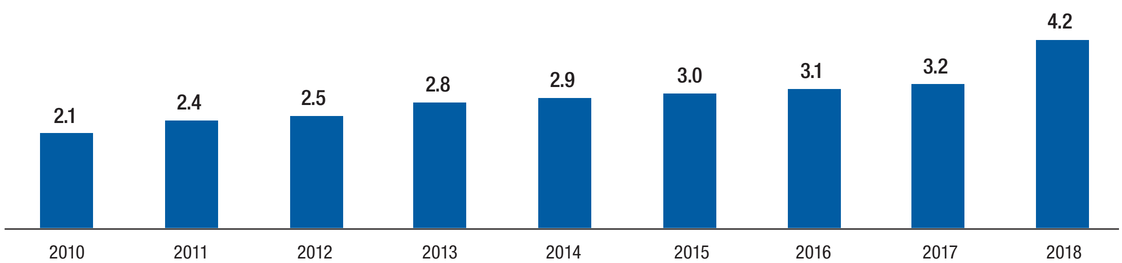
Thailand's spending on pharmaceuticals is growing rapidly, doubling between 2010 and 2018 as a percentage of GDP (figure 4.2). This is primarily due to the increasing demand for pharmaceuticals from the ageing population. Other contributing factors include the country's universal health coverage and the continued growth of medical tourism. The pharmaceuticals market now accounts for almost 20 per cent of all domestic health expenditures, with the majority distributed through Thailand's public and private hospital system.

Figure 4.1. Thailand: Medical device trade, 2011–2018 (Millions of dollars)



Source: International Trade Centre.

Figure 4.2. Thailand: Pharmaceutical spending (Per cent of GDP)



Source: Krungsri Research (September 2018), and Office of the National Economics and Social Development Board.

Despite a large number of domestic manufacturers, Thailand relies significantly on imports of pharmaceutical products. In 2018, the country imported $2.9 billion pharmaceuticals, 16 per cent from China and 12 per cent from the United State and Germany (11 per cent) (Krungsri Research 2018). Its export value stood at $884 million, mainly to the neighbouring countries.

Another key area for investment is in medical robotics. The Thailand Center of Excellence for Life Sciences has established a Center for Advanced Medical Robotics. It is focused on international and regional investors and users, with the aim of broadening Thailand's research base through advanced medical robotics projects. Some success stories include homegrown companies such as the Dinsow elderly care robot developed by CT Asia Robotics, the Fhasai robot-assisted therapy for children with autism spectrum disorders by Mahidol University; and Sensible Tab arm rehabilitation robot by the Center and TMGI.

Medical tourism

Medical tourism is a key feature of the Thai health care industry. Thailand is a major medical tourism destination. It has 64 hospitals accredited by the JCI – the highest number in ASEAN and the fourth highest in the world.[57] The provision of affordable and quality care including other health care facilities (e.g. wellness and spa) has contributed to the rise in the number of medical tourists (figure 4.3).

The increasing rise in medical tourism has provided the impetus for a range of technological advances, innovations and clinical studies. Such developments have led to the rise of supporting industries such as pharmaceuticals, laboratory testing and clinical R&D.

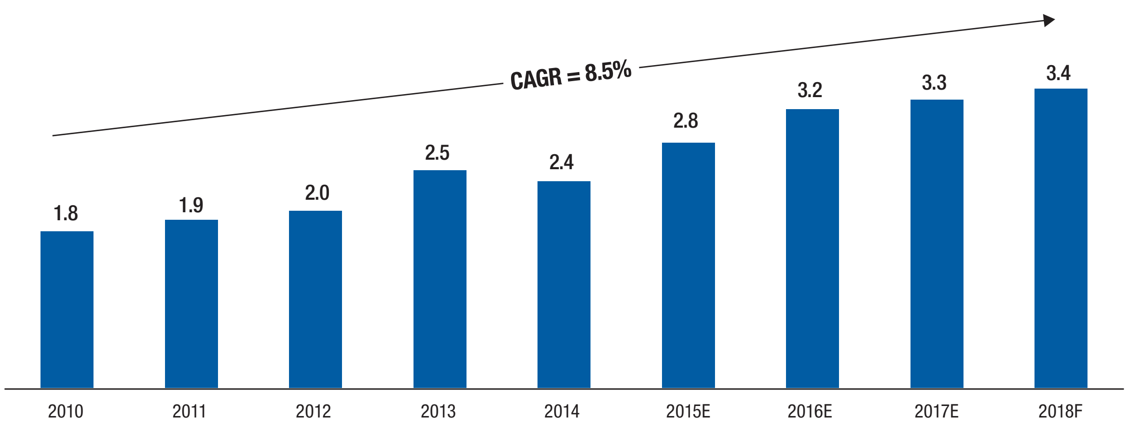
The Government supports the development of the medical tourism industry and plans to further develop Thailand into a significant international medical hub over the period 2017-2026, in four major areas (wellness, medical services, academic medical centres and health products). The Government has introduced various related measures, which include the following:[58]

(i) Extending the permitted period of stay for visitors travelling to Thailand for medical treatment from China and the CLMV nations (Cambodia, the Lao People's Democratic Republic, Myanmar and Viet Nam) to 90 days from 30 days and allowing up to four family members to accompany travellers bound for Thai hospitals

(ii) Extending long-stay visas from 1 to 10 years for individuals from 14 specified nations

(iii) Assembling a special dental and health-check package for international travellers.

Figure 4.3. Foreign patients at Thai hospitals, 2010–2018 (Millions of persons)



Source: Business Sweden, The Swedish Trade & Investment Council and Kasikorn Research.
Note: Some 2.4 million medical tourists visited Thailand in 2017. This number excluded the 900,000 expatriate health care visits.

4.3.10. Viet Nam

High economic growth and increasing personal incomes, a growing population and rapid urbanization along with an ageing society have led to a rising demand for health care service in Viet Nam. The country's population is growing rapidly. In 2010, it was 87 million and by 2018 it had grown by 10 per cent to 96 million. The society is also ageing, with the population older than age 60 projected to triple to 32.4 million (28.3 per cent of the population) by 2050.[59]

Viet Nam's health care expenditure rose from 5 per cent of GDP in the 1990s to about 7.5 per cent in 2018 ($17 billion), one of the highest rates in ASEAN. It is expected to grow to $23 billion in 2021, representing a compound annual growth rate of 12.5 per cent between 2017 and 2021.[60]

The country imports most of the medications it needs, but local capacities are improving. The pharmaceuticals market had an estimated revenue of $5.9 billion in 2018. The country's drug imports in 2018 increased by 8.8 per cent year-on-year to $3.7 billion. In 2018, about 300,000 medical tourists travelled to Viet Nam, while 40,000 Vietnamese spent approximately $2 billion abroad for health care service.[61]

Despite the significant public expenditure on health care, the Government faces challenges to meet the rapid growth in demand. Outdated and overcrowded hospitals, obsolete medical equipment and shortages of qualified medical staff are among them. The health care system has undergone decentralization and privatization in recent years. However, public facilities continue to dominate the health care system. In 2016, there were 1,346 hospitals, which included 1,161 public hospitals, accounting for 86 per cent of the total, and 185 private ones. More than 90 per cent of hospital beds are provided by the public system. The Government aims to increase the share of private hospital beds to 20 per cent by 2020, through PPPs.

Role of private sector

To meet demand, the Government is promoting PPPs. In 2014, the Government announced plans to deregulate the health care industry and open for foreign investment. For example, the Government encourages the privatization of public hospitals and allows foreign investors to have 100 per cent ownership of Vietnamese hospitals with no restrictions on the number of practising foreign doctors.

Local private investors including FLC Group, T&T Group and Hoan My Medical Corporation are active. FLC Group, a resort conglomerate, invested $160 million in an international hospital in the northern province of Thai Binh. The T&T Group acquired a 51.5 per cent stake in Hanoi Transport Hospital – the first privatization of a public company or hospital.

Health plan

The Government has made development of health care one of its strategic objectives. In Viet Nam's Five-Year Socio-Economic Development Plan (2016-2020), the Government listed specific objectives for health care development. By 2020, the country's health care system is to have 9 to 10 doctors and more than 26.5 patient beds per 10,000 people. Insurance coverage is to be above 80 per cent of the population. To achieve these goals, the Government plans to focus on construction and upgrading of hospitals, professional education and training, and development of the medicine and health equipment subsectors. In addition, the 2014 national strategy on the development of Viet Nam's pharmaceuticals industry aims to increase the share of locally produced pharmaceuticals to 80 per cent of market value – strengthening local productive capacities and reducing reliance on imports.

Health insurance became compulsory for all Vietnamese citizens in 2015. In 2018, 87 per cent of the population was covered, up from 68 per cent in 2013. The Government is aiming for universal coverage by 2030.

The health insurance premium averages about 4.5 per cent of the reference wage, but the Government substantially subsidizes premiums to the poorest people, students, children under age 6 and beneficiaries of social assistance programmes. The Social Health Insurance Fund accounted for 22 per cent of health expenditure in 2016; however, voluntary health insurance accounted for only 1 per cent of health expenditure.[62]

Policy encouraging FDI in health care

The Investment Law (2014) lists health R&D activities, development of infrastructure facilities and pharmaceuticals production as eligible for investment incentives. Health care service is among the 11 services industries open to foreign investment in Viet Nam's WTO Commitments. Except for distribution of pharmaceutical products and medications, foreign investors can invest in health care establishments, pharmaceuticals, medical devices, and medical education and training units. Foreign investment up to 100 per cent equity ownership is allowed in each of these subsectors with certain conditions on the capital requirement. For example, the capital investment for a hospital is $20 million, whereas a polyclinic requires an investment of $2 million and a specialized clinic $200,000. Home care, nursing and emergency evacuation services are subject to approval on a case-by-case basis.[63]

Government policy on the relaxation of the foreign investment limit of the overall 49 per cent cap on foreign ownership in Vietnamese public listed companies in 2015 has also encouraged foreign investors in health care. For example, Abbott Laboratories (United States) now holds a 52 per cent majority share of Domesco Medical Import Export, a leading pharmaceutical company listed on the Ho Chi Minh Stock Exchange. Japanese Taisho Group spent about $48 million to lift its ownership in DHG Pharma, also a listed company and a top medication distributor in Viet Nam, to 32 per cent in 2018. The Finance Ministry is planning to remove restrictions on foreign ownership of State-owned and listed companies by the end of 2019, which is expected to open up more business and investment opportunities in health care.[64]

