Promoting Services Trade in ASEAN
Trade in Telecommunication Services

PAPER 3
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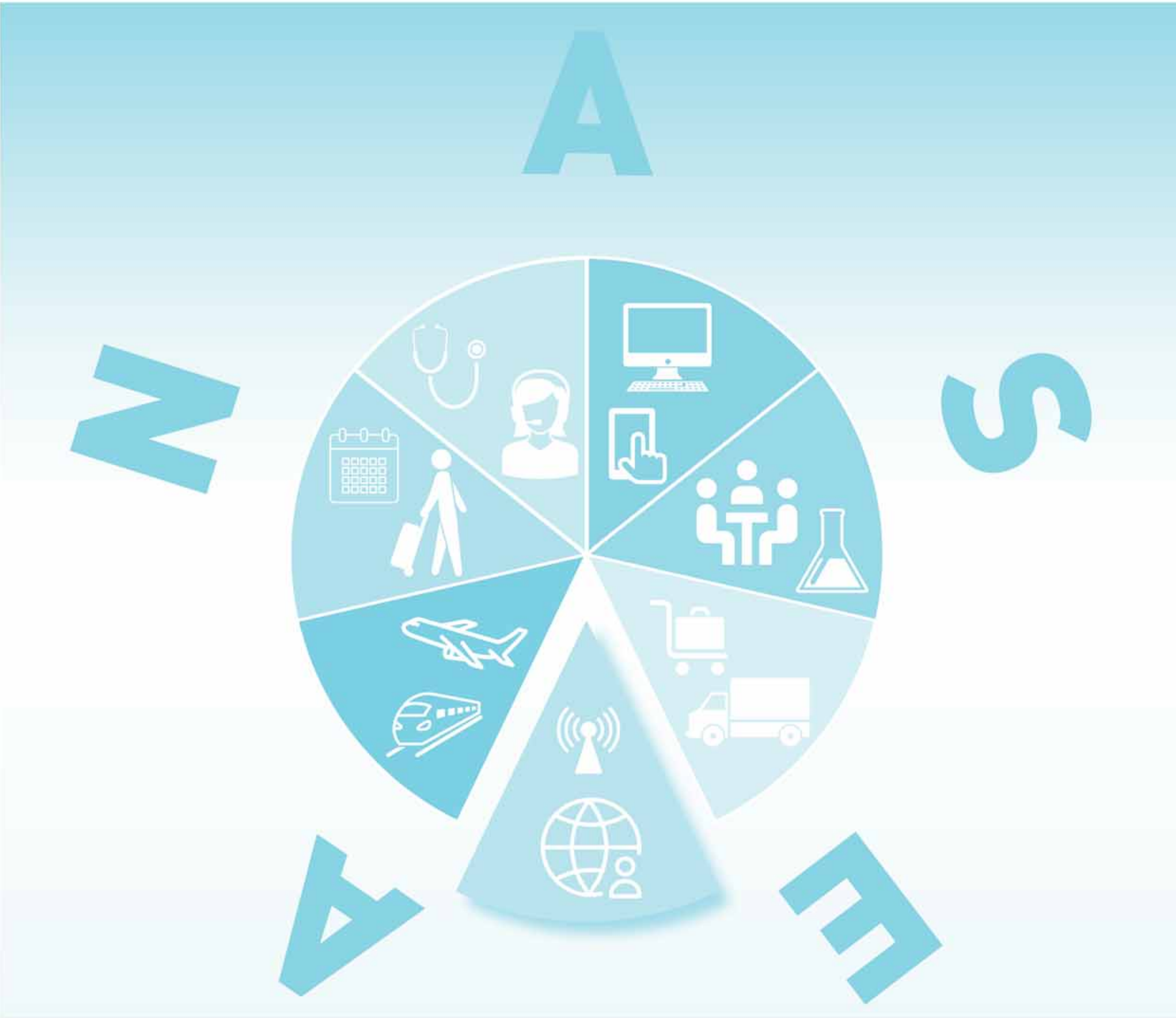

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NOTES

The terms country and/or economy as used in this study also refer, as appropriate, to territories or areas; the designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the ASEAN-Japan Centre concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The following symbols have been used in the tables:

- Two dots (..) indicate that data are not available or are not separately reported.
- A dash (-) indicates that the item is equal to zero or its value is negligible.
- Use of a dash (-) between dates representing years, e.g., 2015–2016, signifies the full period involved, including the beginning and end years.
- Reference to "dollars" ($) means United States dollars, unless otherwise indicated.

There are seven papers in total. The other six papers cover professional services; R&D services; computer and related services; courier services; air, rail and road transport services; and tourism.

Prepared by Hikari Ishido (Chiba University, Japan) and Masataka Fujita (ASEAN-Japan Centre). The authors wish to thank the staff members of the AJC and Richard Liang for their research and statistical assistance. The manuscript was edited by Lise Lingo and typeset by Laurence Duchemin. Errors and omissions are only those of the authors and should not be attributed to their respective organizations.

CONTENTS

I. INTRODUCTION

Like professional services, telecommunication services are a required service element in any industry, becoming an indispensable input also into the economic activities of ASEAN. The General Agreement on Trade in Services (GATS) administered by the World Trade Organization (WTO) lists[1] the following 15 job categories under "telecommunication services":[2]

a. Voice telephone services
b. Packet-switched data transmission services
c. Circuit-switched data transmission services
d. Telex services
e. Telegraph services
f. Facsimile services
g. Private leased-circuit services
h. Electronic mail
i. Voice mail
j. Online information and data base retrieval
k. Electronic data interchange (EDI)
l. Enhanced or value added facsimile services, including store and forward, store and retrieve
m. Code and protocol conversion
n. Online information and/or data processing (including transaction processing)
o. Other

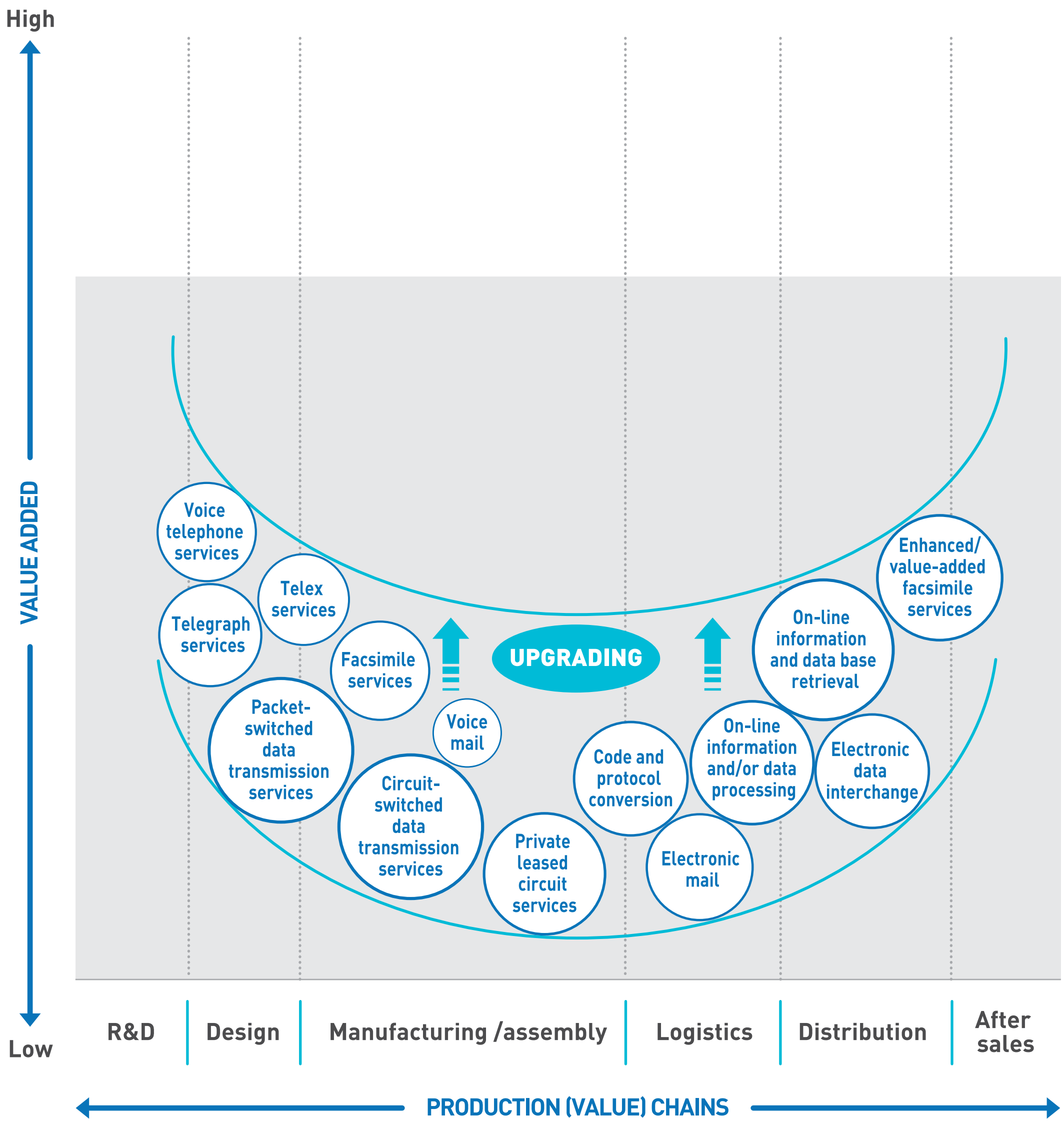
Progress in communication technologies and telecommunication services, together with that in logistics and transport services, has made globalization possible at every corner in the world through reductions in communication costs and improvements in service quality (e.g. speed of operation). Playing an important role in globalization and company growth, telecommunication services improve efficiency and allow digitization of the economy. In terms of trade, these services make non-tradable products tradable, thus enhancing cross-border supply (Mode 1).

As in the case of professional services, the position and role of telecommunication services in value-creating economic activities can be similarly displayed on the value chain curve (figure 1). The coverage (the shaded square in this figure) of these telecommunication services is wide, encompassing the whole production chain. Telecommunication services ensure smoother (in the horizontal direction, known as the "value chain") and more efficient (in the vertical direction, referred to as "value added") operation of a country's entire value-creating activities for whole industries.

1 "Services Sectoral Classification List" (MTN.GNS/W/120, 10 July 1991).

2 World Bank and ITU (2011) point out the merger of computer services and telecommunication services at the core of recent technological trends. As UNCTAD (2004: 150) points out, internet-related services (or ICT services) include the supply of the telecommunication service itself and the supply of content, a mix of business services, audiovisual services, and computer and related services. This paper addresses mainly the narrowly defined telecommunication services, i.e., telephone-related services.

Figure 1. **Value chains and telecommunication services**



Source: ASEAN-Japan Centre.
Note: Positions of job categories are simply placed in a relevant specific place along the value chain and do not necessarily represent the most suitable place.

II. TELECOMMUNICATION INFRASTRUCTURE

Telecommunication service activities, including their supply (Modes 1-4), are largely dictated by the availability and affordability of telecommunication infrastructure in each ASEAN country. Telecommunication infrastructure is typically measured by the number of users of fixed and mobile phones and of the internet. The spread and density of information networks depend on the existence of telecommunication companies, both national and foreign and both private and public, which provide such infrastructure. Nowadays it is largely determined by the presence of foreign telecommunication companies (see later). Table 1 shows numbers of fixed telephone subscriptions. Singapore is at the top of these statistics; Myanmar is at the bottom. A salient feature of this category (fixed telephone) is an overall reduction in fixed telephone lines (especially in Brunei Darussalam and Indonesia) and their replacement for mobile phones, although these are also general trends worldwide. Seen from this perspective, the rather low ASEAN average of 10 per cent (a decrease from 12 per cent from the 2005–2010 average), is not necessarily a negative observation.