The Government has also issued other laws and implementation decrees to cut procedures and create more favourable conditions for investment in health care. For instance, the 2016 Law on Pharmacy waives requirements for clinical trials of new drugs except vaccines, provided that they have sufficient clinical data on safety and efficiency and are circulated in at least one country anywhere in the world.[65]

Investment incentives

Investment incentives, in the form of tax incentives, tax holidays, exemption from import duties and exemption from or reduction of land rental, land-use levy or land use tax are provided for health care activities such as medical examination and treatment; production of medications and medication materials, major and essential drugs, preventive and curative drugs for social diseases, vaccines, medical bioproducts, herbal medicines and oriental medicines, scientific research and biotechnology for producing new drugs.[66]

Tax incentives and tax holidays are also available to other health care activities. Investment in health care establishments, if qualified as performing socialized activities and subject to meeting certain requirements, can be eligible for a preferential corporate income tax rate of 10 per cent during the entire operation period instead of the standard rate of 20 per cent. In addition, depending on their location, such health care establishments can also enjoy tax holidays (four years of tax exemption and a subsequent five or nine years of 50 per cent tax reduction).[67]

Foreign investment in health care

Foreign investors have been active in the health care industry in recent years. In 2018 alone, major deals in health care establishments include the acquisition by Sun Medical Center (Republic of Korea) of Nha Khoa My, an international network of dental clinics that has been operating in Viet Nam for 15 years. In anticipation of the Vietnam-Europe Free Trade Agreement, Adamed Group, Poland's second largest pharmaceutical group, acquired a 70 per cent stake in Davipharm for $50 million. Mergers and acquisitions have been used by foreign investors for immediate access to the local market. Aside from health care establishments, other foreign companies such as Mega Lifesciences (Thailand), DKSH and Zuellig Pharma (both Switzerland) are active in wholesale pharmaceutical activities.

Foreign investment in health care is expected to increase because of market opening. The Government has set ambitious targets for the development of the health care industry to meet the growing demand and has also taken measures to encourage investment. It is promoting PPPs in national-scale hospital upgrade and construction projects, which opens up opportunities for private investment.

4.4. CHALLENGES

Despite efforts to improve the regional investment environment and strengthen health care cooperation, moving forward requires addressing larger challenges. One area is in harmonization of health care standards and mutual recognition, involving countries at different stages of development. Health care regulatory systems in ASEAN differ. This creates challenges for health care players, who need to comply with multiple regulatory systems to operate in the region. Progress is being made through the AMDD and the MRAs, but in most ASEAN Member States implementation is far from ideal.

Table 4.19 highlights the status of Member States with respect to each of the six AMDD regulatory issues and their disparities. Although the AMDD aims to standardize requirements, local guidelines are still in place and must be followed. This has contributed to some differences in the documentary requirements across the region, and approval of a certain medical device by one Member State does not ensure its approval by other Member States.[68]

Table 4.19. Progress of ASEAN Medical Device Directive (AMDD), 2018

Implementation category	Subcategories	Brunei Darussalam	Cambodia	Indonesia	Lao People's Democratic Republic	Malaysia
				AMDD specific regulations		
Medical device definition	Medical device defined	○	○	●	●	●
	IVD defined	○	○	●	○	●
Medical device classification	Classification	○	○	●	●	●
	Categories	○	○	Class A, B, C and D	Type A, B, C and D	A, B, C, D medical device regulations 2012
	Classification rules	○	○	●	○	●
	Classification rules details	◉	◉	Classification based on risk, in four categories: A, B, C and D	◉	Medical devices are classified based on the level of risk, intended use and interaction with the body
Essential principles	Essential principles	○	○	○	●	●
Conformity assessment	CAB	○	○	○	○	●
	Pre-marketing procedure	○	○	●	○	Medical device regulations, 2012. Third Schedule: Conformity; Assessment; Procedure
Clinical Investigation	Clinical investigation Controls	○	○	●	●	○
Post-market controls	PMS	○	○	●	○	●
	QMS	○	○	●	○	●
	Enforcement	○	○	●	●	●
	AE reporting	○	○	●	●	●
	FSCA monitoring	○	○	●	○	●
	Advertising	○	○	●	●	●
	Labeling	○	○	●	○	●
	Details					New regulations in labelling requirements will be strictly implemented in the end of August 2018.

● Yes ○ No ◉ Not available

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Table 4.19. Progress of ASEAN Medical Device Directive (AMDD), 2018 (Concluded)

Implementation category	Subcategories	Myanmar	Philippines	Singapore	Thailand	Viet Nam
AMDD specific regulations						
Medical device definition	Medical device defined	●	●	●	●	●
	IVD[a] defined	●	○	●	○	●
Medical device classification	Classification	○	New regulation is in place to be implemented	●	●	●
	Categories[b]	○	Current: Registrable and non-registrable. For implementation (year 2019): Class A, B, C and D	Class A, B, C and D	International risk classification method (Class I-IV) will be adopted	Class A, B, C and D, valid from 15 December 2016 (Circular 39/2016)
Medical device classification	Classification rules	○	New regulation is in place to be imple-mented	●	●	In 2018, all Class A, B, C, D devices were still following the old regulations enclosed in Circular 30.
	Classification rules details	◍	New regulation is in place to be implemented	Classification rules are adopted from the GHTF guidance See Health Prod-ucts Act (Medical Devices) Regulations, 29 (2)(b)	Seven categories of medical devices require premarket approval: (1) condoms; (2) examination gloves; (3) surgical gloves; (4) sterile hypodermic disposable syringes; (5) sterile insulin disposable syringes; (6) HIV test kits for diagnostic use; (7) contact lenses. Manufacturers and importers of HIV test kits must have a quality control accreditation. Licensed medical devices: Four categories of devices categories of devices require an application for notification to the Thai FDA prior to manufacture or importation.	◍
Essential principles	Essential principles	○	○	●	●	○
Conformity assessment	CAB[c]	○	○	○	●	○
	Pre-marketing procedure	○	○	The owner of a medical device or its authorized representative is responsible for preparing a declaration of conformity	○	Conformity assessment process and requirements described in Decision No. 24/2007/QD-BKHCN of 28 September 2007 by the Ministry of Science and Technology
Clinical Investigation	Clinical investigation Controls	○	○	●	●	○
Post-market controls	PMS[d]	○	○	●	○	●
	QMS[e]	○	●	●	○	○
	Enforcement	○	○	●	●	○
	AE reporting[f]	○	○	●	●	○
	FSCA monitoring[g]	○	○	●	○	○
	Advertising	○	●	●	●	○
	Labeling	○	●	●	○	●
	Details					●

Source: Qualtech, "ASEAN medical device directive implementation: Current progress and future direction", 11 May 2018 (http://www.qualtech.com.tw).
[a] IVD = in vitro diagnostic device
[b] Medical Devices shall be classified according to their risk classification levels, according to: Class A: Low risk; Class B: Low to moderate risk; Class C: Moderate to high risk; Class D: High risk.
[c] CAB = conformity assessment body
[d] PMS = post-market surveillance
[e] QMS = quality management system
[f] AE = adverse event
[g] FSCA = field safety corrective action

● Yes
○ No
◍ Not available

Harmonization of health care regulatory issues among countries with varying stages of development is not an easy task. There is more to be done to harmonize regulatory standards to support health care development in the region. Other technical issues (e.g. on medication, data protection and data security) need to be considered if harmonization is to transform ASEAN into a competitive medical hub. However, it is important to recognize that the commitment of Member States to the various MRAs and agreements on harmonization of regulatory issues are notable efforts to improve the business environment and to realize the AEC (health care) objectives.

A lack of skills, technological capacity and human resources (doctors and other health care workers) continues to weigh on the development of the health care industry across the region. In some Member States, this limitation poses more serious challenges than in others. The emergence of new and more complex health care activities or products (biomedical, advanced medical technology) requires new talents and personnel with the right skill sets. The lack of raw materials that can be sourced locally also poses a challenge to developing a strong local pharmaceuticals industry.

Meeting the rapidly growing demand for health care in the region remains a major challenge because of limited government budgets. Some Member States face challenges in attracting FDI in health care despite recent efforts in opening up to foreign investment. In some cases, a limited market and less developed ecosystem have made it a challenge to attract FDI. There are administrative challenges (in some Member States) in terms of transparency, clarity and streamlining of investment procedures and uncertainties in the implementation of laws and regulations on health care. Providing additional guidance and more clarity on new laws on foreign investments would help alleviate such concerns.

The participation of more small and medium-sized enterprises in health care is needed. Such entities face barriers to entry more often than larger ones; examples of such barriers include regulatory challenges and limited access to finance and support for innovation.

In regard to attracting private investment in medical technology, the region faces the challenge of a lack of experienced talent, focused capital and a nascent supporting industry. Although cooperation exists, competition in the region in medical tourism is growing.

4.5. POLICY OPTIONS AND WAYS FORWARD

To address some of the challenges, the following policy options on investment facilitation, balancing regulation over innovation, coherence of policies in attracting FDI and developing a region-wide medical tourism hub could be considered (chapter 3).

Investment facilitation

Most Member States have liberal policies for investment in health care. Some are examining measures to support further opening up of the industry. Member States are actively promoting and encouraging FDI in health care infrastructure (e.g. hospitals). And in most cases, they allow 100 per cent foreign equity ownership, including in health insurance. Streamlining of investment and administrative measures and procedures can further improve the investment environment.

PPPs

Given the limited public resources to meet the increasing demand for health care, a strengthened PPP model could offer a way forward. Member States are already supporting PPPs. However, deeper engagement with various private sector stakeholders from hospital groups to private equity investors could be considered. Smart PPPs and establishing a mechanism for regular public and private sector consultation at the regional level could help spearhead greater private sector participation in the development of the industry, including in digital health. One such mechanism could be an “ASEAN health care council” involving private sector stakeholders to promote the development of an efficient and competitive health care environment.

Regulatory issues

Some regulatory issues also require attention. They include the following:

Overregulation versus promoting innovation

There is a need to regulate segments of the health care industry to protect patients and to direct development towards national and regional objectives. However, there is also a need to strike a balance between regulating and promoting innovation. Overregulating could stifle innovation, which is needed to advance the industry and improve efficiency in the delivery of care services. For instance, promoting digital health and ensuring data privacy. Regulations that stop the free flow of data could severely restrict the use of such data, which could stifle investments and development of the health care industry (e.g. tele-health and data analytics).

Region-wide regulatory framework

Some regulatory issues (aside from those covered under the existing ASEAN MRAs and AMDD) could be harmonized to facilitate cross-border investment in health care, where appropriate.

Data protection

As the industry moves towards greater digitalization, with EMRs in a digital data environment, there is a need to consider the issues of data ownership, data residency, and data protection and security in order to protect patients. A strong national and region-wide regulatory framework on these issues could be considered.

Developing medical tourism

Medical tourism is on the rise in some ASEAN Member States because of their more efficient health care environments. Although medical tourism is important, it should not be the primary reason for investment in hospitals. The development of the health care industry should serve local patients. In addition to the local patient segment, medical tourism can make the market lucrative for private investors. Private investment in hospitals that targets only medical tourism does not offer a sustainable business model, as medical tourism revenues can fluctuate and be affected by global events such as recession or financial crises.

Where promoting medical tourism is an important item on the economic agenda, it should be built on the basis of efficiency and through the development of a strong ecosystem, and it should involve an interplay of the various stakeholders (e.g. private hospitals, government institutions, health care enablers, transportation and logistics services, the hospitality industry and tourism boards).

Recognizing the potential of the region for further growth in medical tourism and the positive externality effects of such tourism (e.g. returns on investment, arrest of "brain drains" of doctors, financing of better equipment and training), an ASEAN medical tourism hub could be considered.[69] The aim would be for Member States to cooperate to promote and develop ASEAN as a world medical tourism hub, drawing on the strengths, skill sets and capabilities of the Member States. Such regional cooperation to develop comprehensive health care solutions could bring complementary benefits and synergies to participating countries, including in supporting the objectives of the AEC.

Transportability of health insurance

Building on insurance to support health care development across the region is worth considering, where viable. At the moment, health insurance is not transportable across borders. Making health insurance transportable could facilitate health care development in the region. Health insurance providers should be involved in the "ASEAN health care council".

Digitalization and medical technologies

In regard to improving the capacity of countries to develop medical technology, Member States could work on developing an environment that is conducive for venture capital firms and start-ups to establish operations in the region. In promoting digital or e-health, the coherence of measures or agreements need to take into account existing agreements such as the ASEAN Agreement on Electronic Commerce, signed in 2018.

Incentivizing SMEs

There is a need to incentivize and motivate small and medium-sized enterprises and start-ups to get involved in health care development, strengthening the ecosystem.

Data limitation and data coverage

Better data are needed to monitor the development of private investment in the health care industry. The provision of such data can help policymakers examine the significance of investment in health care across different value chain segments and can be of use in the design of policies to attract investment (e.g. in digital health and medical technologies). A task force could be established to identify and examine approaches in which better data and information could be extracted from existing reporting systems. Such health care data could be reported regularly to the ASEAN health ministers and economic ministers for use in policy development.

4.6. CONCLUSION

The demand for health care in ASEAN is rising. Population growth, changing demographics, universal health care programmes and the rise in non-communicable diseases are pushing up demand for health care services. The public sector alone cannot meet the health care challenge. The private sector can play a role in complementing public efforts and supporting the development of a competitive health care industry. In most Member States, the private sector has been playing an important role. In some Member States, private hospitals and governments have worked closely to develop medical tourism markets. With the growth in demand, the private sector could contribute through PPP activities and invest in health infrastructure, manufacturing of pharmaceutical and medical devices, and funding of health care start-ups.

The investment environment in the region is improving. Key drivers are regional and national development. The former relates to regional cooperation and implementation of agreements relating to health care, including market opening and harmonization of standards and regulatory issues. The latter covers efforts to improve the investment environment, liberalize, commit to realizing universal health coverage and provide an efficient health care system, as well as to strengthen the PPP environment. ASEAN Member States have further opened up the health care market for FDI, where 100 per cent foreign equity ownership under the AFAS is allowed, and they are spending more on developing their health care systems.

Investors and companies would do well to evaluate and understand the implications of the changing regional investment landscape, which offers opportunities across the health care spectrum. The region continues to offer investment opportunities, as ASEAN moves towards realizing the objectives of a single market, a competitive production base and a more deeply connected region by 2025. The significance of regional development and an integrated market of nearly 700 million people with a combined GDP of more than $4.7 trillion by 2025 cannot be underestimated.

In moving forward to develop a competitive health care environment, existing challenges at the regional and national levels need to be addressed. Some policy options could be considered. They could include investment facilitation to attract FDI in health care, a strengthened PPP model, engagement of insurance companies and transportability of cross-border health insurance, harmonization of regulatory issues, a balanced consideration between overregulation and promotion of health innovation to increase efficiency, and closer region-wide cooperation on medical tourism to tap the synergy, cost and complementary advantages of Member States. ASEAN Member States need to give stronger attention to digital and medical technology to increase efficiency and to provide a better quality of care. Attracting MNEs, local companies and start-ups in this emerging area of health care delivery is important.

NOTES

[1] ASEAN Secretariat, "Declaration of the 8th ASEAN health ministers meeting", 21 June 2006, Yangon (https://www.asean.org).

[2] "Universal health coverage (UHC) means that all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship." (Source: WHO, https://www.who.int/health_financing/universal_coverage_definition/en/.) Universal health coverage is part of the Sustainable Development Goal 3.

[3] Ministry of Health Brunei Darussalam. Health System and Infrastructure Master Plan for Brunei Darussalam (http://www.moh.gov.bn).

[4] World Health Organization (WHO) Western Pacific Region (2018). "Brunei Darussalam: UHC and SDG Country Profile 2018".

[5] Kouland, Thin, and Sokbunthoeun, S.O. (2017). "Assessing government's fiscal space for moving towards universal health coverage in Cambodia", *Global Journal of Medicine and Public Health*, 6 (3).

[6] Ministry of Health. 2016. "Estimating health expenditure in Cambodia: National health accounts report". Phnom Penh.

[7] Ministry of Health, Cambodia, Third Health Strategic Plan 2016-2020 (HSP3).

[8] Pacific Bridge Medical, "Healthcare in Cambodia", 11 July 2017.

[9] The Health Sector Progress Report 2015, Ministry of Health, Cambodia.

[10] Cambodia Investment Board/Council for the Development of Cambodia, "Investment incentives" (http://www.cambodiainvestment.gov.kh/investment-scheme/investment-incentives.html).

[11] WHO, "Republic of Indonesia Health System Review", WHO Asia Pacific Observatory on Health Systems and Policies, 2017, and Republic of Indonesia Health System Review, WHO Asia Pacific Observatory on Health Systems and Policies, 2017.

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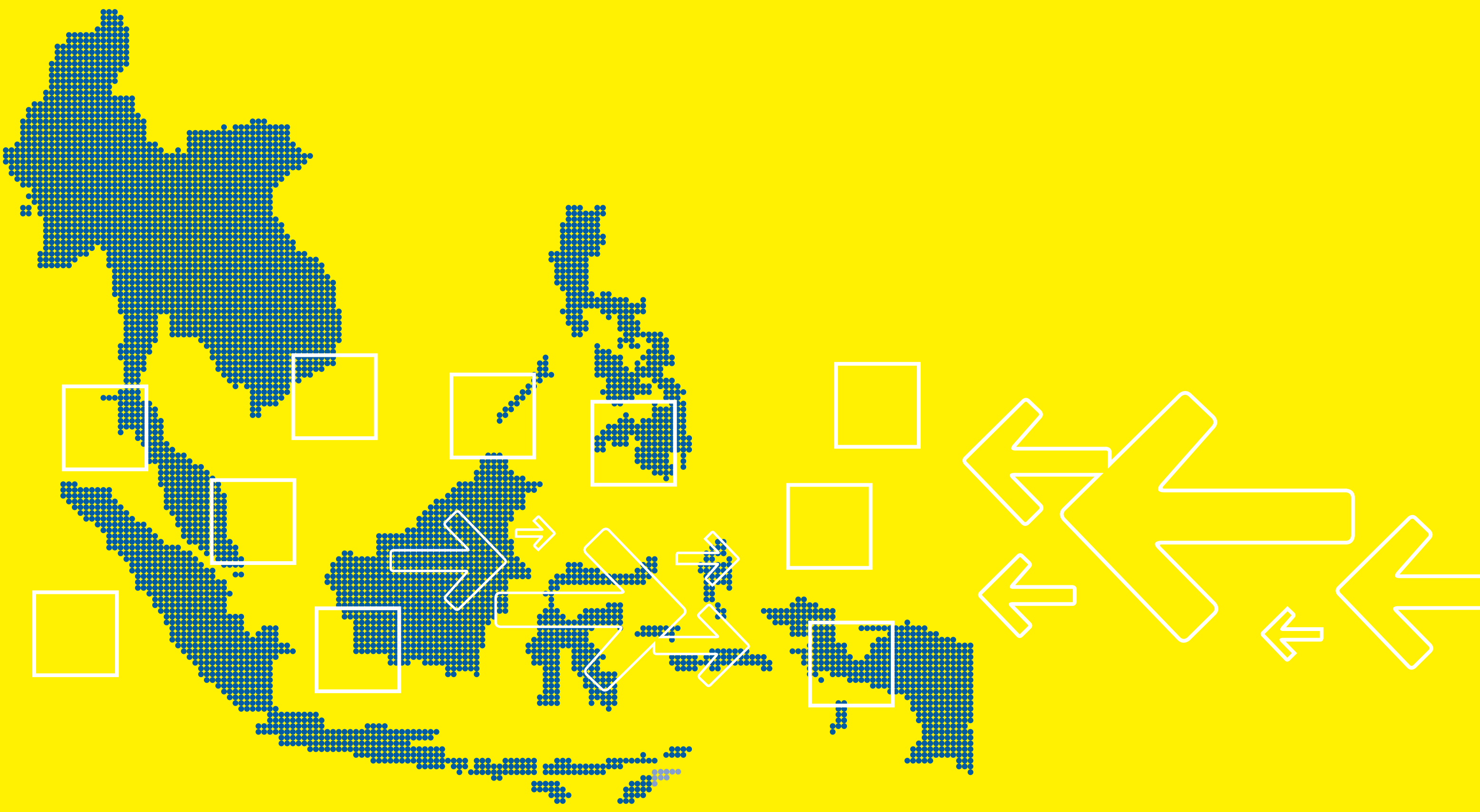