Table 2 shows numbers of mobile cellular subscriptions. As compared with fixed telephone subscriptions, there is, overall, an increasing trend in all the ASEAN Member States. This is clearly because of a substitution effect between the fixed telephone lines and mobile telephones. Indeed, this "mobile revolution" is drastically changing the landscape of how telecommunication services should be supplied. As the initial fixed cost (at the societal level) of mobile phone subscription is considered to be significantly lower than the installment of fixed telephone lines, the ASEAN Member States could look to this mobile-based supply of telecommunication services as the main pillar.

Table 1. **Fixed-line telephone subscriptions, 2005–2015** (per 100 people)

Country	Average, 2005–2010	2011	2012	2013	2014	2015
Brunei Darussalam	21.0	19.6	17.2	13.6	11.4	9.0
Cambodia	0.6	3.6	3.9	2.8	2.3	1.6
Indonesia	10.9	15.8	15.4	12.3	10.4	8.8
Lao People's Democratic Republic	1.7	1.7	6.8	10.4	13.4	13.7
Malaysia	16.5	15.7	15.7	15.3	14.6	14.3
Myanmar	1.0	1.0	1.0	1.0	1.0	1.0
Philippines	4.2	3.7	3.6	3.2	3.1	3.0
Singapore	39.6	38.9	37.5	36.3	36.2	36.0
Thailand	10.7	10.0	9.5	9.0	8.5	7.9
Viet Nam	15.1	11.3	10.5	7.3	6.0	6.3
ASEAN average	**12.1**	**12.1**	**12.1**	**11.1**	**10.7**	**10.2**
Memorandum						
China	25.3	20.8	20.2	19.3	17.9	16.5
India	3.4	2.7	2.5	2.3	2.1	2.0
Japan	45.3	50.8	50.5	48.0	50.1	50.2
Korea, Rep. of	52.0	60.5	61.4	61.6	59.5	58.1
United States	52.8	45.5	43.7	41.6	39.8	37.5

Source: World Bank, *World Bank Open Data* (http://data.worldbank.org/indicator/).

Table 2. **Mobile cellular subscriptions, 2005–2015** (per 100 people)

Country	Average, 2005–2010	2011	2012	2013	2014	2015
Brunei Darussalam	92.6	109.0	113.9	112.2	106.8	108.1
Cambodia	28.5	94.2	128.5	133.9	132.7	133.0
Indonesia	51.0	102.5	114.2	125.4	128.8	132.3
Lao People's Democratic Republic	33.4	84.0	64.7	68.1	67.0	53.1
Malaysia	94.4	127.5	141.3	144.7	148.8	143.9
Myanmar	0.7	2.4	7.1	12.8	54.0	76.7
Philippines	66.8	99.1	105.5	104.5	111.2	118.1
Singapore	123.8	150.1	152.1	155.9	146.9	146.1
Thailand	81.4	116.3	127.3	140.1	144.4	125.8
Viet Nam	67.9	141.6	145.0	135.0	147.1	130.6
ASEAN average	**64.1**	**102.7**	**110.0**	**113.3**	**118.8**	**116.8**
Memorandum						
China	45.3	72.1	80.8	88.7	92.3	93.2
India	29.8	73.2	69.9	70.8	74.5	78.8
Japan	85.6	104.3	110.9	116.3	120.2	125.1
Korea, Rep. of	93.2	107.7	109.4	111.0	115.7	118.5
United States	82.0	94.4	96.0	97.1	110.2	117.6

Source: World Bank, *World Bank Open Data* (http://data.worldbank.org/indicator/).

Table 3. **Internet users** (per 100 people)

Country	Average, 2005–2010	2011	2012	2013	2014	2015
Brunei Darussalam	45.2	56.0	60.3	64.5	68.8	71.2
Cambodia	0.6	3.1	4.9	6.8	14.0	19.0
Indonesia	6.7	12.3	14.5	14.9	17.1	22.0
Lao People's Democratic Republic	3.4	9.0	10.7	12.5	14.3	18.2
Malaysia	54.0	61.0	65.8	57.1	63.7	71.1
Myanmar	0.2	1.0	1.4	1.8	11.5	21.8
Philippines	9.6	29.0	36.2	37.0	39.7	40.7
Singapore	66.5	71.0	72.0	80.9	79.0	82.1
Thailand	18.8	23.7	26.5	28.9	34.9	39.3
Viet Nam	22.0	35.1	39.5	43.9	48.3	52.7
ASEAN average	**22.7**	**30.1**	**33.2**	**34.8**	**39.1**	**43.8**
Memorandum						
China	20.1	38.3	42.3	45.8	47.9	50.3
India	4.4	10.1	12.6	15.1	21.0	26.0
Japan	73.6	79.1	79.5	88.2	89.1	93.3
Korea, Rep. of	79.5	83.8	84.1	84.8	87.9	89.9
United States	71.4	69.7	74.7	71.4	73.0	74.6

Source: World Bank, *World Bank Open Data* (http://data.worldbank.org/indicator/).

Table 3 shows the numbers of internet users in ASEAN Member States. After 2011, all of them recorded a rapid increase, and the ASEAN average in 2015 stands at 43.8 per 100 people, which is more or less comparable to that of China (50.3). The Lao People's Democratic Republic records the lowest figure, 18.2, while Singapore's figure is the highest, at 82.1 – higher than that of the United States (74.6) and close to the level of the Republic of Korea (89.9).

Table 4 shows numbers of fixed broadband subscriptions. Figures for the ASEAN Member States are lower than those for the Republic of Korea, Japan and the United States. The lowest figures are recorded by Myanmar (0.3) and the Lao People's Democratic Republic (0.5), and the highest by Singapore (26.5). The ASEAN average in 2015 was 6.7.

Table 4. **Fixed broadband subscriptions, 2005–2015** (per 100 people)

Country	Average, 2005–2010	2011	2012	2013	2014	2015
Brunei Darussalam	3.7	5.7	4.8	6.6	7.1	8.0
Cambodia	0.1	0.2	0.2	0.2	0.4	0.5
Indonesia	0.4	1.1	1.2	1.3	1.2	1.1
Lao People's Democratic Republic	0.0	0.1	0.1	0.1	0.2	0.5
Malaysia	4.4	8.7	10.0	9.9	10.1	9.0
Myanmar	0.0	0.0	0.1	0.2	0.3	0.3
Philippines	0.8	1.9	2.2	2.6	2.9	3.4
Singapore	20.8	27.1	27.0	27.6	26.7	26.5
Thailand	2.7	5.9	6.8	7.7	8.1	9.2
Viet Nam	2.1	4.3	5.3	5.6	6.5	8.1
ASEAN average	**3.6**	**5.5**	**5.8**	**6.2**	**6.4**	**6.7**
Memorandum						
China	5.8	11.4	12.7	13.6	14.4	18.6
India	0.4	1.1	1.2	1.2	1.2	1.3
Japan	22.9	28.0	28.4	28.9	29.8	30.5
Korea, Rep. of	31.4	36.6	37.2	38.0	38.8	40.2
United States	23.1	28.0	29.1	30.0	30.3	31.5

Source: World Bank, *World Bank Open Data* (http://data.worldbank.org/indicator/).

III. ASCENDANCY OF TELECOMMUNICATION SERVICES TRADE

The total supply of telecommunication services from ASEAN through all four modes accounted for 6 per cent of the total services supply to the world (table 5). Supply through commercial presence (Mode 3) is the largest. The dominance of this mode indicates that foreign direct investment (FDI) plays an important role in providing this service. Similarly, foreign firms operating in ASEAN provide the largest amount of services. Because of the nature of the product, telecommunication services can be supplied directly to users. Services supplied through cross-border trade (Mode 1), consumption abroad (Mode 2) and movement of natural persons (Mode 4) account for minor shares and are limited to, for example, international telephone, fax and online operations, as well as maintenance and repair of infrastructure and person-to-person provision of technical services.

Table 5. **Estimated value and share of telecommunication services supply in ASEAN, by mode of supply, 2015** (Billions of dollars and per cent)

	Receipts from the world (imports)				Supply to the world (exports)			
	Telecommunication services		Total services		Telecommunication services		Total services	
Mode of supply	Value	Share	Value	Share	Value	Share	Value	Share
Mode 1	7[a]	8	308	30	6[a]	9	302	30
Mode 2	2[b]	2	103	10	2[b]	3	101	10
Mode 3	69[c]	81	565	55	51[c]	80	554	55
Mode 4	7[d]	8	51	5	5[d]	8	50	5
Total	**85**	**100**	**1 027**	**100**	**64**	**100**	**1 007**	**100**

Source: AJC, based on own estimates, UNCTAD for total services and the WTO for the mode shares of total services.

Note: For total services, each mode share estimated by the WTO for the global supply is applied to ASEAN. The basic data for estimates by mode are cross-border services (Mode 1) from UNCTAD; the WTO data on shares have been applied to the UNCTAD data to calculate the value of each mode.

[a] For Brunei Darussalam, data are available only for telecommunications, computer and information services. Therefore, the ratio of telecommunications services to this sector from the Philippines is applied to estimate the telecommunications services sector only. For 2015, data are available only for the services total. Therefore, first, the telecommunications, computer and information services are estimated by using the ratio to services total. Then the Philippines' ratio of telecommunications services is applied.
For Cambodia, Indonesia and Thailand, information services may be included.
For Lao People's Democratic Republic, data are available but include computer and/or information services. Therefore, Myanmar's average ratio of telecommunications services to this sector from 2014 and 2015 is applied to estimate the telecommunications services sector alone.
For Malaysia, data are available only for telecommunications, computer and information services for 2010 onward. Therefore, the ratio from telecommunications services to this sector in 2009 is applied to estimate the telecommunications services sector only for 2010 onward. Information services may be included.
For Myanmar, data for telecommunications, computer and information services available only for 2012 onward, which is the same as telecommunication services for 2012 and 2013. From 2014 onward telecommunication, computer and information services became available separately. Therefore the average ratio of services to this sector from 2014 onward is applied to estimate the telecommunication services sector for 2012 and 2013.
For Singapore, data are available only for telecommunications, computer and information services. Therefore, the average ratio of telecommunications services to this sector from Indonesia, Malaysia, the Philippines and Thailand was applied to estimate the telecommunications services sector alone.
For Viet Nam, data are available only for telecommunications, computer and information services. Therefore, Myanmar's average ratio of telecommunication services to this sector from 2014 and 2015 is applied to estimate the telecommunication services sector alone.

[b] Estimated as one third of Mode 1.

[c] See table 10.

[d] Estimated as one tenth of Mode 3.

The fact that ASEAN receipt of telecommunication services from the world is larger than its supply to the world shows that in this subsector of services foreign countries have higher comparative advantages than ASEAN countries. The large presence of foreign firms in ASEAN means that Member States may harness the technology and networks of such firms for their own development of this subsector.