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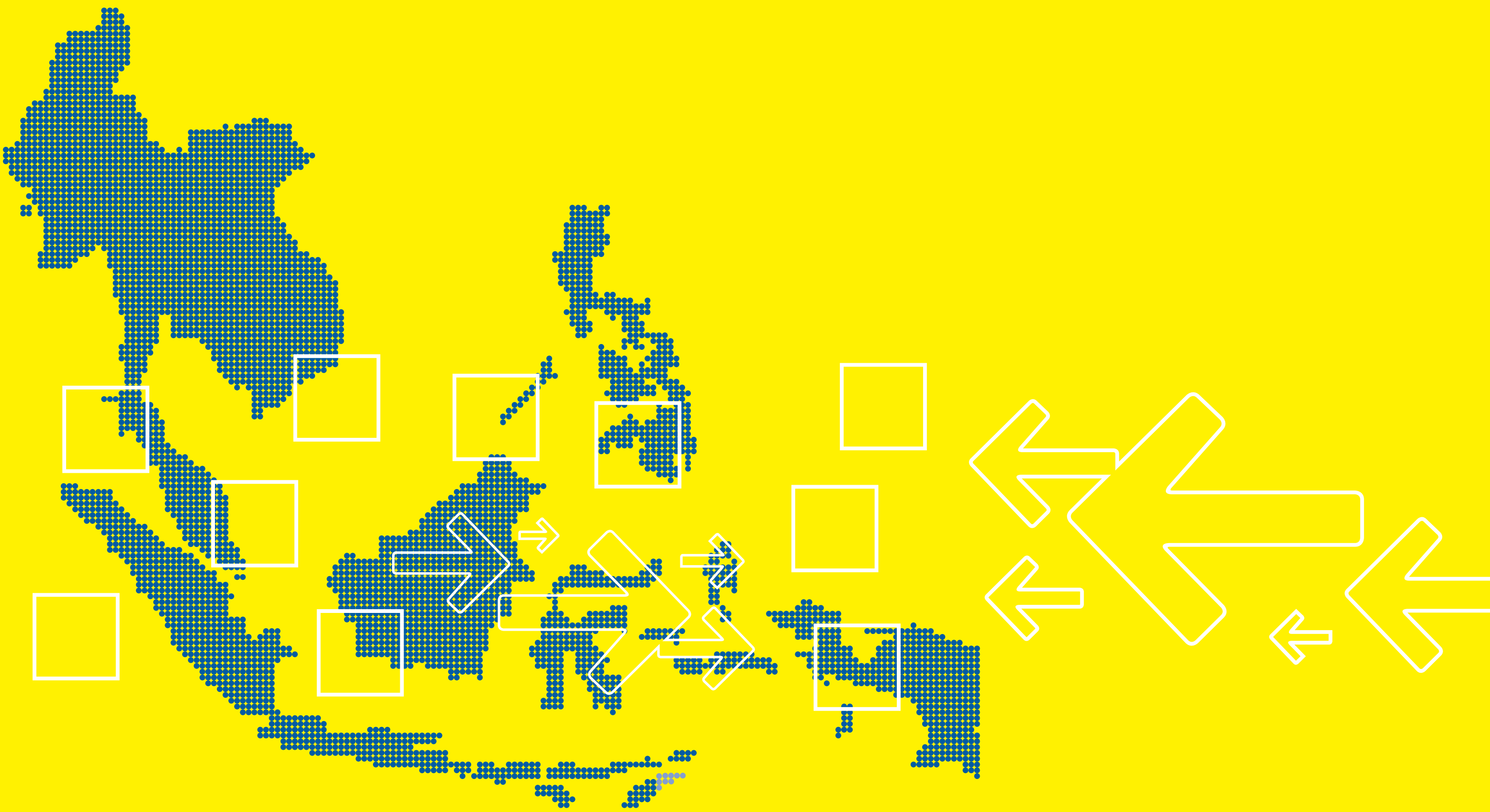
ANNEXES



Annex table 1.1. ASEAN: FDI flows, by industry, 2017 and 2018 (Millions of dollars)

2017

				Emerging Markets of East Asia											
Economic sector	Japan	United States	European Union	Republic of Korea	Hong Kong (China)	Taiwan Province of China	China	**Total**	India	Australia	New Zealand	Russian Federation	ASEAN	Canada	**Total**
Agriculture, forestry and fishing	21.3	5.6	84.0	54.7	23.3	3.1	238.6	**319.8**	4.7	3.5	..	0.1	3825.0	0.1	**4275.5**
Mining and quarrying	635.0	-3136.0	3304.4	-524.4	536.4	21.3	679.6	**712.8**	-93.5	194.6	47.9	1.4	665.6	-29.5	**2253.2**
Manufacturing	6053.9	-1185.5	5499.1	2095.4	1247.4	514.9	1699.1	**5556.8**	60.6	-357.5	5.9	8.6	7337.3	-33.4	**30425.4**
Electricity, gas and air conditioning	950.7	76.8	2132.5	850.6	208.5	131.3	916.8	**2107.2**	17.3	14.1	0.3	4.0	921.0	4.2	**6626.2**
Water and sanitation	58.5	2.6	297.7	53.2	14.7	9.5	16.9	**94.3**	1.2	0.8	..	0.3	40.3	-0.1	**544.8**
Construction	366.3	91.2	-10.6	-88.5	159.3	8.1	653.7	**732.6**	3.5	-31.3	..	0.5	610.6	0.5	**1929.4**
Wholesale and retail trade	2753.6	4451.4	7734.6	1118.5	424.7	143.5	2707.9	**4394.5**	145.8	244.8	44.4	1.2	3286.3	48.4	**26213.7**
Transportation and storage	-427.0	88.0	90.6	64.5	46.0	123.4	85.3	**319.2**	-15.8	119.3	23.6	0.2	208.2	12.7	**242.9**
Accomodation and food services	107.7	-2.2	24.6	69.7	165.7	15.2	-180.1	**70.5**	1.1	0.9	..	0.3	106.5	0.3	**345.9**
Information and communication	462.8	9.0	239.9	14.6	92.9	7.4	155.3	**270.3**	6.2	6.0	..	-13.0	1321.6	0.4	**2416.5**
Financial and insurance	3339.6	23751.7	-11283.5	267.1	468.6	549.4	3468.9	**4754.0**	-934.9	750.2	29.2	-1.9	2395.9	599.1	**39355.9**
Real estate	885.6	977.3	552.0	314.8	1830.6	466.1	3167.0	**5778.5**	323.0	112.2	2.8	31.0	3109.5	61.7	**13680.9**
Other services	1065.9	-164.9	6432.1	224.0	335.0	73.2	97.6	**729.9**	373.2	255.5	..	15.2	1656.6	-151.2	**11682.0**
Unspecified	..	-53.2	..	41.3	..	..	..	**41.4**	..	..	-1.1	..	..	-82.2	**6909.5**
Total	**16273.9**	**24911.9**	**15097.4**	**4555.6**	**5553.1**	**2066.5**	**13706.6**	**25881.8**	**-107.5**	**1313.2**	**153.1**	**47.8**	**25484.3**	**430.9**	**146901.7**

2018

				Emerging Markets of East Asia											
Economic sector	Japan	United States	European Union	Republic of Korea	Hong Kong (China)	Taiwan Province of China	China	**Total**	India	Australia	New Zealand	Russian Federation	ASEAN	Canada	**Total**
Agriculture, forestry and fishing	21.6	22.1	4.2	21.6	33.5	4.0	211.1	**270.2**	2.2	1.8	..	0.1	3405.7	0.2	**4039.5**
Mining and quarrying	370.8	-864.0	-3432.8	-36.8	-29.3	0.4	5.5	**-60.2**	6.2	-26.4	-138.6	0.7	-835.6	-27.1	**-5937.4**
Manufacturing	10067.2	12363.5	6764.9	2132.4	2917.7	599.2	1586.0	**7235.3**	163.2	192.1	-0.9	6.6	7983.4	-77.9	**55116.0**
Electricity, gas and air conditioning	235.7	32.9	53.3	161.5	143.8	16.9	86.7	**408.9**	3.5	12.3	0.2	0.9	249.3	1.8	**1532.1**
Water and sanitation	35.4	-0.9	12.0	23.2	1.5	3.4	10.6	**38.8**	0.8	2.0	..	0.1	29.6	2.4	**151.0**
Construction	336.6	14.8	75.8	139.6	82.4	31.6	950.2	**1203.8**	11.0	16.7	-0.5	0.6	407.9	1.3	**2254.3**
Wholesale and retail trade	3387.1	-8942.4	292.0	1083.6	1778.5	744.2	3602.0	**7208.4**	638.1	458.8	15.8	2.0	4318.1	120.3	**20204.4**
Transportation and storage	185.6	196.6	2460.8	0.0	-1252.8	17.7	-307.3	**-1542.3**	-106.6	160.1	0.3	0.2	66.2	19.2	**-1740.5**
Accomodation and food services	137.6	-47.8	17.2	64.4	78.9	14.2	90.4	**247.8**	1.3	4.4	0.1	0.3	123.4	0.7	**674.5**
Information and communication	95.8	-4.4	259.3	19.7	-2.0	7.0	9.6	**34.3**	1.7	1.8	..	-7.7	567.9	1.3	**1002.9**
Financial and insurance	3766.4	-10688.2	14159.9	827.4	2880.7	-983.6	423.1	**3147.5**	1628.1	-373.7	-74.1	0.5	3665.3	165.5	**42397.6**
Real estate activities	1063.8	676.9	1100.8	667.1	2148.2	89.7	2666.0	**5571.0**	131.2	76.5	-7.7	55.3	1725.5	51.9	**13057.9**
Other services	1366.5	307.1	-12.3	370.0	1012.3	-38.5	386.2	**1730.0**	-747.9	679.0	-0.1	-1.6	726.1	-32.2	**14380.9**
Unspecified	122.6	15045.8	205.4	1086.0	368.0	42.0	467.3	**1963.3**	2.1	..	-17.4	..	2111.2	82.0	**7579.9**
Total	**21192.6**	**8111.8**	**21960.6**	**6559.7**	**10161.4**	**548.3**	**10187.5**	**27456.8**	**1735.0**	**1205.4**	**-223.1**	**58.0**	**24543.9**	**309.2**	**154713.0**

Source: ASEAN Secretariat. ASEAN FDI database.