1. Cross-border supply (Mode 1)

Tables 6 and 7 display the export and import statistics for telecommunication services, respectively. There are significant differences. Whereas total exports from ASEAN (supply of telecommunication services to the world) have not grown in the 2000s, total imports to ASEAN (receipts of telecommunication services from the world) have increased constantly. By 2015, imports had more than doubled from the level of 1995–2000. In both directions, Singapore is the largest trader, followed by Malaysia and Indonesia. For analytical purposes, table 8 shows export trends in the past as well as a possible future export path; table 9 provides the export competitiveness index, to measure the degree of a country's strength in trade in this particular services subsector. Some observations for individual Member States:

- In Brunei Darussalam, the export and import values remain low, the lowest among ASEAN Member States, and the export competitiveness index is negative. The export slope, however, is positive. This is because of the country's recent policy shift toward accelerating regulatory reforms in the telecommunication sector.
- In Cambodia, the export figure in 2015 was $45 million, placing it eighth in ASEAN, and its export figure remained rather flat. Its export competitiveness index is barely positive, reflecting the country's recent transition toward a market-based telecommunication sector.
- Indonesia's export figure in 2015 is the third largest (after Singapore and Malaysia), yet the export trend (in terms of slope) is negative. Its export competitiveness index is declining, yet remains positive. As the country transitions from fixed to mobile telecommunication service, it might take some time for Indonesia to gain export momentum.
- In the Lao People's Democratic Republic, the export figure is the second lowest among the ASEAN Member States in 2015; its export slope, however, is positive and above the ASEAN average. Its export competitiveness index is the highest among the ASEAN Member States since the country is rapidly embracing a high-level mobile telecommunication framework.
- In Malaysia, the export volume is the second largest in ASEAN, while the export slope is weakly positive (below the ASEAN average). Its export competitiveness index is negative. This is mainly because the country is in the middle of the transition from a conventional fixed-line network to a mobile-oriented network.
- As for Myanmar, its export performance is gaining remarkable momentum (especially after 2014), and the export slope is the highest among the ASEAN Member States. Its export competitiveness index value is positive and the second highest in the region, reflecting the country's rapid transition toward a market-oriented telecommunication sector.

Table 6. **Exports of telecommunication services and its share in total exports of services, goods and services, 2005-2015** (Millions of dollars and per cent)

Country	Annual average 2005-2010	2011	2012	2013	2014	2015
Telecommunication services export						
Brunei Darussalam[a]	2	3	2	2	2	3
Cambodia[b]	39	45	45	43	46	45
Indonesia[b]	1 116	1 450	1 091	837	876	736
Lao People's Democratic Republic[c]	18	30	30	36	37	33
Malaysia[d]	588	678	819	800	773	745
Myanmar[e]	-	37	73	78	189	351
Philippines	444	386	501	500	349	294
Singapore[f]	1 324	1 945	2 531	2 434	2 448	2 415
Thailand[b]	338	513	453	501	480	462
Viet Nam[g]	177	209	212	419	406	476
ASEAN total	**4 046**	**5 296**	**5 757**	**5 650**	**5 606**	**5 560**
Share in total exports of services						
Brunei Darussalam[a]	0,3	0,6	0,4	0,4	0,4	0,5
Cambodia[b]	2,5	1,6	1,4	1,2	1,2	1,1
Indonesia[b]	8,1	6,6	4,6	3,6	3,7	3,4
Lao People's Democratic Republic[c]	5,4	5,5	5,2	4,6	4,8	4,1
Malaysia[d]	2,2	1,7	2,0	1,9	1,8	2,1
Myanmar[e]	-	4,9	5,9	2,8	4,5	9,1
Philippines	3,4	2,0	2,5	2,1	1,4	1,0
Singapore[f]	1,8	1,6	2,0	1,7	1,6	1,7
Thailand[b]	1,2	1,2	0,9	0,9	0,9	0,8
Viet Nam[g]	2,9	2,4	2,2	3,9	3,7	4,2
ASEAN total	**2,4**	**2,1**	**2,1**	**1,8**	**1,8**	**1,8**
Share in total exports of goods and services						
Brunei Darussalam[a]	-	-	-	-	-	-
Cambodia[b]	0,8	0,6	0,5	0,4	0,4	0,4
Indonesia[b]	0,9	0,7	0,5	0,4	0,1	0,4
Lao People's Democratic Republic[c]	1,3	1,2	1,1	1,2	1,1	1,0
Malaysia[d]	0,3	0,3	0,1	0,3	0,3	0,4
Myanmar[e]	-	0,4	0,8	0,6	1,4	2,5
Philippines	1,0	0,7	0,7	0,7	0,5	0,4
Singapore[f]	0,3	0,4	0,4	0,4	0,4	0,5
Thailand[b]	0,2	0,2	0,2	0,2	0,2	0,2
Viet Nam[g]	0,3	0,2	0,2	0,3	0,3	0,3
ASEAN total	**0,4**	**0,4**	**0,4**	**0,4**	**0,4**	**0,4**

Source: AJC, based on data from WGSITS (ASEAN Working Group on Statistics of International Trade in Services), IMF, UNCTAD and individual countries' balance-of-payments data.

[a] Data are available only for telecommunications, computer and information services. Therefore, the ratio of telecommunications services to this sector from the Philippines is applied to estimate the telecommunications services sector only. For 2015, data are available only for the services total. Therefore, first, the telecommunications, computer and information services are estimated by using the ratio to services total. Then the Philippines' ratio of telecommunications services is applied.

[b] Information services may be included.

[c] Data are available but include computer and/or information services. Therefore, Myanmar's average ratio of telecommunications services to this sector from 2014 and 2015 is applied to estimate the telecommunications services sector alone.

[d] Data are available only for telecommunications, computer and information services for 2010 onward. Therefore, the ratio from telecommunications services to this sector in 2009 is applied to estimate the telecommunications services sector only for 2010 onward. Information services may be included.

[e] Data for telecommunications, computer and information services available only for 2012 onward, which is the same as telecommunication services for 2012 and 2013. From 2014 onward telecommunication, computer and information services became available separately. Therefore the average ratio of services to this sector from 2014 onward is applied to estimate the telecommunication services sector for 2012 and 2013.

[f] Data are available only for telecommunications, computer and information services. Therefore, the average ratio of telecommunications services to this sector from Indonesia, Malaysia, the Philippines and Thailand was applied to estimate the telecommunications services sector alone.

[g] Data are available only for telecommunications, computer and information services. Therefore, Myanmar's average ratio of telecommunication services to this sector from 2014 and 2015 is applied to estimate the telecommunication services sector alone.

Table 7. **Imports of telecommunication services and its share in total imports of services, goods and services, 2005-2015** (Millions of dollars and per cent)

Country	Annual average 2005-2010	2011	2012	2013	2014	2015
Telecommunication services imports						
Brunei Darussalam[a]	7	12	11	11	11	8
Cambodia[b]	35	38	37	36	38	38
Indonesia[b]	580	806	717	696	647	706
Lao People's Democratic Republic[c]	4	8	8	13	13	15
Malaysia[d]	757	923	1 080	1 245	1 223	1 252
Myanmar[e]	-	2	3	7	76	185
Philippines	114	146	194	241	374	412
Singapore[f]	1 285	2 396	3 277	3 462	4 103	3 968
Thailand[b]	226	402	462	532	558	488
Viet Nam[g]	71	100	101	171	255	260
ASEAN total	**3 079**	**4 833**	**5 890**	**6 414**	**7 298**	**7 332**
Share in total imports of services						
Brunei Darussalam[a]	0,5	0,7	0,4	0,4	0,5	0,4
Cambodia[b]	4,2	2,9	2,4	2,0	2,0	2,0
Indonesia[b]	2,4	2,5	2,1	2,0	1,9	2,3
Lao People's Democratic Republic[c]	3,8	2,4	2,4	2,4	2,7	2,7
Malaysia[d]	2,8	2,4	2,5	2,8	2,7	3,1
Myanmar[e]	-	0,2	0,2	0,3	2,9	7,6
Philippines	1,3	1,2	1,4	1,5	1,8	1,7
Singapore[f]	1,6	2,0	2,5	2,4	2,6	2,8
Thailand[b]	0,6	0,8	0,9	1,0	1,0	1,0
Viet Nam[g]	1,0	0,8	0,8	1,2	1,8	1,7
ASEAN total	**1,9**	**1,8**	**2,0**	**2,0**	**2,2**	**2,4**
Share in total imports of goods and services						
Brunei Darussalam[a]	0,2	0,2	0,2	0,1	0,2	0,2
Cambodia[b]	0,6	0,5	0,4	0,3	0,3	0,3
Indonesia[b]	0,5	0,4	0,3	0,3	0,3	0,4
Lao People's Democratic Republic[c]	0,3	0,3	0,2	0,4	0,3	0,4
Malaysia[d]	0,5	0,4	0,5	0,6	0,6	0,7
Myanmar[e]	-	-	-	0,1	0,5	1,1
Philippines	0,2	0,2	0,2	0,3	0,4	0,5
Singapore[f]	0,4	0,5	0,7	0,7	0,8	0,9
Thailand[b]	0,1	0,2	0,2	0,2	0,2	0,2
Viet Nam[g]	0,1	0,1	0,1	0,1	0,2	0,2
ASEAN total	**0,3**	**0,4**	**0,4**	**0,4**	**0,5**	**0,6**

Source: AJC, based on data from WGSITS (ASEAN Working Group on Statistics of International Trade in Services), IMF, UNCTAD and individual countries' balance-of-payments data.

[a] Data are available only for telecommunications, computer and information services. Therefore, the ratio of telecommunications services to this sector from the Philippines is applied to estimate the telecommunications services sector only. For 2015, data are available only for the services total. Therefore, first, the telecommunications, computer and information services are estimated by using the ratio to services total. Then the Philippines' ratio of telecommunications services is applied.

[b] Information services may be included.

[c] Data are available but include computer and/or information services. Therefore, Myanmar's average ratio of telecommunications services to this sector from 2014 and 2015 is applied to estimate the telecommunications services sector alone.

[d] Data are available only for telecommunications, computer and information services for 2010 onward. Therefore, the ratio from telecommunications services to this sector in 2009 is applied to estimate the telecommunications services sector only for 2010 onward. Information services may be included.

[e] Data for telecommunications, computer and information services available only for 2012 onward, which is the same as telecommunication services for 2012 and 2013. From 2014 onward telecommunication, computer and information services became available separately. Therefore the average ratio of services to this sector from 2014 onward is applied to estimate the telecommunication services sector for 2012 and 2013.

[f] Data are available only for telecommunications, computer and information services. Therefore, the average ratio of telecommunications services to this sector from Indonesia, Malaysia, the Philippines and Thailand was applied to estimate the telecommunications services sector alone.

[g] Data are available only for telecommunications, computer and information services. Therefore, Myanmar's average ratio of telecommunication services to this sector from 2014 and 2015 is applied to estimate the telecommunication services sector alone.

Table 8. **Export trend line for telecommunication services**

Country	Slope (in log)
Brunei Darussalam	0.023
Cambodia	0.021
Indonesia	-0.110
Lao People's Democratic Republic	0.110
Malaysia	0.044
Myanmar	0.545
Philippines	-0.068
Singapore	0.104
Thailand	0.042
Viet Nam	0.218
ASEAN average	**0.093**

Source: Calculated from tables 6 and 7.
Note: The export competitiveness index is defined as Exports – Imports / Exports + Imports.

Table 9. **Export competitiveness index of telecommunication services, 2005–2015**

Country	Average, 2005–2010	2011	2012	2013	2014	2015
Brunei Darussalam	-0.56	-0.60	-0.69	-0.69	-0.69	-0.45
Cambodia	0.05	0.08	0.10	0.09	0.10	0.08
Indonesia	0.32	0.29	0.21	0.09	0.15	0.02
Lao People's Democratic Republic	0.64	0.58	0.58	0.47	0.48	0.38
Malaysia	-0.13	-0.15	-0.14	-0.22	-0.23	-0.25
Myanmar	-	0.90	0.92	0.84	0.43	0.31
Philippines	0.59	0.45	0.44	0.35	-0.03	-0.17
Singapore	0.01	-0.10	-0.13	-0.17	-0.25	-0.24
Thailand	0.20	0.12	-0.01	-0.03	-0.08	-0.03
Viet Nam	0.43	0.35	0.35	0.42	0.23	0.29
ASEAN average	**0.17**	**0.19**	**0.16**	**0.12**	**0.01**	**-0.01**

Source: Calculated from tables 6 and 7.