Annex table 1.2. M&A megadeals in ASEAN, 2017 and 2018 (Millions of dollars)

Ultimate acquiring company	Ultimate acquiring economy	Target company	Target nation	Target industry	Year	Value ($ millions)	Shares acquired (%)	Shares owned after (%)
Exxon Mobil Corp	United States	InterOil Corp	Singapore	Crude petroleum and natural gas	2017	3,952	100.0	100.0
MS&AD Insurance Group Holdings	Japan	First Capital Insurance	Singapore	Fire, marine and casualty insurance	2017	1,600	97.7	97.7
Macquarie Group	Australia	Energy Development Corp	Philippines	Electric services	2017	1,281	31.7	31.7
Warburg Pincus	United States	ARA Asset Management	Singapore	Investment advice	2017	1,278	100.0	100.0
Mitsubishi UFJ Financial Group	Japan	Pt Bank Danamon Indonesia	Indonesia	Banks	2017	1,175	19.9	19.9
Alibaba Group Holding Ltd	China	PT Tokopedia	Indonesia	Information retrieval services	2017	1,100	...	...
Donata Holdings SE	Austria	Super Group	Singapore	Roasted coffee	2017	1,047	100.0	100.0
Japan Tobacco	Japan	PT Karyadibya Mahardhika	Indonesia	Cigarettes	2017	1,000	100.0	100.0
Alibaba Group Holding	China	Lazada South East Asia	Singapore	Catalog and mail-order houses	2017	1,000	32.0	83.0
Hainan Province Cihang	China	CWT	Singapore	Trucking, except local	2017	996	100.0	100.0
ams	Austria	Heptagon Advanced Micro-Optics	Singapore	Semiconductors and related devices	2017	881	100.0	100.0
Blackstone Group	United States	Croesus Retail Trust	Singapore	Real estate investment trusts	2017	649	100.0	100.0
Investor Group	Japan	edotco Group	Malaysia	Radiotelephone communications	2017	600	34.1	34.1
Jardine Matheson Holdings	Hong Kong, China	Eunosville	Singapore	Operators of apartment buildings	2017	554	100.0	100.0
Japan Tobacco	Japan	Mighty Corp-Assets	Philippines	Cigarettes	2017	544	100.0	100.0
Manulife Financial Corporation	Canada	8 Cross Street	Singapore	Operators of nonresidential buildings	2017	526	100.0	100.0
Thai Beverage	Thailand	Alliance Asia Investment	Singapore	Distilled and blended liquors	2017	494	100.0	100.0
Nesta Investment Holdings	China	Global Logistic Properties	Singapore	Lessors of real property, nec	2018	11,554	100.0	100.0
Investor Group	United States	Equis Energy Developments	Singapore	Cogeneration, alternative energy sources	2018	5 000	100.0	100.0

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Annex table 1.2. M&A megadeals in ASEAN, 2017 and 2018 (Millions of dollars) (Concluded)

Ultimate acquiring company	Ultimate acquiring economy	Target company	Target nation	Target industry	Year	Value ($ millions)	Shares acquired (%)	Shares owned after (%)
Investor Group	Japan	Grab Taxi Holdings	Singapore	Prepackaged Software	2018	2,500	...	...
Nami Corporation	United States	SBS Mining Corp Malaysia	Malaysia	Miscellaneous metal ores, nec	2018	1,297	100.0	100.0
Mitsubishi UFJ Financial Group	Japan	PT Bank Danamon Indonesia	Indonesia	Banks	2018	1,186	20.1	40.0
Investor Group	China	PT Tokopedia	Indonesia	Catalog and mail-order houses	2018	1,100	0.0	0.0
Toyota Motor	Japan	Grab Holdings	Singapore	Prepackaged software	2018	1,000	0.0	0.0
Investor Group	United States	Grab Holdings	Singapore	Prepackaged software	2018	1,000	0.0	0.0
Jardine Matheson Holdings	Hong Kong, China	PT Agincourt Resources	Indonesia	Gold ores	2018	1,000	95.0	95.0
Blue Sail Med	China	CB Cardio Holdings II	Singapore	X-ray apparatus and tubes and other irradiation equipment	2018	807	62.6	62.6
Coca-Cola	United States	Coca-Cola Femsa Philippines	Philippines	Bottled and canned soft drinks and carbonated waters	2018	715	51.0	51.0
Bain Capital	United States	DSM Sinochem Pharmaceuticals	Singapore	Pharmaceutical preparations	2018	665	100.0	100.0
Shanghai Pharm Holdings	China	Cardinal Health	Malaysia	Medical, dental, and hospital equipment and supplies	2018	576	100.0	100.0
Incline B Irishco One	Ireland	Red Aircraft Holdings 2	Malaysia	Equipment rental and leasing, nec	2018	549	100.0	100.0
Unicharm Corporation	Japan	DSG (Cayman)	Thailand	Sanitary paper products	2018	530	100.0	100.0
SK Group Corporation	Republic of Korea	Masan Group Corp	Viet Nam	Pickled fruits and vegetables, salad dressings	2018	473	10.4	10.4
China Fire Safety Entrp Group	Hong Kong, China	Pteris Global	Singapore	Process control instruments	2018	450	99.4	99.4

Source: UNCTAD, M&A database.

Annex table 2.1. Megadeals in financial services, 2012–2018 (Millions of dollars and per cent)

Ultimate acquiring company	Ultimate acquiring economy	Target company	Target industry	Target nation	Year	Value ($ million)	Shares owned after (%)
Mitsubishi UFJ Financial Group	Japan	Bank of Ayudhya	Banks	Thailand	2013	5,279	72
AIA Group	Hong Kong, China	ING Management Holdings (Malaysia)	Life insurance	Malaysia	2012	1,719	100
MS&AD Insurance Group Holdings	Japan	First Capital Insurance	Fire, marine, and casualty insurance	Singapore	2017	1,600	98
Bank of Ayudhya	Thailand	Bank of Tokyo-Mitsubishi UFJ Ltd-Bangkok, Thailand Branch	Banks	Thailand	2015	1,550	100
Warburg Pincus	United States	ARA Asset Management	Investment advice	Singapore	2017	1,278	100
Mitsubishi UFJ Financial Group	Japan	PT Bank Danamon Indonesia	Banks	Indonesia	2018	1,186	40
Mitsubishi UFJ Financial Group	Japan	PT Bank Danamon Indonesia	Banks	Indonesia	2017	1,175	20
Sumitomo Mitsui Financial Group	Japan	Bank Tabungan Pensiunan Nasional	Banks	Indonesia	2013	949	24
Mitsubishi UFJ Financial Group	Japan	Security Bank Corporation	Banks	Philippines	2016	778	20
Mitsubishi UFJ Financial Group	Japan	Vietnam Joint Stock Commercial Bank for Industry and Trade	Banks	Viet Nam	2013	742	20
Investor Group	Singapore	Bank of the Philippine Islands	Banks	Philippines	2013	679	10
Cherkasioblenerho	Ukraine	CIMB Aviva Assurance	Life insurance	Malaysia	2013	597	98
Prudential	United Kingdom	Thanachart Life Assurance	Life insurance	Thailand	2013	568	100
Mizuho Financial Group	Japan	Joint Stock Commercial Bank for Foreign Trade of Vietnam (Vietcombank)	Banks	Viet Nam	2012	567	15
Sumitomo Mitsui Financial Group	Japan	Bank Tabungan Pensiunan Nasional	Banks	Indonesia	2014	526	40
China Investment Corp	China	Bank of China (Malaysia)	Banks	Malaysia	2016	502	100

Source: UNCTAD, M&A database.

Annex table 2.2. Top 50 multinational banks in ASEAN, by total assets, 2019 (Billions of dollars)

Bank	Headquarters	Total assets	Presence in ASEAN
ICBC	China	4,044	Indonesia, Malaysia, Singapore, Thailand
China Construction Bank	China	3,390	Indonesia, Malaysia, Singapore
Agricultural Bank of China	China	3,301	Malaysia, Singapore, Thailand
Bank of China	China	3,105	Indonesia, Malaysia, Singapore, Thailand
Mitsubishi UFJ Financial Group	Japan	2,805	Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
JP Morgan Chase & Co	United States	2,623	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
HSBC Holdings	United Kingdom	2,558	Brunei Darussalam, Indonesia, Lao People's Democratic Republic, Philippines, Malaysia, Myanmar, Singapore, Thailand, Viet Nam
China Development Bank	China	2,361	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
Bank of America	United States	2,355	Indonesia, Malaysia, Philippines, Thailand, Singapore
BNP Paribas	France	2,346	Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
Credit Agricole	France	2,132	Singapore
Japan Post Bank	Japan	1,984	Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
Citigroup	United States	1,917	Indonesia, Malaysia, Philippines, Singapore, Thailand
Wells Fargo & Co	United States	1'896	Singapore
Sumitomo Mitsui Financial Group	Japan	1,836	Cambodia, Indonesia, Malaysia, Viet Nam
Mizuho Financial Group	Japan	1,810	Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Singapore, Thailand, Viet Nam
Banco Santander	Spain	1,677	Singapore
Deutsche Bank	Germany	1,550	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
Societe Generale	France	1,505	Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
Groupe BPCE	France	1,464	Singapore
Barclays	United Kingdom	1,435	Indonesia, Malaysia, Philippines, Singapore, Thailand
Bank of Communications	China	1,391	Singapore
Postal Savings Bank of China	China	1,389	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
ING	Netherlands	1,020	Indonesia, Thailand
Toronto Dominion Bank	Canada	1,019	Indonesia, Singapore, Viet Nam
Royal Bank of Canada	Canada	1,019	Singapore, Thailand
Norges Bank	Norway	1,019	Indonesia, Malaysia, Myanmar, Singapore, Thailand, Viet Nam
Lloyds Banking Group	United Kingdom	1,010	Singapore
China Minsheng Bank	China	992	Singapore
China Merchants Bank	China	985	Singapore
Credit Mutuel	France	980	Singapore
Industrial Bank	China	980	Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam

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Annex table 2.2. Top 50 multinational banks in ASEAN, by total assets, 2019 (Billions of dollars) (Concluded)

Bank	Headquarters	Total assets	Presence in ASEAN
UBS	Switzerland	958	Indonesia, Malaysia, Philippines, Singapore, Thailand
UniCredit	Italy	956	Singapore, Viet Nam
Norinchukin Bank	Japan	955	Singapore
Goldman Sachs	United States	932	Brunei Darussalam, Indonesia, Lao People's Democratic Republic, Malaysia, Singapore, Thailand, Philippines, Viet Nam
Intesa Sanpaolo	Italy	905	Singapore
China Citic Bank	China	886	Singapore, Thailand, Viet Nam
RBS	United Kingdom	879	Indonesia, Malaysia
China Minsheng Bank	China	875	Indonesia, Myanmar, Malaysia, Philippines, Singapore, Thailand, Viet Nam
Morgan Stanley	United States	854	Brunei Darussalam, Indonesia, Malaysia, Myanmar, Phillippines, Singapore, Thailand, Viet Nam
Credit Suisse Group	Switzerland	785	Indonesia, Malaysia, Philippines, Singapore, Thailand
BBVA	Spain	778	Singapore
Scotiabank	Canada	762	Indonesia, Singapore
Commonwealth Bank	Australia	722	Indonesia, Singapore
Standard Chartered	United Kingdom	689	Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
ANZ Banking Group	Australia	683	Indonesia, Singapore
Rabobank Group	Netherlands	679	Indonesia, Singapore
Westpac Banking Corporation	Australia	637	Indonesia, Singapore
China Everbright Bank	China	636	Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam

Sources: Banker database (https://www.thebankerdatabase.com/index.cfm?fuseaction=Featured_Ranking.default&page=1) and Orbis database.
Note: Total assets based on global basis. Some banks may have representative offices in other countries; this table does not include that information.