- The Philippines' export performance is rather flat or even declining a bit; the export slope is negative and the export competitiveness index is going into negative territory. This is presumably because of the country's prolonged transition away from a monopolistic condition toward a more competition-based telecommunication sector.
- Singapore's export value is the largest among the ASEAN Member States; its export trend is positive and above the ASEAN average. Its export competitiveness index, however, is negative and looks like it is declining, due partly to the fact that the Singaporean economy is rather mature and its limited market size.

- As for Thailand, export performance is fairly flat, yet the export slope is positive; its export competitiveness index value is declining and was slightly negative in 2015. The country's export-oriented policy (which started in the 1980s) has not affected services, as it targeted mainly the goods sector.
- In Viet Nam, the export value is increasing sharply; its export slope is positive and well above the ASEAN average. Its export competitiveness index value is declining but still significantly positive. This is because Viet Nam has been actively embracing a market-based economy and hence inward FDI.

These trade-related statistics provide some basic information on growth and typical characteristics of trade for individual Member States. Mode 1 trade is dwarfed by supply through commercial presence (Mode 3), though still considerably higher than Mode 2 (consumption abroad) and Mode 4 (movement of natural persons) (table 1).

2. Supply through commercial presence (Mode 3)

Table 10 shows the estimated sales of telecommunication services through foreign presence (Mode 3) in terms of service trade categorization, done by the AJC (box 1).[3] Except for Brunei Darussalam, the Lao People's Democratic Republic and Myanmar, receipts (imports) from abroad and sales by foreign telecommunication services affiliates are relatively large, indicating that the ASEAN region is benefiting from foreign supply of telecommunication services, if not generating trade surplus from investing abroad.

Table 10. **Estimated sales of telecommunication services through foreign presence, 2015**
(Number and millions of dollars)

Country	Receipts from abroad		Supply to the world	
	Number of foreign entities	Estimated sales[a]	Number of ASEAN entities abroad	Estimated sales[a]
Brunei Darussalam	1	1 (0)	0	-
Cambodia	27	1 230 (7)	0	-
Indonesia	68	16 616 (25)	12	3 524 (1)
Lao People's Democratic Republic	3	175 (0)	0	-
Malaysia	74	13 240 (14)	53	6 694 (17)
Myanmar	14	8 (2)	0	-
Philippines	64	12 807 (7)	7	64 (2)
Singapore	170	15 282 (24)	111	40 595 (23)
Thailand	46	8 905 (11)	10	11 (3)
Viet Nam	49	477 (11)	17	138 (1)
ASEAN total	**516**	**68 740**	**210**	**51 027**

Source: AJC, based on data from Toyo Keizai Shimposha, UNCTAD, Thomson Reuters and Orbis.
Note: For estimated sales, see the estimation procedure in the main text.
[a] Figures in parentheses indicate the number of entities for which sales cannot be estimated.

[3] This is an underestimation of trade volume, as only companies that provide telecommunication services are considered, in the absence of data on companies engaged only partly in telecommunication services. Tables 6 and 7 are still useful for a first approximation.

Box 1. **How to estimate services supply of Mode 3**

Almost no developing countries compile foreign affiliate statistics (FATS). ASEAN Member States are no exception. The supply of telecommunication services through commercial presence must therefore be estimated from the sales of foreign affiliates engaged in such services. The AJC estimated this supply using the following steps:

(1) Identify foreign affiliates in each country by examining the lists of foreign companies compiled from various sources, including Toyo Keizai's database for Japanese affiliates in ASEAN, Orbis and Who Owns Who databases for non-Japanese foreign affiliates in ASEAN, and individual foreign investment cases from Thomson One and the *Financial Times'* fDi Markets databases.

(2) Because many of these identified foreign affiliates do not provide sales data, calculate the ratio of sales to firm size on the basis of the affiliates that have information on both sales and firm size (i.e. capital size, asset size or investment size), the ratio of sales to firm size is calculated. To estimate sales, apply this ratio to affiliates that have at least data on firm size.

(3) Do not include affiliates for which estimates of sales were not possible, effectively assuming that they are small and do not affect the totality.

For sales by ASEAN affiliates abroad, the same estimation procedure is applied. In both estimates (supply of services by foreign affiliates in ASEAN and supply of services by ASEAN affiliates abroad), the AJC's estimates tend to be underestimated because they include only those affiliates that are identified and only those whose main business is telecommunication services. Companies whose main business is not telecommunication services can provide such services. However, in the calculations for Mode 3, supply by this type of firms is not covered.

Annexes A and B provide some of the identified telecommunication foreign firms established through foreign direct investment (FDI).

In terms of the number of investments, Brunei hosts the smallest number of foreign affiliates and has no affiliates identifiable abroad. Singapore hosts the largest number at home (170) and sends the largest number abroad (111). All in all, the ASEAN Member States are receiving investment in telecommunication services rather than sending investment elsewhere.

Unlike trade under Mode 1 (cross-border supply), under Mode 3 Singapore, Indonesia, Malaysia and the Philippines show almost the same level of foreign presence in terms of sales. Singapore has by far the largest presence abroad of all the ASEAN Member States, 7 to 10 times larger than the next largest countries (Malaysia and Indonesia).

Table 11 shows foreign affiliates in ASEAN and ASEAN affiliates abroad in telecommunication services by source and destination country. Investments in ASEAN from other ASEAN countries constitute the dominant share. Outside the ASEAN region, Europe makes the largest number of investments, followed by the United States and Japan.

In terms of the volume of inward investment, or trade in services in Mode 3, the relevant companies' total sales figures have been added together. The result of the estimation shows that other ASEAN countries together make up the largest share of inward investors. Then comes Japan, which implies that the average investment size is larger in the case of Japan than in the case of the United States and Europe. The large investment values from Qatar (Qatar Telecom) and Hong Kong, China (True Corp.) (annex A) are impressive, considering their rather small numbers of investments.

As for ASEAN companies' investment abroad, the largest number of affiliates is hosted by other ASEAN countries, followed by India. Bermuda and Pakistan also rank high. In contrast, Europe and the United States, together with Japan, are not investment destinations, presumably because of the high costs and the dominance of large telecommunication companies in these advanced economies.

Table 11. **Foreign affiliates in ASEAN and ASEAN affiliates abroad in telecommunication services, by source / destination country** (Number and millions of dollars)

	Country	Foreign affiliates in ASEAN: Number of affiliates	Foreign affiliates in ASEAN: Estimated sales[a]	ASEAN affiliates abroad: Number of affiliates	ASEAN affiliates abroad: Estimated sales[a]
Developed countries	United States	97	6 440 (8)	8	179 (4)
	Europe	111	8 646 (11)	12	422 (2)
	Japan	67	10 115 (17)	4	25 (0)
	Others[b]	23	329 (3)	22	269 (2)
	Subtotal	**298**	**25 529 (39)**	**46**	**895 (8)**
Developing countries	ASEAN[c]	105	21 638 (38)	95	38 741 (28)
	China	23	76 (3)	7	100 (2)
	Korea, Rep. of	4	4 (0)	2	33 (0)
	India	10	137 (0)	14	5 416 (2)
	Hong Kong (China)	15	5 629 (4)	8	169 (2)
	Bermuda	0	0 (0)	2	3 190 (0)
	Pakistan	0	0 (0)	4	1 326 (0)
	Quatar	9	6 767 (2)	0	0 (0)
	Others[d]	45	8 921 (10)	32	1 157 (5)
	Subtotal	**211**	**43 173 (57)**	**164**	**50 132 (39)**
Unspecified		7	39 (5)	0	0 0
World		**516**	**68 741 (101)**	**210**	**51 028 (47)**

Source: AJC, based on data from Toyo Keizai Shimposha, UNCTAD, Thomson Reuters and Orbis.
Note: For estimated sales, see the estimation procedure in the main text.
[a] Figures in parentheses indicate the number of affiliates for which sales cannot be estimated.
[b] Foreign affiliates in ASEAN includes those from Australia, Canada and New Zealand; ASEAN affiliates abroad includes Australia and New Zealand only.
[c] The number of foreign affiliates in ASEAN and ASEAN affiliates abroad should balance. However, either the destination or the source country of some of these affiliates is not available. Therefore they do not match.
[d] Foreign affiliates in ASEAN include those in the United Arab Emirates, Israel, Kuwait, the Cayman Islands, the Marshall Islands, Mexico, the Russian Federation, Saudi Arabia, Seychelles, Tokelau, Taiwan and the Virgin Islands (British). ASEAN affiliates abroad include those in the United Arab Emirates, Bahrain, Brazil, Egypt, Haiti, Israel, Sri Lanka, the Marshall Islands, Macau, Oman, Peru, Papua New Guinea, Saudi Arabia, East Timor, South Africa, Taiwan Province of China, Tanzania, the Virgin Islands (British) and Yemen.

3. Consumption abroad (Mode 2) and movement of natural persons (Mode 4)

The essence of telecommunication services is embodied in equipment, networks and infrastructure that provide such services, rather than in natural persons. Therefore, supply of services through Mode 2 and Mode 4 is very limited, as movement to the places of consumption or production does not accompany such infrastructure. Supply through these two modes is estimated to be only one tenth of total supply of this subsector. As there is no systematic information available, international roaming can itself be seen as supply of telecommunication services in Mode 2, since foreign suppliers' service facilities are used by consumers in the suppliers' countries. Meanwhile, Mode 4 is not technically feasible due to the fact that the very essence of telecommunication services is oriented to facilities rather than natural persons. Put differently, the lack of relevant trade statistics in Mode 2 and Mode 4 reflects the fact that these two modes are not in full use.

Having stated that, there is a need to use and record trade flows in both of these underutilized modes. Foreign visitors' rental of mobile phones would be considered trade in Mode 2, and expansion of this trade is much needed, with the increase in foreign visitors (including tourists and businessmen and women). Although the nature of this services trade is telecommunication, for statistical purposes, it is recorded as tourism expenditure. Regarding Mode 4, as the industry stands now, self-employed telecommunication experts are still inconceivable. In the not distant future, however, such professionals might appear, using mobile (not large-scale) facilities to supply telecommunication services abroad. Business development along this line should thus be kept open, by not restricting such trade flows without sound discretionary reasons.

IV. TRADE AGREEMENTS AND REGULATIONS AMONG AND IN THE ASEAN MEMBER STATES

The ASEAN Framework Agreement on Services (AFAS) is the most extensive ASEAN-related free trade agreement on services. In that it has the potential impact of spillovers to non-AFAS countries (including ASEAN's dialogue partners), the AFAS merits a particular focus. It is important to first make an overall assessment of the degree of trade liberalization in telecommunication services. One useful method is indexation of trade liberalization through, for example, the Hoekman Index.[4] Table 12 shows Hoekman Index values for the ASEAN Member States under the AFAS (9th package, signed in November 2015); see annex C. Judging from the ASEAN-average value of more than 0.5 in all three modes,[5] most ASEAN Member States are fairly highly committed in telecommunication services.

Following are some noteworthy observations by country.

Brunei Darussalam: Highly committed and well above the ASEAN average in all three modes. Mode 2 reveals the highest commitment, followed by Mode 1 and then by Mode 3; this is a typical pattern, considering the sensitivity of Mode 3, which directly relates to domestic regulation and employment.

Cambodia: Highly committed and well above the ASEAN average in all three modes; Mode 3 records the lowest commitment.

Indonesia: Commitments are below the ASEAN average in all three modes; commitments for Mode 3 are the lowest. Recently, the country introduced a regulation that imposes a 20 per cent limit on foreign ownership in companies that offer electronic payment services.[6] The minimum local content requirement for domestically produced 4G smartphones sold in the Indonesian market has been also increased, from 20 per cent to 30 per cent starting 1 January 2017.

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4 Hoekman (1995) proposes an indexation method for measuring the GATS-style degree of commitment in the services sector. The index takes a value between 0 and 1, with 0 referring to the most restricted situation and 1 being the most open. The method assigns values to each of eight cells (four modes and two aspects – market access or national treatment), as follows: assign the value 1 for a sector that is "fully liberalized"; 0.5 for one that is "limited (but bound)"; 0 for one that is "unbound" (government has not committed to liberalize) by subsector, by mode and by aspect (market access of national treatment), and take the simple average for aggregation; then calculate the average value by services sector and by country. The higher the figure, the more liberal the country's service trade commitments are to members of a free trade agreement. Using the database constructed for this paper series, the Hoekman Index is derived for each of 155 subsectors. Then the simple average for the 11 sectors is calculated.

5 As Mode 4 (movement of natural persons) is administered by a separate ASEAN-wide agreement (ASEAN Agreement on the Movement of Natural Persons or AMNP, to be specific) and Mode 4 is not so relevant in telecommunication services, the table lists only Modes 1–3.

6 Bank Indonesia, "Peraturan Bank Indonesia No. 18/40/PBI/2016 tentang Penyelenggaraan Pemrosesan Transaksi Pembayaran", 14 November 2016.

Lao People's Democratic Republic: Fully committed in all three modes; this is presumably because telecommunication services are an essential part of the country's value chains with the rest of ASEAN.

Malaysia: The level of commitment is below the ASEAN average; it seems that Malaysia has a domestically oriented policy strategy for telecommunication services, especially in Mode 3 (commercial presence).

Myanmar: The level of commitment is a little below the ASEAN average; Mode 3 has the lowest commitment level.

Philippines: The level of commitment is below the ASEAN average; it seems that the Philippines, together with Malaysia, has a domestically oriented policy strategy for telecommunication services, especially in Mode 3 (commercial presence).

Singapore: The level of commitment is below the ASEAN average; the commitment in Mode 3, however, is higher than those in Mode 1 and Mode 2.

Thailand: Commitment in Mode 1 is slightly higher than the ASEAN average; commitment in Mode 2 is slightly lower and Mode 3 commitment is much lower than the ASEAN average.

Viet Nam: The level of commitment is much higher than the ASEAN average for all three modes; Mode 2 is fully committed (the index value is 1.0).

Table 12. **Hoekman Index of AFAS (9th package, signed in November 2015) commitments for telecommunication services**

Country	Mode 1	Mode 2	Mode 3
Brunei Darussalam	0.90	0.92	0.88
Cambodia	0.87	0.87	0.83
Indonesia	0.67	0.67	0.50
Lao People's Democratic Republic	1.00	1.00	1.00
Malaysia	0.40	0.40	0.30
Myanmar	0.67	0.67	0.40
Philippines	0.40	0.53	0.30
Singapore	0.47	0.47	0.58
Thailand	0.73	0.70	0.42
Viet Nam	0.95	1.00	0.95
ASEAN average	**0.71**	**0.72**	**0.62**

Source: AJC, calculated from the specific commitment tables of the AFAS (9th package). For each ASEAN Member State's specific commitment table, see appendix C.

The lower presence of foreign firms in the telecommunication services sector in Myanmar and Thailand reflects the lower degree of liberalization in those countries. However, despite also having a lower degree of liberalization, Indonesia, Malaysia and the Philippines attracted investments because of the potential of their markets.

Table 13 shows the status of restrictions in the telecommunication subsector by country. Following are some of the observations to make from this table.

Table 13. **Status of restrictions in telecommunications subsector under AFAS** (9th package)

Country	N = none/no limitation	D = limitations on the total number of natural persons	E = measures which restrict or require specific types of legal entity	F = limitations on the participation of foreign capital	G = Government approval requirement	H = tax or fee payment requirement
Brunei Darussalam	115	0	16	4 (70%: 4)	0	0
Cambodia	28	0	1	1 (51%: 1)	0	0
Indonesia	99	0	8	20 (70%: 12; 51%: 1; 49%: 7)	2	0
Lao People's Democratic Republic	39	0	1	1 (49%: 1)	0	0
Malaysia	64	0	1	12 (70%: 9; 51%: 3)	0	0
Myanmar	68	0	16	0	1	0
Philippines	39	4	4	9 (70%: 5; 40%: 4)	3	0
Singapore	20	0	2	2 (73.99%: 2)	0	0
Thailand	72	0	13	20 (70%: 12; 40%: 6; 25%: 2)	4	0
Viet Nam	30	0	6	5 (70%: 1; 51%: 4)	0	0

Source: AJC, calculated from each country's specific commitment table.

Brunei Darussalam: Among the restrictions used, the frequency of E (measures that restrict or require specific types of legal entity) is higher than that of F (limitations on the participation of foreign capital); a 70 per cent upper limit is dominant.

Cambodia: Restriction is less used; only one 51 per cent foreign equity limit is observed.

Indonesia: Among the restrictions used, the frequency of F (limitations on the participation of foreign capital) is dominant; a 70 per cent upper limit on foreign equity participation is more frequently used than a 49 per cent or 51 per cent limitation.

Lao People's Democratic Republic: Restriction is less used; only one 49 per cent foreign equity limit was observed.

Malaysia: The use of F (limitations on the participation of foreign capital) is dominant; a 70 per cent foreign equity limit is more frequently used than a 51 per cent limit.

Myanmar: The use of E (measures that restrict or require specific types of legal entity) is dominant; F (limitations on the participation of foreign capital) is not used.

Philippines: F (limitations on the participation of foreign capital) is dominant, and a 70 per cent foreign equity limit is more frequently used than a 40 per cent limit. The use of D (limitations on the total number of natural persons) is uniquely among the ASEAN Member States, and its use is as frequent as that of E (measures that restrict or require specific types of legal entity).

Singapore: The use of E (measures that restrict or require specific types of legal entity) is just as frequent as that of F (limitations on the participation of foreign capital); a foreign equity limit of 73.99 per cent is dominant.

Thailand: The use of F (limitations on the participation of foreign capital) is dominant; a 70 per cent foreign equity limit is the most frequently used figure; the use of G (Government approval requirement) is fairly frequent.

Viet Nam: The use of E (measures that restrict or require specific types of legal entity) is dominant; as for F (limitations on the participation of foreign capital) which is also frequently used, an upper limit of 51 per cent is dominant.

An important aspect of the AFAS (the most updated publicly available version is the 9th package, signed in November 2015) is its expected positive spillover effect for the ongoing Regional Comprehensive Economic Partnership (RCEP) negotiations involving the ASEAN Member States as well as their dialogue partners (Australia, China, India, Japan, the Republic of Korea and New Zealand). The AFAS could be utilized as a common template for the RCEP negotiations. In this sense, the specific measures in telecommunication services under the AFAS (see annex C) provide useful information for considering the region's telecommunication service trade.

Although trade liberalization measures are addressed under the AFAS, measures specific to telecommunication service trade are also administered through other means. ASEAN and the World Bank (2015: 130) point out that telecommunication ministers "do not address liberalization measures in the form of restrictions on market access and national treatment, which are understood to be covered by the AFAS negotiations ... These ASEAN bodies and their efforts may, however, address the domestic regulation measures that may act as barriers to trade and investment in these services sectors". The most important and updated policy measures are provided under the ASEAN Information and Communication Technology (ICT) Masterplan 2020 (AIM 2020) released in 2015, which covers the period of 2016–2020 (see box 2).

The AIM 2020 covers wide-ranging policy agendas not just for telecommunication services but also for computer services. With the merging of telecommunication services and computer services, a unified treatment – i.e., information and communication technology (ICT) – should be addressed as a single important service sector (see paper 4 in this series). ASEAN has also responded to this technological trend and currently holds related ministerial meetings in a unified fashion.

The Joint Media Statement of the 16th ASEAN Telecommunications and Information Technology Ministers Meeting and Related Meetings[7] (TELMIN, held on 26 November 2016 in Bandar Seri Begawan, Brunei Darussalam) covers important regulatory issues for ASEAN's telecommunication services. Paragraph 5 of the Joint Media Statement goes: "The Ministers reiterated their support to further enhance the development of ICT policies, human resources as well as connectivity in the region. Among others, the development of an ASEAN Framework on International Mobile Roaming to provide travelers and businesses with affordable access to international mobile roaming services within ASEAN". As is discussed in the next section, there is a community-wide benefit (or "network externality") arising from enhancing connectivity between country-level or operator-level subnetworks. Viewed from this perspective, reducing international mobile roaming charges would open up the possibility to capture value added farther along the value chain.

[7] http://asean.org/storage/2012/05/TELMIN-16-JMS-Final-cleared.pdf.

Box 2. **ASEAN ICT Masterplan 2020 (AIM 2020)**

The AIM 2020 focuses on enabling economy-wide transformation, as featured in figure 1. The vision of the AIM 2020 is "to propel ASEAN towards a digitally enabled economy that is secure, sustainable and transformative; and to enable an innovative, inclusive and integrated ASEAN Community". The AIM 2020 has the following five outcome-oriented goals:

- An accessible, inclusive and affordable digital economy: ASEAN will address new and emerging digital and information divides through a sustained agenda of digital education in schools, re-skilling in next-generation telecentres, and life-long learning. ICT will be used to support digital inclusion and social equality, where marginalized, underserved and vulnerable communities have avenues for engaging in and entering the digital economy.
- Deployment of next-generation ICT as an enabler of growth: In recognizing ICT as a horizontal enabler, ASEAN will increasingly deploy its use in education and training, government service delivery, health care provision, and disaster response and recovery, driving innovation in all economic sectors. ASEAN will continue to embrace next-generation ICT and innovatively apply new technologies to enhance the quality of life for ASEAN citizens.
- Sustainable development through smart city technologies: ASEAN will provide leadership in responsible development through the promotion of interconnected smart cities. Green policies will be promoted through the deployment of next-generation ICT, such as sensor networks and the internet of things, and the benefits will be disseminated broadly through a focus on sustainable community practices and business models.
- Multiple ICT opportunities across a single regional market: Through enabling an interconnected and interoperable digital economy, ASEAN will utilize ICT to further support and drive the ASEAN Economic Community. ICT across ASEAN will represent a sizeable market opportunity, facilitate the integration of other sectors of the economy, lower business costs, achieve economies of scale and foster synergies toward greater socio-economic development.

Secure digital marketplaces, safe online communities: ASEAN will develop trusted online marketplaces, buttressed by strong security measures. It will support ASEAN trade facilitation platforms and promote and protect inter- and intraregional digital trade.

V. IMPACTS OF FURTHER LIBERALIZATION OF TELECOMMUNICATION SERVICES ON ECONOMY

Table 14 shows the value added and output of telecommunication services for some ASEAN Member States. The average ratio of value added to output (0.63) is significantly higher than the all-industry average (0.42), which indicates that the expansion of the telecommunication services sector has a significant value-creation impact. In terms of the absolute level of value added, Indonesia has the largest figure, followed by Malaysia, the Philippines and Thailand. This order is roughly positively related to both the size and the level of economic development of the countries. Indeed, the telecommunication sector is the base of a country's physical infrastructure. Trade expansion in this sector therefore is expected to rapidly increase the level of basic infrastructure.