Annex table 2.3. Top 50 fintech start-ups in ASEAN, by funding amount, August 2019 (Millions of dollars)

Name	Headquarters	Funding raised	Funding since 2018
Akulaku	Indonesia	220	170
Singapore Life	Singapore	173	113
TenX	Singapore	159	-
Momo	Viet Nam	134	100
GoBear	Singapore	80	80
InstaReM	Singapore	59	41
Reliance Capital Management	Indonesia	45	-
Funding Societies	Singapore	43	25
Aspire	Singapore	42	42
Radana Bhaskara Finance	Indonesia	40	40
Jirnexu	Malaysia	37	31
Pundi X	Singapore	35	-
CDRX	Singapore	34	34
Spiking	Singapore	33	32
MatchMove Pay	Singapore	30	-
TrakInvest	Singapore	30	30
Credit Culture	Singapore	29	29
First Circle	Philippines	29	26
C88 Financial Technologies	Singapore	28	28
Moka	Indonesia	28	24
Fastacash	Singapore	24	-
Enjin	Singapore	23	-
KICK ECOSYSTEM	Singapore	23	-
UangTeman	Indonesia	23	10
Payfazz	Indonesia	21	21
Omise[a]	Thailand	20	..
Wave Money	Myanmar	19	19
Validus Capital	Singapore	19	15
AND Global	Singapore	17	8
Zyraz Technology	Malaysia	15	-
Active.ai	Singapore	15	3
Bambu	Singapore	13	13
MoneySmart	Singapore	13	-
Silot	Singapore	12	11
Orient Commercial	Viet Nam	11	-
N-Frnds	Singapore	10	1
Sunday Ins	Thailand	10	10
Coins.ph	Philippines	10	-
Thunes	Singapore	10	10
PawnHero	Philippines	10	-
Rabbit Internet	Thailand	9	-
Tookitaki	Singapore	9	8
Helicap	Singapore	7	7
Celer Network	Singapore	6	6
Sparrow	Singapore	6	6
Spark Systems	Singapore	5	-
BitRock	Singapore	4	4
First Finance MFI	Cambodia	4	-
HATCHER+	Singapore	4	-
Copernicus Gold	Singapore	4	3
Top 50		**1,684**	**1,000**

Source: Crunchbase.
Note: [a] Omise has successfully raised a number of rounds of funding, some of which were not disclosed.

Annex table 2.4. Top 50 global retailers with subsidiaries in ASEAN, 2019 (Billions of dollars)

Company	Economy	Total Assets	Subsidiaries in ASEAN
Walmart	United States	219	Singapore, Thailand
CVS Health Corporation	United States	196	Indonesia, Singapore, Thailand
Amazon	United States	163	Indonesia, Singapore
Alibaba Group	China	144	Indonesia, Singapore
Aeon	Japan	91	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
Walgreens Boots Alliance	United States	68	Singapore
Tesco	United Kingdom	65	Malaysia, Thailand, Singapore
Express Scripts Holding Company	United States	54	Indonesia, Malaysia, Thailand, Singapore
Carrefour	France	54	Indonesia
Seven & I Holdings	Japan	52	Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
Bunnings Group	Australia	45	Indonesia, Singapore
Rallye	France	45	Thailand
Casino Guichard-Perrachon	France	43	Thailand
Target Corporation	United States	41	Singapore
Lidl Stiftung	Germany	39	Singapore
Koninklijke Ahold	Netherlands	38	Indonesia
Officeworks	Australia	35	Indonesia, Singapore
JD.com	Cayman Islands	31	Indonesia, Singapore, Thailand, Viet Nam
Kering	France	24	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
Albertsons Companies	United Kingdom	24	Singapore, Philippines
Lotte Shopping	Republic of Korea	24	Indonesia, Singapore, Viet Nam
eBay	United States	23	Malaysia, Singapore, Viet Nam
El Corte Inglés	Spain	22	Philippines, Singapore, Thailand, Viet Nam
Emerson Electric (Asia)	Hong Kong, China	20	Singapore, Philippines
Sherwin-Williams Company	United States	19	Indonesia, Malaysia, Singapore, Thailand, Viet Nam
Steinhoff International	South Africa	19	Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
Fast Retailing	Japan	18	Indonesia, Philippines, Singapore, Thailand, Viet Nam
Sime Darby	Malaysia	16	Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
TJX Companies	United States	14	Viet Nam
Safeway	United States	13	Singapore, Philippines
H&M	Sweden	13	Malaysia, Philippines, Singapore, Viet Nam
Genuine Parts Company	United States	13	Singapore
Lawson	Japan	12	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
CP All	Thailand	12	Cambodia, Myanmar, Singapore, Viet Nam
Isetan Mitsukoshi Holdings	Japan	11	Malaysia, Singapore
Otto	Germany	11	Viet Nam
Yamada Denki	Japan	11	Indonesia, Malaysia, Philippines, Singapore
Ceconomy	Germany	10	Malaysia, Myanmar, Singapore, Thailand, Viet Nam
Takashimaya	Japan	10	Singapore, Thailand, Viet Nam
Marks & Spencer Group	United Kingdom	9	Thailand, Singapore
J. Front Retailing	Japan	9	Thailand, Singapore
American Stores Company	United States	9	Philippines
GAP	United States	8	Thailand, Singapore, Viet Nam
Esselunga	Italy	7	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Viet Nam
Don Quijote Holdings	Japan	7	Singapore
FamilyMart UNY Holdings	Japan	7	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
Shanghai Friendship Group Incorporated	China	7	Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
CJ ENM	Republic of Korea	6	Viet Nam
Inchcape	United Kingdom	6	Brunei Darussalam, Singapore, Viet Nam
Tiffany	United States	5	Cambodia, Malaysia, Singapore, Thailand, Viet Nam

Source: Orbis database.

Annex table 2.5. Cross-border M&As in logistics in ASEAN, 2014–2018 (Selected cases) (Millions of dollars and per cent)

Ultimate acquiring company	Ultimate acquiring economy	Target company	Target nation	Target industry	Year	Value ($ millions)	Shares acquired (%)
Merit Corporation	Lebanon	Neptune Orient Lines	Singapore	Marine cargo handling	2016	2,421	100
Kintetsu World Express	Japan	APL Logistics	Singapore	Railroads, line-haul operating	2015	1,200	100
Hainan Province Cihang	China	CWT	Singapore	Trucking, except local	2017	996	100
Investor Group	China	Global Logistic Properties	Singapore	General warehousing and storage	2014	875	13
China Ocean Shipping Group	China	Cogent Holdings	Singapore	Trucking, except local	2018	353	98
Bourbon	France	Greenship Gas	Singapore	Deep sea foreign transportation of freight	2016	320	100
DHT Holdings	Bermuda	Samco Shipholding	Singapore	Deep sea foreign transportation of freight	2014	312	100
Macquarie	Australia	Oiltanking Odfjell Terminal Singapore	Singapore	Marine cargo handling	2017	300	50
Alibaba Group Holding	China	Singapore Post	Singapore	Courier services, except by air	2014	249	10
Chiyoda Corp	Japan	Ezra Holdings Ltd-Subsea Services Unit	Singapore	Water transportation of freight, nec	2016	180	50
Evisu (PTC)	Hong Kong, China	Hap Seng Logistics	Malaysia	Local trucking	2017	169	100
Eagle Bulk Shipping	United States	Greenship Bulk Trust-Ultramax Vessels (9)	Singapore	Deep sea foreign transportation of freight	2017	153	100
Alibaba Group Holding	China	Singapore Post	Singapore	Courier services, except by air	2017	138	5
Investor Group	unspecified	Ninja Logistics	Singapore	Trucking, except local	2018	87	0
Alibaba Group Holding	China	Quantium Solutions International	Singapore	Courier services, except by air	2016	64	34
Yamato Holdings	Japan	GD Express Carrier	Malaysia	Trucking, except local	2016	56	11
Cj Logistics Corp	Korea, Republic of	Century Logistics Holdings	Malaysia	Trucking, except local	2016	43	31
Kharisma Mutiara Agung	Indonesia	Bangkok Container Terminal	Thailand	Deep sea foreign transportation of freight	2016	40	100

Source: UNCTAD, M&A database.

Annex table 2.6. Top 50 largest global logistics companies with a presence in ASEAN, 2019 (Billions of dollars)

Name	Economy of origin	Revenue	Subsidiaries in ASEAN
Deutsche Post	Germany	68	Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
United Parcel Service	United States	66	Singapore, Thailand, Viet Nam
Fedex	United States	62	Malaysia, Singapore
The Rhenus Group	Germany	56	Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Deutsche Bahn	Germany	48	Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Lufthansa Group (Cargo)	Germany	40	Myanmar, the Philippines, Thailand
SNCF Geodis	France	38	Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Maersk	Denmark	31	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Bollore	France	27	Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Indonesia, Malaysia, the Philippines, Singapore, Viet Nam
Mediterranean Shipping	Switzerland	21	Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
BNSF Railway	United States	21	Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam
CMA CGM Group	France	21	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Kuehne and Nagel	Switzerland	21	Indonesia, Malaysia, Singapore, Thailand, Viet Nam
Nippon Yusen	Japan	20	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Nippon Express	Japan	18	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
C.H. Robinson	United States	17	Malaysia, Singapore, Thailand, Viet Nam
Yamato Holdings	Japan	16	Indonesia, Malaysia, Myanmar, Singapore, Thailand, Viet Nam
XPO Logistics	United States	15	Singapore
Mitsui O.S.K. Lines	Japan	15	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
COSCO Shipping Holdings	China	13	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
DSV	Denmark	12	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Samsung SDS Logistics	Republic of Korea	11	Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam
Hapag-Lloyd	Germany	11	Indonesia, Malaysia, Singapore, Thailand, Viet Nam
SF Express	China	10	Malaysia, Singapore
Kawasaki Kisen Kaisha	Japan	10	Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
SG Holdings	Japan	9	Cambodia, Indonesia, the Philippines, Singapore, Thailand, Viet Nam
Ryder System	United States	8	Thailand
CJ Logistics Corp	Republic of Korea	8	Viet Nam
Expedotors International	United States	8	Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Viet Nam
GeoPost Group	France	8	Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
CEVA Logistics	United Kingdom	7	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam

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Annex table 2.6. Top 50 largest global logistics companies with a presence in ASEAN, 2019 (Billions of dollars) (Concluded)

Name	Economy of origin	Revenue	Subsidiaries in ASEAN
Hitachi Transport	Japan	6	Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam
Toll Group	Australia	6	Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam
Panalpina	Switzerland	6	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Orient Overseas (International)	Hong Kong, China	6	Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Kintetsu World Express	Japan	5	Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Viet Nam
Gefco	France	5	Viet Nam
Agility Logistics	Kuwait	5	Thailand
Sankyu Inc	Japan	5	Indonesia, Malaysia, Thailand, Viet Nam
Evergreen Marine	Taiwan Province of China	5	Indonesia, Malaysia, Thailand
YRC Worldwide	United States	5	Indonesia
Kerry Logistics	Hong Kong, China	5	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Hyundai Merchant Marine	Republic of Korea	4	Malaysia, the Philippines, Singapore, Viet Nam
Yang Ming Marine Transport	Taiwan Province of China	4	Malaysia, Singapore, Thailand, Viet Nam
DB Shenker Logistics	Germany	4	Cambodia, the Lao People's Democratic Republic, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam
Pacific International Lines	Singapore	4	Indonesia
Pantos Logistics	Republic of Korea	4	Cambodia, Indonesia, Malaysia, Myanmar, Singapore, Viet Nam
Hellman Worldwide Logistics	Germany	3	Cambodia, Malaysia, Singapore, Viet Nam
Wallenius Wilhelmsen Group	Norway	3	Singapore, Thailand
Sinotrans Ltd	China	3	Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam

Sources: Adapted from SJ Consulting Group, "Top 50 Global Logistics Companies", *Journal of Commerce*, April 2018 and Orbis.
*China Railway Corp, Russian Railways and Indian Railways are listed among the top 50 logistics companies but were removed due to their diverse business activities.

Annex table 3.1. ASEAN: Health care investment from Japan through acquisition and joint venture (Selected cases)

Japanese company	ASEAN health care company	Host country	Investment	Remarks	Year
Sekisui Chemical	Veredus Laboratories	Singapore	$83 million	Acquired a majority stake in a molecular diagnostics kit maker from Accuron Technologies (owned by Temasek–Singapore).	2018
Taisho Pharmaceutical	Duoc Hau Giang Pharmaceutical	Viet Nam	$48 million	Raised its ownership from 24.9 per cent to 32 per cent, for $48 million.	2018
Sakurajyuji Group	Rojana Sakurajyuji Medical	Thailand	..	A health care service provider in a joint venture with Rojana, an industrial park operator in Thailand, to run Sakura Cross Clinic. The group plans to operate nursing facilities and housing for the elderly in Thailand.	2018
Itochu Corporation	OUE Lippo Healthcare	Singapore	$59 million	Acquired a 25.3 per cent stake, gaining exposure to the health care business in some ASEAN Member States.	2018
Health Sciences Research Institute[a] and Toyota Tsusho Corporation	Kalbe Farma	Indonesia	$7 million	Established a partnership (20 per cent for each Japanese entity) with a major Indonesian pharmaceutical company to establish Innolab Sains Internasional (a clinical laboratory that offers test services, including advanced molecular diagnostics).	2018
Mitsui	IHH Healthcare	Malaysia	$1 billion	Acquired a 30 percent stake to complement its business in retirement villages, medical information technology and medical devices. One of the largest Japanese investments in health care in the region.	2011
		Malaysia	$2 billion	Acquired a 16 per cent stake in IHH Healthcare subsidiary Khazanah Nasional, to tap the rapid growth of Asia's hospital business and diversify the business portfolio. Raised overall stake in IHH Healthcare to about 33 per cent.	2018
Fuji Pharma	OLIC	Thailand	>$32 million	Acquired a 99.91 per cent stake from DKSH (Switzerland) to use OLIC – a contract pharmaceutical manufacturer for more than 40 MNEs – as a manufacturing base, to further the production, distribution and use of Fuji Pharma products across Asia.	2012
Capita Medica-Sojitz Corporation	Tam Tri Medical Group)	Viet Nam	..	Collaborated with Vietnamese partners to introduce Japanese-style medical services and hospital management system. Sojitz acquired a 7 per cent stake in Capital Medica in 2014.	2015
Itochu Corporation	OUE Lippo Healthcare (OUELH)	Singapore	$58 million	Acquired a 25.3 per cent stake in OUE Lippo Healthcare to get involved in health care business in Asia.	2018
Yazaki Corporation	Torres Group	Philippines	..	Joint venture to establish Torres Yazaki Manufacturing. The Torres Group owns the St. Frances Medical Center for cancer patients and for Japanese expatriates in the Philippines.	2007

Sources: Media news and company websites information.
[a] Yokohama-based medical laboratory service provider.

Annex table 3.2. Fifty largest pharmaceuticals companies in ASEAN, 2018 (Billions of dollars)

No.	Name	Country of Origin	Total assets[a]	Presence in ASEAN
1	Pfizer	United States	159	Indonesia, Malaysia, Philippines, Singapore, Thailand
2	Johnson & Johnson	United States	153	Malaysia, Philippines, Singapore, Thailand, Viet Nam
3	Novartis	Switzerland	146	Indonesia, Malaysia, Philippines, Singapore, Thailand
4	Bayer AG	Germany	145	Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
5	Sanofi	France	128	Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
6	Takeda Pharmaceutical	Japan	125	Indonesia, Philippines, Singapore, Thailand
7	Allergan	Ireland	102	Malaysia, Philippines, Singapore, Thailand
8	Merck & Co.	United States	83	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
9	Roche Holding	Switzerland	80	Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
10	GlaxoSmithKline	United Kingdom	74	Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
11	Shire	United Kingdom	68	Malaysia, Thailand
12	Gilead Sciences	United States	64	Malaysia, Singapore, Thailand
13	Teva Pharmaceutical Industries	Israel	61	Singapore
14	AstraZeneca	United Kingdom	61	Indonesia, Malaysia, Philippines, Singapore, Thailand
15	AbbVie	United States	59	Malaysia, Singapore, Thailand
16	Eli Lilly	United States	44	Indonesia, Malaysia, Philippines, Singapore, Thailand
17	Merck KGAA	Germany	42	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
18	Celgene Corp	United States	35	Malaysia, Singapore, Thailand
19	Bristol-Myers Squibb	United States	35	Singapore, Thailand
20	Mylan	Netherlands	33	Malaysia, Philippines, Singapore, Thailand
21	Bausch Health	Canada	32	Indonesia, Malaysia, Philippines, Singapore, Thailand
22	Solvay	Belgium	25	Indonesia, Singapore, Thailand
23	Otsuka Pharmaceutical	Japan	22	Indonesia, Philippines, Singapore, Thailand, Viet Nam
24	Shanghai Industrial Holdings	China	21	Singapore
25	Daiichi Sankyo	Japan	19	Thailand
26	Astellas Pharma	Japan	17	Indonesia, Malaysia, Philippines, Singapore, Thailand
27	Novo Nordisk	Denmark	17	Indonesia, Malaysia, Philippines, Singapore, Thailand
28	Grifols	Spain	14	Malaysia, Singapore, Thailand
29	UCB	Belgium	12	Malaysia, Singapore, Thailand
30	Kangmei Pharmaceutical	China	11	Singapore
31	Zoetis	United States	11	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
32	CSL	Australia	11	Singapore
33	B. Braun Melsungen	Germany	11	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
34	Shanghai Fosun Pharmaceutical	China	10	Singapore
35	Endo International plc	Ireland	10	Singapore
36	Sun Pharmaceutical Industries	India	10	Malaysia, Philippines, Thailand
37	Eisai	Japan	10	Indonesia, Malaysia, Philippines, Singapore, Thailand
38	Aspen Pharmacare Holdings Limited	South Africa	10	Malaysia, Philippines
39	Mitsubishi Tanabe Pharma	Japan	10	Indonesia, Singapore, Thailand
40	Chugai Pharmaceutical	Japan	8	Singapore
41	Sumitomo Dainippon Pharma	Japan	8	Singapore, Thailand
42	Guangzhou Pharmaceutical	China	8	Indonesia
43	Shionogi & Company	Japan	7	Singapore
44	Endo Health Solutions	United States	7	Singapore
45	Kyowa Hakko Kirin	Japan	7	Singapore, Thailand
46	Vertex Pharmaceuticals	United States	6	Singapore
47	Toho Holdings	Japan	6	Singapore
48	Humanwell Healthcare	China	5	Singapore, Thailand
49	The Menarini Group	Italy	5	Indonesia, Philippines, Singapore, Thailand
50	Vifor Pharma	Switzerland	5	Singapore

Source: *ASEAN Investment Report 2019* research, based on Orbis database.
[a] 2018 value.