As for the impact of the diffusion of telecommunication services, figure 2 shows the multiplier effects of telecommunication services in ASEAN (in 2011). As in the table, Malaysia displays the highest level of multiplier effect – more than 1.5 – presumably reflecting the fact that the country has

Table 14. **Value added and output of telecommunication services[a] compared with all industries, 2011** (Millions of dollars and ratio)

Country	Post and telecommunications			All industries		
	Value added	Output	Ratio of value added to output	Value added	Output	Ratio of value added to output
Brunei Darussalam	149	186	0,80	16 697	23 709	0,70
Cambodia	154	273	0,56	12 042	25 145	0,48
Indonesia	26 314	33 740	0,78	815 181	1 606 973	0,51
Malaysia	8 634	17 776	0,49	280 687	829 419	0,34
Philippines	5 555	9 172	0,61	209 529	429 792	0,49
Singapore	4 730	10 711	0,44	254 808	711 535	0,36
Thailand	5 346	9 087	0,59	343 407	893 396	0,38
Viet Nam	1 296	1 812	0,71	126 630	332 716	0,38
ASEAN total	**52 177**	**82 756**	**0,63**	**2 058 981**	**4 852 685**	**0,42**

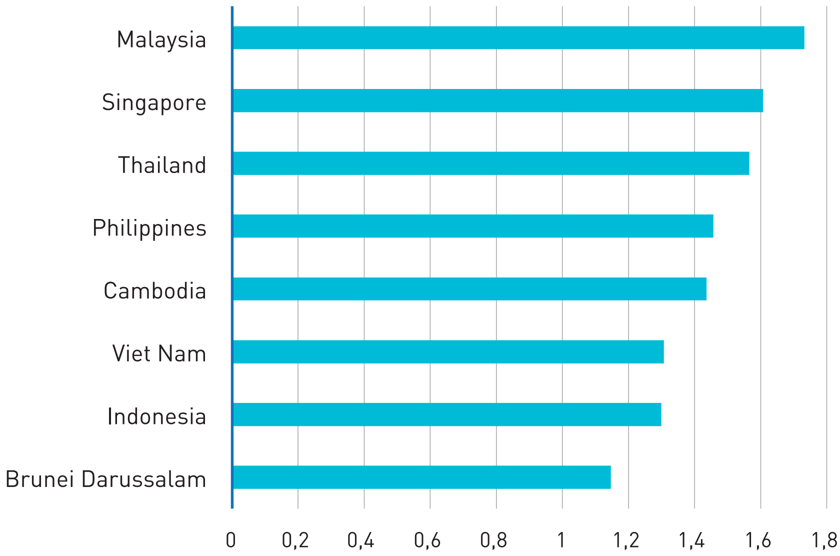
Source: OECD Input-Output table database.
Note: The Lao People's Democratic Republic and Myanmar are not covered in the OECD database.
[a]Refers to post and telecommunications.

been concentrating on IT-related infrastructure over the past decades. Singapore follows Malaysia for the same reason. Thailand, ranked third, is also considered to have a high level of multiplier effect, due mainly to its domestic industrial infrastructure (albeit centering on the automotive sector). Therefore, presence of foreign telecommunication services which are considered more competitive may change the productivity of the telecommunication services sector. Brunei Darussalam, in contrast, is ranked at the bottom; this is due to the lack of domestic industrial linkage between telecommunication services and the other sectors. The coefficient multiplier of the telecommunication sector has declined generally. For example in Indonesia, it was approximately 1.8 during the 1980s, and decreased to only 1.3 by the end of 2008 (Roham and Bohlin, 2014). This is because in the case of mobile phones are used more for communication (as a final demand) than for industrial input and because the mobile era that started in the early 2000s caused a trend of changes in telecommunication output: although final demand remains dominant, the technological coefficient effect has diminished as the source of that output. This study indicates that in ASEAN at large, the telecommunication services sector has a limited capacity to strengthen its input-output linkage with other sectors.

The main impact of telecommunication services, however, comes precisely from the transition toward final-demand-oriented use of mobile phones. Although a quantitative assessment of this channel of impact is difficult, smoother communication through mobile phones surely contributes to the upward shifting of ASEAN's smile curve for value creation.

In order to assess the impacts of telecommunication services, it is also important to introduce the concept of network externality. Figure 3 illustrates network externality. Telecommunication networks are managed by respective operators; the interconnection charges are required between two operators. The retail part of the operators handle transactions with users (e.g., billing and customer services). Network externality signifies the increased value of a network arising from new users' joining the network. For instance, when new users start to use Network 1 in figure 3 (represented by the bigger, solid oval), the network now has more users, and existing users can also contact the new users at low cost; this situation is more valuable than in the case where new

Figure 2. **Multiplier effects of telecommunication services in ASEAN[a], 2011**



Source: AJC, based on OECD Input-Output table database.
Note: The Lao People's Democratic Republic and Myanmar are not covered in the OECD database.
[a] Refers to post and telecommunications.

users select the other network (either Network 1 or Network 2) separately (the two networks being represented by the smaller ovals with dashed lines). Put differently, the total value of the new users joining Network 1 includes the value for the new users *and* the value for existing users of Network 1. This means that the existing users benefit without paying extra connection fees; this is precisely the network externality effect.

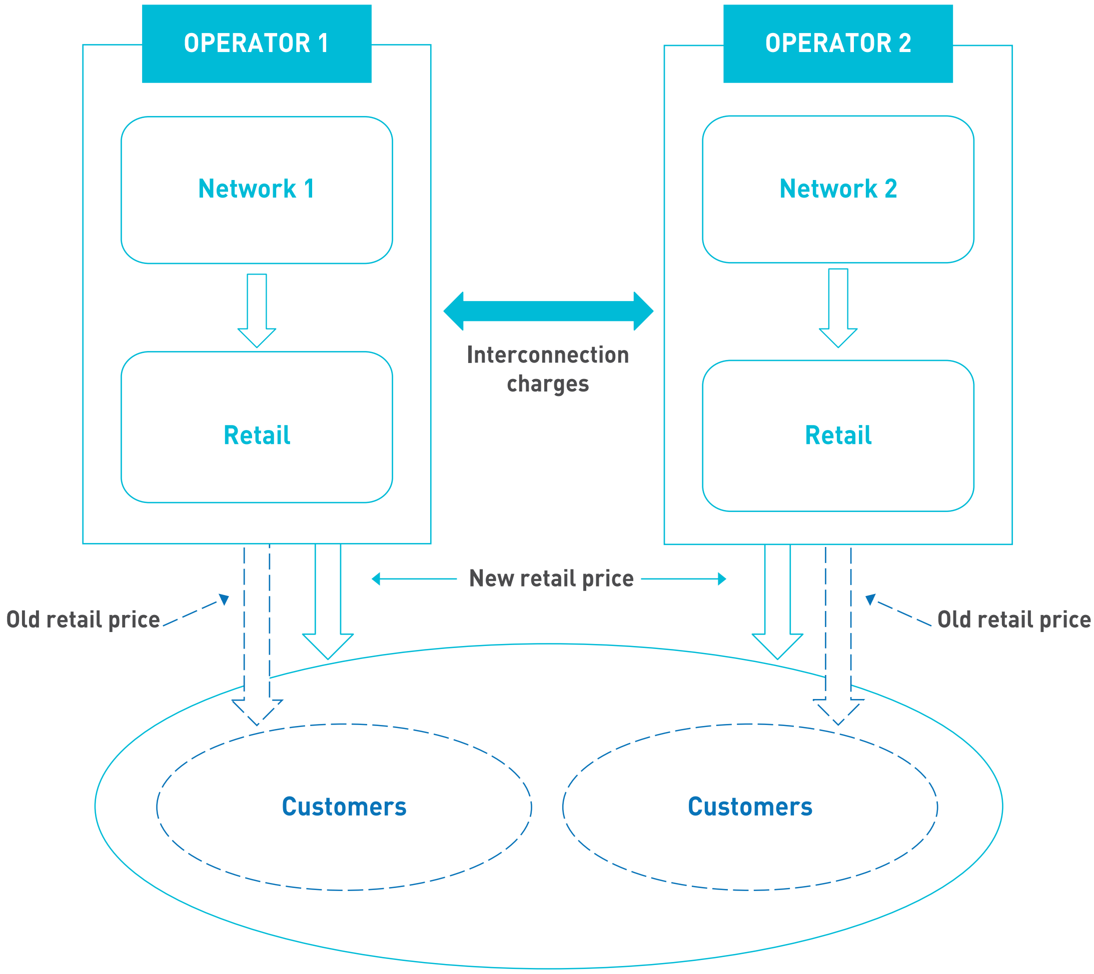
In the extreme case of only one user of the network, there would be no benefit for the network user; so the cost of using the network is higher than the benefit (zero); when the number of users somehow becomes two, the second user's entry affects the first (existing) user since the first user can benefit from contacting the second user of the network. Thus, the network has the feature of "externality" of new users' affecting existing users.

However, market competition requires that the cost should be equal to the price. In the extreme case of "zero users", there would be no one to start using the network, since the benefit for the first user of the network is, as mentioned above, zero (no telecommunication is possible with others).

UNCTAD (2004: 138) addresses effects on supply and costs in host economies and reports that the availability and performance of telecommunication services after large-scale foreign entry lead to improved and more competitive provision of services owing to better firm performance. An enhanced degree of trade in telecommunication services will improve service provision not only within ASEAN but also within the broader region (such as the RCEP) as a spillover of market externality. Although concrete cost calculation may be difficult, there is surely a need for government intervention, in the form of subsidies, to encourage potential users to use the network and also to merge existing smaller-scale networks, so as to capture a larger degree of network externally.

Higher pricing of international roaming charges makes capturing this externality difficult in practice. In 2011, the World Bank and the ITU pointed out that there are much higher roaming charges than termination charges within home areas (2011: 138). Users of foreign telecommunication services

Figure 3. **Illustration of network externality**



Source: Adapted from Frontier Economics (2005).

often have to pay one month's fee plus other usage charges to be able to roam; the combination of these fees can be quite expensive.[8] ASEAN has a goal of reducing international roaming charge significantly by 2020. Concrete policy measures should be honed to make this happen. ASEAN-wide collaborator efforts are especially important for capturing ASEAN-wide network externalities.

In the context of growing market potential and network externality across the ASEAN region, it would be beneficial for ASEAN to consider integrating the telecommunication services sector into the economy by promoting relevant trade in services. With a view to assessing market integration, following are overviews of the domestic market and regulatory structure of each of the ASEAN Member States.

[8] For roaming to be possible, the user's handset must be compatible with the host's network. It is also worth pointing out that if the home operator and host operator use different technologies, roaming can be accomplished only by using a different handset when in the host operator's coverage area. This can be expensive as well as cumbersome. And even when network technologies are compatible, international roaming cannot occur until the operators have agreed on the terms and conditions for accepting each other's roaming traffic (World Bank and ITU, 2011).

Brunei Darussalam:[9] Growth in total mobile subscribers had generally slowed in recent years as customers moved to opt for mobile broadband. The fixed-line segment has been completely overwhelmed by the emergence of the strong mobile segment. Despite the overall positive situation, if the country is to maintain the pace required to be globally competitive, it must further restructure and generally liberalize the local telecommunication industry. Brunei's telecommunication regulator, the Authority for Info-communications Technology Industry (AITI), was established in 2003. Although seen as a positive step, the creation of a new regulator has not accelerated full-scale telecommunication reform. As for the internet, the market, both fixed and mobile, is expanding rapidly. Broadband services subscriptions constitute 99 per cent of all internet subscriptions in 2015.

Cambodia:[10] The Telecommunication Regulator of Cambodia (TRC) was established in 2012. The TRC has the authority to inspect and oversee the telecommunication and information technology sectors. The TRC will aim to strengthen existing laws, while introducing new rules and regulations to keep pace with the dynamic nature of technologies, as well as to ensure a fair and transparent environment. In Cambodia, net customer losses as a result of inactive accounts are a common occurrence, as subscriber bases are primarily composed of low-value prepaid subscriptions and further affected by the high number of operators and fierce price competition. As for the internet, the wireline market has been providing investment opportunities for several major foreign investors including Viet Nam's Viettel, and a large number of service providers have emerged, offering internet access via a range of technologies.

Indonesia:[11] Telecommunication services are offered through fixed and mobile communication networks separately. The fixed communications segment primarily includes fixed line telephone and fixed broadband services. Mobile communications dominates the telecommunication industry in Indonesia, with fixed communications constituting a fragment of the market. Fixed communication services is giving way to mobile telephone and mobile broadband services. This can largely be attributed to relatively high charges for fixed communication services in Indonesia. The lack of portability and user personalization of fixed line telephones vis-à-vis mobile phones have contributed to the decline in the former's industry share.

As for the internet services, commercial internet services were launched in Indonesia in 1995. Currently, Indonesia's internet service provider market is dominated by three large telecommunication operators: Telkomsel (Indonesia) (subsidiary of Telkom Indonesia (Indonesia)), Indosat (Indonesia) (both controlled by the Indonesian government) and XL Axiata (Indonesia), a private player. ISPs offer internet access through an array of technologies, including DSL, fiber optic lines and mobile broadband. Telkom Indonesia owns the domestic fixed line infrastructure for internet services, whereas Indosat controls international gateways. Smaller ISPs providing wired connections to customers use Telkom Indonesia's ADSL network infrastructure.

Lao People's Democratic Republic:[12] Previously, the industry had been regulated by the communications, post, transport and construction ministry (MCTPC). The government put in place a new telecommunication regulator, the National Post and Telecommunications Authority (NPTA) in 2007. The Department of Post and Telecommunications plays a role as policymaker. Competition among Laotian mobile operators remains intense, although the Government stepped in to prevent further intensification by controlling mobile tariff rates and disallowed free-airtime promotions

9 https://www.kenresearch.com/technology-and-telecom/telecommunications-and-networking/brunei-darussalam-telecoms-mobile-broadband/4919-105.html.

10 https://www.kenresearch.com/technology-and-telecom/telecommunications-and-networking/brunei-darussalam-telecoms-mobile-broadband/4919-105.html.

11 Information provided by the database SPEEDA.

12 https://www.kenresearch.com/technology-and-telecom/telecommunications-and-networking/brunei-darussalam-telecoms-mobile-broadband/4919-105.html.

to subscribers. As for the internet, broadband subscriptions are costly, which would hinder the prospect of it achieving a mass market status in the short term. However, the introduction of mobile broadband technologies such as WiMAX and LTE serve well for increasing the penetration rate as expanding into rural regions would be cheaper for telecommunication companies.

Malaysia:[13] The usage of fixed-line telephones, represented as direct exchange lines (DELs), has been declining with the increased usage of mobile phones. Malaysia's fixed communications industry is largely concentrated in urban areas. Public switched telephone network (PSTN) and integrated services digital network (ISDN) are the main modes of communication used to provide fixed-line telephone services in Malaysia. The growth in mobile phone ownership over the last few years was largely driven by rising consumer affluence and declining mobile handset prices, coupled with intense competition among the country's three largest mobile operators: Maxis (MYS), Celcom Axiata (MYS) and Digi.com (MYS).

As for the internet, the service is available through multiple technologies, with broadband being most prominent. The broadband market is currently supported by internet service providers (ISPs) that offer subscribers both wired and wireless access to the internet. ISPs providing wired connectivity utilize a variety of digital subscriber line (ADSL, SDSL, VDSL) and other fixed-broadband technologies. Telekom Malaysia, which is about 30 per cent owned by the Government, is Malaysia's largest fixed-broadband provider. High mobile and smartphone penetration, coupled with affordable data packages, have resulted in an increasing number of Malaysians accessing the internet through smartphones, tablets and other handheld devices.

Myanmar:[14] The first two private operators, Ooredoo and Telenor, were launched in 2014. Both launches were met with high levels of demand, outstripping the supply of available SIM cards and leading to a number of them being sold on the black market before being activated. The mobile market consists of Ooredoo, Telenor and MPT in collaboration with KDDI and Sumitomo Corporation. In July 2015, the Government invited companies to bid for the fourth operator's license in the country. As for the internet, Myanmar's market is set to perform well in the long run as liberalization continues to gain traction. However, attainment of short-run prospects is being hampered by the time needed to expand and upgrade the networks. In addition, although prices for ADSL services have started to decline, the total cost of ownership is still prohibitively high.

Philippines:[15] The higher penetration of fixed-line broadband services compared with that of voice subscriptions is largely attributed to the growing demand for corporate internet services in the Philippines, primarily from the emerging business process outsourcing sector. Critical telecommunication reforms by the Filipino Government during the past years have seen the industry expand from a high-priced inefficient monopoly to a competitive, cost-effective provider of telecommunication services for a broader reach of customers. The introduction of the Telecommunications Act in 1995 paved the way to dismantling the industry monopoly held by the Philippines Long Distance Telephone Company (PLDT) over decades, to open up the industry to other private telecommunication entities.

As for the internet, the market is duopolistic, led by PLDT and Globe Telecom; in addition, nearly 200 small ISPs were operating as of 2015. In the fixed communication market, PLDT is Globe Telecom's main competitor, while in the mobile market, Smart Communications and Sun Cellular, both subsidiaries of PLDT, are direct competitors.

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13 Information provided by the database SPEEDA.
14 https://www.kenresearch.com/technology-and-telecom/telecommunications-and-networking/brunei-darussalam-telecoms-mobile-broadband/4919-105.html.
15 Information provided by the database SPEEDA.

Singapore:[16] The telecommunication industry has been liberalized since 2000, paving the path for the private sector to flourish with a host of new operators entering the market, including global service providers such as AT&T (United States) and Deutsche Telekom (Germany). Currently, the country has more than 500 service-based operators and over 50 facilities-based operators. The telecommunication industry is regulated and governed by Infocomm Development Authority of Singapore under the Telecommunications Act of 2002. However, the Government's private investment arm, Temasek Holdings (Pte) Ltd, holds at least 20 per cent or more ownership of some telecommunication operators. Internet services are provided through wired and wireless lines. ISPs that provide wired internet connectivity use a variety of DSL technologies, as well as cable modems, leased lines and optical fiber lines. In contrast, wireless connectivity can be obtained through broadband or wireless hotspots.

Thailand:[17] Fixed communications dominated Thailand's telecommunication industry, but their share is declining with the advent of mobile communication services as mobile phones provide the benefits of portability and cost-efficiency. The telecommunication industry is dominated by State-owned entities, while private players operate through licenses. As for the internet, in the absence of an independent regulator, the Communication Authority of Thailand (CAT) acted as a license-granting body in addition to being an industry player. When the CAT was the controlling authority, its licensing practice required ISPs to allocate 35 per cent of their shares to the CAT. This monopolistic practice hindered other companies from entering the ISP market. However, with the establishment in 2004 of an independent regulator, the National Telecommunication Commission, the commission began to control licensing under the Organisation to Assign Radio Frequency and to Regulate the Broadcasting and Telecommunications Services Act B.E. 2553 (2010) and the Telecommunication Business Act B.E. 2544 (2001), thereby enabling free-market competition.

Viet Nam:[18] The telecommunication industry largely focuses on developing wireless infrastructure across 2G and 3G networks. The advent of mobile networks has led to a decline in share for fixed communications. State-owned companies such as the Vietnam Posts and Telecommunications Group (VNPT) and Viettel, which are major players in the segment, are currently incurring significant losses in fixed-line telephone services. As for the internet, Government-controlled organizations dominate Viet Nam's internet services market: VNPT, Viettel and FPT Telecom controlled more than 96.4 per cent in 2013. Whereas VNPT and Viettel (under the Ministry of Defense) are wholly owned by the Government, FPT Telecom is a private company in which the State holds a 6 per cent stake as a requirement for being granted a license to build network infrastructure. Furthermore, most of the other internet service providers operating in Viet Nam are directly or indirectly controlled by the Government.

As indicated above, each of the ASEAN Member States is in the middle of transition from a monopolistic to a competition-based market in the telecommunication sector, with rather domestically oriented reform (i.e. not focused on attracting international service suppliers). To capture the ASEAN-wide network externality, therefore, each needs to allow market penetration by suppliers from other ASEAN Member States.

It is worthwhile to consider the issue of why and when regulation is needed in the first place. Figure 4 depicts the transition point of the need for regulation. Stage 1 (public monopoly) is usually the starting point, as the supply of telecommunication services requires large-scale facilities (i.e. cables, lines, satellites and so forth) that are beyond the capacity of private companies. At this stage, regulation could be limited because the government itself is the operator of telecommunication services.

16 Information provided by the database SPEEDA.
17 Information provided by the database SPEEDA.
18 Information provided by the database SPEEDA.

Stage 2 (private monopoly) requires regulation since the private sector, while seeking efficiency and profit, needs guidelines for operation. Stage 3 (partial competition) needs an enhanced level of regulation to ensure private sector contestability. Stage 4 (full competition) needs deregulation to ensure the "self-regulation" of market forces (or efficient price formation without market failure); trade liberalization should be implemented at this stage. Then, the impact of liberalizing trade in telecommunication services could be addressed in this context.

Figure 4. **Transition of need for regulation**

(1) Public Monopoly: Limited regulation because government is the sole monopoly operator and the regulator itself

⇩

(2) Private Monopoly: Increase in regulation because the private operator needs to know its rights and obligations and the government needs a regulatory framework to facilitate oversight of the monopoly operator

⇩

(3) Partial Competition: Greater need for regulation as regulator must implement tools to foster and sustain a new competitive market

⇩

(4) Full Competition: Decrease in regulation as competitive market largely regulates itself, representing a shift to ex-post regulation

Source: Adapted from World Bank and ITU (2011), figure 1.3.

VI. POLICY RECOMMENDATIONS AND PROMOTION MEASURES FOR TRADE IN TELECOMMUNICATION SERVICES

1. General policy suggestions

As mentioned in the first section, telecommunication services have a wide-ranging impact on the value added along the value chain curve (figure 1), in the sense of facilitating domestic and international communications. In many cases, service regulations aim at redressing market failures and achieving legitimate non-trade policy objectives such as national security. As long as those objectives are attainable, regulators should consider deregulating the telecommunication service market internationally, in order to secure market contestability.

The following three major themes were identified by the ASEAN Telecommunications Regulators' Council as priority areas for their work program: (1) competition management and interconnection, (2) convergence and licensing of existing and new services, and (3) tackling the digital divide through capacity building and universal service and/or access schemes (Shogren et al., 2005).

All these emerging issues stemmed from the same origins: market liberalization and technology advancement. Removing regulations created under the state-monopoly era and evolving into an open market at the same time is quite important. A general policy for promoting trade in telecommunication services in ASEAN could be suggested in these three areas (Shogren et al., 2005).

Competition management and interconnection. Making the regulatory institutions at the ASEAN Secretariat robust will be essential in order to capture additional network externalities. As the telecommunication market is being liberalized for trade, ASEAN Member States should ensure that there is an independent, well-functioning regulatory body. Singapore, Malaysia and the Philippines are faring rather well in this respect. However, there is a tendency toward effectively preventing small telecommunication operators from competing for trade and market accessibility for new operators is sometimes quite difficult. This situation needs to be remedied by technology-neutral and size-neutral telecommunication policy.

Convergence and licensing of existing and new services. Continuing liberalization of telecommunication service markets will be indispensable. Of course, AFAS-based regulations in the ASEAN Member States would never converge perfectly; yet continuous efforts should be made to reduce market access barriers while maintaining a technology-neutral and pro-competitive market condition ready for embracing new services.