Annex table 3.3. Fifty most-funded medical start-ups in ASEAN, 2019

Start-up	Location	Year	Description	Category	Funding ($ millions)	Investors (Selected cases)	ASEAN operations
TauRx Therapeutics	Singapore	2002	Diagnostics for neurodegenerative diseases	Biotechnology	257	Dundee Corporation (Canada), Genting management (Malaysia)	None
Tessa Therapeutics	Singapore	2001	Clinical-stage biotechnology company	Biotechnology	130	EDBI (Singapore), Heliconia Capital Management (Singapore), Heritas Capital Management, Karst Peak Capital (Hong Kong, China) and Temasek (Singapore)	Malaysia Thailand
ASLAN Pharmaceuticals	Singapore	2010	Oncology-focused biotechnology company developing a portfolio of immuno-oncology agents and targeted therapies	Biotechnology	100	Milestone Capital China (China), Daiwa Corporate Investment (Japan), Taya Ventures (Israel), KGI Venture Capital (China), TopTaiwan (Taiwan Province of China)	None
Halodoc	Indonesia	2013	Web and mobile app for patients to consult with doctors and links to other services of the start-up	Tele-health	65	Go-Jek (Indonesia), Blibli.com (Indonesia), NSI Ventures (Singapore), UOB Venture (Singapore), Singtel Innov8 (Singapore), Clermont Group (Singapore), WuXi Apptec (China)	None
Connexions Asia	Singapore	2013	An insurance and wellness marketplace	Tele-health	58	Sumitomo Corporation Equity Asia (Hong Kong, China), MDI Ventures (Indonesia), B Capital Group (United States), Singtel Innov8 (Singapore), HSBC (United Kingdom), Muang Thai Fuchsia Ventures (Thailand),Telkom Indonesia (Indonesia), Heritas Venture Fund (Singapore) , EDBI (Singapore), Humanica (Thailand)	Indonesia
BioFourmis	Singapore	2015	Personalized physiological data analytics firm using computing power, cognitive technology, machine learning and AI	Health care software (AI, data analytics)	44	Aviva Ventures (United Kingdom), Openspace Ventures (United Kingdom), SGInnovate (Singapore), MassMutal Ventures (United States), EDBI (Singapore), Sequoia Capital India, SGInnovate (Singapore)	None
Ark Bio	Singapore	2018	MicroRNA and advanced data science applications to improve medical discovery technology for early cancer detection	Medical device	40	Gaorong Capital (China), Venturecraft Group (Singapore)	None
Tickled Media	Singapore	2009	Online magazine for parents that contains information on pregnancy, child care and related issues	Consumer health portal	37	Mountain Pine Capital (Singapore), Global Grand Leisure (Singapore), Helmutt Schutte (based in the United States), Tigris Capital (United States), Vertex Ventures (Singapore)	Indonesia; Malaysia The Philippines; Thailand: Viet Nam
Lion TCR	Singapore	2015	Developer of T cell receptor therapy for life-threatening viral infections and viral-related cancers	Biotechnology	20	Westlake Venture Partners (United States), Yashang Capital (Singapore)	None
DocDoc	Singapore	2012	Online platform that enables patients to search for and book appointments with doctors and health care professionals	Tele-health (data aggregation platform/AI)	19	Cyberport Macro Fund (Hong Kong, China), Adamas Finance Asia (Hong Kong, China), Vectr (Hong Kong, China), Sparklabs Global Ventures (United States), 500 Startups (United States), Jungle Ventures (Singapore)	Indonesia; Malaysia; The Philippines; Thailand
Attune Technologies	Singapore	2008	Next-generation health care IT products	Hardware	16	Norwest Venture Partners (United States), Qualcomm Ventures (United States), Qualcomm (United States)	None
Hummingbird Bioscience	Singapore	2014	Discovery and early development of oncology drugs from pre-clinical validation through proof of concept	Biotechnology	>15	Decheng Capital (China), Heritas Capital Management (Singapore), SEEDS Capital (Singapore)	None
KFit	Malaysia	2015	Online platform to search for and book fitness and beauty services	Tele-health	15	Axiata Digital Innovation Fund (Malaysia), 500 Startups (United States), Venturra Capital (Indonesia), Susquehanna International Group (United States), Sequoia Capital (United States), SXE Ventures (Hong Kong, China), Segnel Ventures (Singapore)	None
Clearbridge Biomedics	Singapore	2009	Medical devices to improve cancer diagnostics and patient care	Medical device	15	NUS Technology Holdings (Singapore), Vertex Ventures (Singapore), Dark House Investment (Hong Kong, China), BioVeda Capital (Singapore), Spring SEEDS Capital (Singapore)	None
EndoMaster	Singapore	2011	Robotics-assisted surgical system	Medical devices (robotics)	15	Hoya (Japan)	None

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Annex table 3.3. Fifty most-funded medical start-ups in ASEAN, 2019

Start-up	Location	Year	Description	Category	Funding ($ millions)	Investors (Selected cases)	ASEAN operations
Alodokter	Indonesia	2014	Health portal providing content and interaction with qualified Indonesian doctors	Tele-health (Telemedicine)	12	Golden Gate Ventures (Singapore), Softbank (Japan), 500 Startups (United States), Fenux Venture Capital (United States), Jungle Ventures (Singapore)	None
Element	Singapore	2012	Mobile-based, software-only platform for biometric identity	Health care software	12	BoxGroup (United States), Recruit Strategic Partners (United States), MDI Ventures (Indonesia), GDP Venture (Indonesia)	Indonesia Philippines
MaNaDr	Singapore	2016	Online platform for appointment booking with doctors	Tele-health	10	…	None
Engine Biosciences	Singapore	2014	Early-stage R&D with a platform technology for discovery of novel gene and drug combinations for therapeutic and industrial biotechnology applications	Biotechnology	10	EDBI (Singapore), Baidu Ventures (China), DHVC (United States), 6 Dimensions Capital (China), WI Harper Group (United States), Goodman Capital (Singapore), Wuxi Apptec (China), Nest.Bio Ventures (United States),	None
Ucare.AI	Singapore	2016	AI-based disease prediction solution for health care professionals	Health software (AI)	8	Great Eastern Holdings (Singapore), WPGrowth Ventures (Singapore), Walden International (United States)	None
Jio Health	Viet Nam	2011	Health care services such as doctor home visits and online pharmacy	Tele-health	8	Monk Hill Ventures (Singapore)	None
MyDoc	Singapore	2012	Digital health care platform that connects patients to providers and health services	Tele-health	7	Spring SEEDS Capital (Singapore), Wavemaker Partners (Singapore), UST Global (United States) , August Capital (United States)	None
mClinica	Singapore	2012	Mobile health technology connecting pharmaceutical companies directly to pharmacies	Tele-health	6	Global Innovation Fund (United Kingdom), MDI Ventures (Indonesia), Endeavor Catalyst (United States), Patamar Capital (Singapore), Spiral Ventures (Singapore), Kickstart Ventures (Philippines), 500 Startups (United States)	Cambodia; Indonesia; Malaysia Thailand; Viet Nam
Lifetrack	Philippines	2012	Teleradiology solution to improve the use of radiologists in the Philippines	Tele-health	6	Philips Venture Capital (Netherlands), Kickstart Ventures (Philippines), UOB Venture (Singapore)	Philippines (operation); Singapore (office)
One BioMed	Singapore	2015	Provides digital health platforms for diagnostic testing	Biotechnology	5	ARCH Venture Partners (United States), Biopath Ventures (Singapore), SEEDS Capital (Singapore)	None
Homage	Singapore	2016	Online platform that allows care seekers to book and avail caregiver services for elderly	Tele-heath	4	Golden Gate Ventures (Singapore), SeedPlus (Singapore), JHealthXCapital (Singapore), Capikris Foundation (Singapore), 500 Startups (United States)	Malaysia
Doctor Anywhere	Singapore	2016	A telemedicine providers	Tele-health	4	Kamet Capital Partners (Singapore)	None
Reka Health	Singapore	2011	Develops and markets tele-health solutions through its interactive health technology platform	Teleheath	4	…	None
ObvioHealth	Singapore	2015	Software solutions to help health care companies substantiate claims and quantifying their impact on the health care community	Health care solutions	3	Tikehau Capital (France)	None
Nova Satra Dx	Singapore	2014	Research, development, and commercialization of molecular diagnostics – blood-based tests for accurate and rapid detection of cancer	Health care solutions	3	Genting (Malaysia)	None
Medical Departures	Thailand	2014	Online platform to find and book appointment with doctors across the globe	Tele-health	2	CyberAgent Ventures (Japan), OPT SEA (Singapore), Hubert Burda Media (Germany), Cento Ventures (Singapore)	Philippines Singapore
Neurosensum	Indonesia	2017	Neuroscience and AI-based tools for understanding consumers' subconscious response	Hardware (AI)	2	Alpha JWC Ventures (Indonesia), SIG China (China)	Singapore

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Annex table 3.3. Fifty most-funded medical start-ups in ASEAN, 2019 (Concluded)

Start-up	Location	Year	Description	Category	Funding ($ millions)	Investors (Selected cases)	ASEAN operations
Soma Sketch	Singapore	2018	A platform that enables users to journal and draw how their body feels to help them understand and communicate their psychiatric symptoms better	Tele-health	2	...	None
BookDoc	Malaysia	2015	Booking app that connects patients with health care professionals	Tele-health	2	SXE Ventures (Hong Kong, China)	Indonesia Singapore
Advent Access	Singapore		Device that improves vascular access reliability, reduces cannulation pain, and preserves the health of an arteriovenous fistula	Medical devices	2	Accuron MedTech (Singapore)	None
GetDoc	Malaysia	2014	Platform for patients to connect with doctors	Tele-health	2	Private individuals	Singapore
Zenyum	Singapore	2018	3D-printed invisible braces and cosmetic dental treatment	Medical device (3D printing)	2	MPGI (London), Sequoia Capital India	Cambodia; Malaysia; Indonesia Viet Nam
AUM Biosciences	Singapore	2018	Innovative and affordable oncology therapeutics for Asia	Biotechnology	2	...	None
Hello Health Group	Singapore	2015	Health care platform	Tele-health	2	...	Malaysia; Thailand; Viet Nam
Healint	Singapore	2013	Enables doctors and health stakeholders to take advantage of mobile devices, sensors, machine learning and big data to manage chronic diseases	Tele-health (AI)	1	Wavemaker (Singapore), Strive (Japan), National Research Foundation (Singapore), Shin Ryoku Trust (Japan), JFDI.Asia (Singapore)	None
Vault Dragon	Singapore	2013	Digital patient record management	Health software	1	...	None
HealthMetrics	Malaysia	2015	SaaS platform for enterprises to manage employee health care benefits	Health software	1	RHL Ventures (Malaysia), Spiral Ventures (Singapore), Cradle Seed Ventures (Malaysia)	None
Nalagenetics	Singapore	2016	Genetic tests for consumers	Medical device	1	East Ventures (Japan), Intudo Ventures (Indonesia)	Indonesia
Privi Medical	Singapore	2014	Relief from grade I and grade II internal hemorrhoidal bleeding and pain	Medical device	1	...	None
See-Mode Technologies	Singapore	2017	Interdisciplinary solutions to predict stroke using computer vision, AI and computational modelling	Health software	1	Blackbird Ventures (Australia), SGInnovate (Singapore), Cocoon Capital (Singapore)	None
Supercraft3D	Singapore	2016	Medical models for surgeons, educational institutes, patients undergoing cranio-maxillofacial procedures and diagnostic centres, for planning surgical procedures	Medical device (3D Printing)	1	Angel investors	None
WellteQ	Singapore	2013	A digital wellness solution for employee health engagement and human resources data analytics	Health software	1	Peak Asset Management (Australia)	None
ConnectedHealth	Singapore	2010	Platform, clinical portals and patient app that enable remote monitoring and guidance for patients	Tele-health	1	National Research Foundation (Singapore), Get2Volume (Singpore)	None
PurelyB	Malaysia	2015	Platform and guide for healthy lifestyle tips	Consumer health portal	0.8	Brunsfield Ventures (Malaysia), 500 Startups (United States)	None
QT Vascular	Singapore	2010	Devices for minimally invasive treatment of vascular disease without the use of permanent implants (stents)	Medical device	0.6	Gem Global (Singapore)	None

Sources: ASEAN Investment Report 2019 research, based on Tech-in-Asia and Crunchbase database.
Note: Up to July 2019.

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