Tackling the digital divide through capacity building and universal service and/or access schemes. Exposure to telecommunication services is an important policy priority. Public-private partnerships would be a feasible option given the network eternality that telecommunication services have, as emphasized in this paper. And a successful universal telecommunication service is closely related to the choice of industry-wide funding mechanism (Shogren et al., 2005).

At the international level, cooperation with other countries, particularly with dialogue partners, is required in the area of ICT. ASEAN's 15th TELMIN (in November 2016) was the occasion for further deepening the cooperation with ASEAN's dialogue partners (including Japan) to enhance ICT policies, develop human resources, explore emerging technologies for adoption, and improve the capacity to address cybersecurity risks in the implementation of AIM 2020. Paragraph 13 of the ministerial statement states: "The Ministers expressed their appreciation to Japan for her assistance in various areas of cooperation in 2016, including the 'ASEAN Smart Network'. The Ministers endorsed the 2017 ASEAN-Japan ICT Work Plan which supports the implementation of the ASEAN ICT Master Plan 2020 (AIM2020). The Ministers agreed to hold several activities under the ASEAN-Japan ICT Fund including policy symposium to discuss ICT policy on the IoT and ICT for public safety. The Ministers expressed their appreciation to Japan for the contribution of USD 100,000.00 to the ASEAN-Japan ICT Fund this year".

ASEAN has collaborative activities with other dialogue and development partners.[19] It is imperative for ASEAN and its partners to join collaborative efforts for capturing network externality. ASEAN

[19] For instance, paragraph 15 of the declaration of the ASEAN Telecommunications Ministers Meeting (TELMIN) states: "The Ministers acknowledged the Republic of Korea for having successfully implemented a series of cooperative activities in 2016, among others: expansion of new technology and services, capacity building and knowledge sharing, ICT infrastructure enhancement, as well as cooperation with international organizations on AP-IS broadband development, women empowerment through ICT, and development of mobile applications." As for collaboration with the European Union (EU), paragraph 17 states: "The Ministers welcomed the endorsement of the 2017 ASEAN-EU ICT Work during the 9th TELSOM+EU meeting, to further extend cooperation on sectors of mutual interest that are targeted in both the ASEAN ICT Masterplan 2020 and the EU Digital Single Market initiative. The Ministers further welcomed the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI) starting early 2017 that will support cooperation, including in ICT." And with the United States, paragraph 18 says: "The Ministers noted the convening of the 2nd TELSOM+U.S. meeting and appreciated the United States' assistance in the successful conclusion of ICT-related activities on spectrum management, cybersecurity, and e-commerce and telecommunication commitments in high-standards trade agreements." All these collaborative activities should be coordinated with one another to enhance their effectiveness.

and the World Bank (2015: 130) indicate that these sectoral initiatives go outside the coverage of the AFAS work insofar as they do not seek to liberalize services per se, but rather focus on cooperation measures that may assist the process of integration. Cooperation initiatives have focused largely on infrastructure issues such as promoting connectivity, enhancing dialogue and increasing domestic capacity.

From the perspective of network externality, the supply of telecommunication services in ASEAN should be managed by the ASEAN-wide coordinating body. Thus, the ASEAN Telecommunications and Information Technology Ministers Meeting (TELMIN) and the ASEAN Telecommunications Senior Officials Meeting (TELSOM[20]) are surely the central organs for implementing promotional measures for telecommunication services.

ASEAN efforts at the regional and international levels should be complemented by the efforts of individual Member States. Country efforts should aim at strengthening the legal and regulatory framework and providing affordable ICT infrastructure and services. The latter includes access to reliable and affordable services, which requires constant improvements in infrastructure accompanied by competent and effective regulation of telecommunication markets. In the former, implementing and enforcing relevant laws and regulations related to ICT is of utmost importance to encourage transparency and eventually reduce transaction costs. For example, in e-commerce business, according to UNCTAD (2015: 65), in the four areas of e-transaction laws, consumer protection laws, data protection and privacy laws, and cybercrime laws, ASEAN countries lag behind developed countries, particularly in data protection and privacy laws.[21]

Digital dividends, or developmental benefits from using digital technologies, are enormous but unevenly distributed. This is not due to any lack of greater digital adoption but to the remaining digital divide. Countries need to work on the "analogue complements" by strengthening regulations that ensure competition, adapting workers' skills to the demands of the new economy and ensuring that institutions are accountable (World Bank, 2016).

[20] In more detail, TELSOM has the following functions: achieving the interoperability and interconnectivity of national information infrastructures of Member States by 2010, and developing and implementing an ASEAN Plan of Action on Regional Broadband Interconnectivity and intensifying cooperation in ensuring seamless roaming of telecommunication services (i.e. wireless communications) within the region, as well as in facilitating intra-ASEAN trade in telecommunication equipment and services. On the basis of the Plan, it is hoped that TELSOM, with the help of the ASEAN Secretariat, will act as an executive body to supervise, coordinate and implement policies, programs and activities for telecommunication and information technology (IT) cooperation in ASEAN, in line with the directions and priorities set by TELMIN. TELSOM's mandate is to identify, implement and monitor cooperation programs and activities to meet the telecommunication and IT requirements of the ASEAN region; to serve as a forum for exchange of information, discussion and consultation on major regional or international issues and developments in telecommunication and IT of common interest to Member States; to provide the mechanism to promote participation of the private sector, regional and/or international organizations and non-governmental organizations in the development and implementation of its programs and activities; to establish, as and when necessary, working groups and/or expert groups to assist in the development and implementation of its cooperative programs and activities; to report progress to TELMIN; and to carry out other activities that may be mandated by TELMIN or requested by other relevant ASEAN bodies. To this end, TELSOM coordinates with the ASEAN Telecommunication Regulators' Council, the e-ASEAN Business Council and ASEAN Dialogue Partners (http://nitc.kkmm.gov.my/index.php/international-linkages/asean-telecommunications-senior-officials-meeting-telsom).

[21] The share of countries with legislation related to privacy and data protection is 55 per cent for ASEAN, compared with 98 per cent for developed countries (UNCTAD, 2015: 65).

2. Workable policy suggestions

As for workable policy suggestions, trade in telecommunication services per se might not be the right focus since the sector necessarily involves large-scale physical facilities. Indeed, lack of capital investment remains a persistent problem in most of the ASEAN Member States. In the formulation of workable promotional measures, it would be better to combine the telecommunication services (larger-scale) and computer services (smaller-scale, addressed in a separate paper) under the umbrella of "information and communication technology (ICT)". (For workable promotional measures for the ICT services, refer to the separately prepared paper on computer and related services.)

For the telecommunication services sector, be it alone in its business or an integral part of other businesses, not only should further liberalization should continue, but also further effort for market regulations is required to ensure network externality.

Telecommunication services are required for everyone not only to communicate but also to use as one of the basic services for any personal or business purposes. All countries have their own strategic policies on this service in addition to their overall commitment to the regional initiatives (e.g. AFAS, AIM 2020).

Some concrete recommendations for the telecommunication services sector only would be to hold capacity-building and information-sharing seminars on expanding telecommunication services, addressing the issue areas discussed in the previous section on general policy suggestions. Especially because no systematic statistical collection is made, particularly in Mode 3 which is already much used, a definition of trade in telecommunication services in this mode and relevant data collection should be undertaken. This should first take the form of holding seminars and later the form of implementing related projects. Interconnection fees are the barriers to capturing network externalities.

Rental of mobile phones abroad would be considered Mode 2 trade, as mentioned earlier. This mode of trade could be undertaken while retaining the country-specific telephone numbers originally assigned to users; then lower international roaming charges should be charged to those users. Some sort of mutual agreement to reduce the roaming charges could therefore be discussed. Mode 4, as mentioned earlier, is not technically feasible. This being the case, it would still be worthwhile to hold seminars concerning what sort of technology might become available for self-employed professional suppliers of telecommunication-related services in the forthcoming "ubiquitous society". These seminars could be organized by regional organizations such as the ASEAN-Japan Centre as a follow-up project, since ASEAN's telecommunication network, given its network externalities, should involve the region beyond ASEAN and surely spill over to ASEAN's dialogue partners (including Japan) through pan-ASEAN group such as RCEP.

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Annex A. **Fifty large foreign affiliates engaged in telecommunication services in ASEAN, 2015** (continued)

	Name of foreign affiliates	Host country	Estimated sales ($ million)	Name of parent firms	Home country
1	Binariang GSM Sdn Bhd	Malaysia	6 008	Saudi Telecom Co	Saudi Arabia
2	Philippine Long Distance Telephone Co (PLDT)	Philippines	5 791	NTT Docomo Inc	Japan
3	Google Asia Pacific Pte. Ltd.	Singapore	5 095	Alphabet Inc	United States
4	Indosat Tbk PT	Indonesia	3 513	Qatar Telecom QSC (Qtel)	Qatar
5	Telekom Malaysia Bhd	Malaysia	3 111	Temasek Holdings (Pte) Ltd	Singapore
6	True Corp PCL	Thailand	3 008	True Corp PCL	Hong Kong
7	Globe Telecom Inc	Philippines	2 544	Singapore Telecommunications Ltd	Singapore
8	Total Access Communication Public Company Limited	Thailand	2 432	Telenor ASA	Norway
9	Philippine Long Distance Telephone Co (PLDT)	Philippines	2 398	Investor Group	Hong Kong
10	Advanced Info Service PCL	Thailand	2 261	Investor Group	Singapore
11	NTT Singapore Pte Ltd	Singapore	2 219	NTT Communications Corporation	Japan
12	Digi Telecommunications Sdn Bhd	Malaysia	2 008	Telenor ASA	Norway
13	PT Indosat TBK	Indonesia	1 944	Ooredoo QSC	Qatar
14	StarHub Ltd	Singapore	1 728	NTT Communications Corporation	Japan
15	Saudi Telecom Co SJSC	Indonesia[a]	1 704	Axis Telekom Indonesia PT	Indonesia[a]
16	XL Axiata TBK	Indonesia	1 662	Axiata Group Bhd	Malaysia
17	Digi.Com Bhd	Malaysia	1 611	Telenor ASA	Norway
18	Asia Mobile Holdings Pte Ltd	Singapore	1 251	Qatar Telecom QSC (Qtel)	Qatar
19	Excelcomindo Pratama Tbk PT	Indonesia	1 244	TM International Sdn Bhd	Malaysia
20	Indosat Tbk PT- Telecomunication Towers (12000)	Indonesia[a]	1 022	PT Tower Bersama Infrastructure Tbk	Indonesia[a]
21	Hutchison CP Telecommunication PT-Certain Assets	Indonesia[a]	985	Profesional Telekomunikasi Indonesia PT	Indonesia[a]
22	Globe Telecom Inc	Philippines	949	Singapore Telecom International Pte Ltd	Singapore
23	MobileOne Ltd	Singapore	908	SunShare Investments Ltd	Malaysia
24	Axiata Group Bhd	Indonesia[a]	905	PT Tower Bersama Infrastructure Tbk	Indonesia[a]
25	M1 Limited	Singapore	818	Standard Chartered Plc	United Kingdom
26	Excelcomindo Pratama Tbk PT	Indonesia	745	Emirates Telecommunications Corp	United Arab Emirates
27	Millicom International Cellular SA-Cambodia Assets	Cambodia[a]	682	Royal Group of Cos Ltd	Cambodia[a]
28	Shin Corp PCL	Thailand	668	Investor Group	Singapore
29	Brightpoint Singapore Pte Ltd	Singapore	629	Ingram Micro Inc	United States

Annex A. **Fifty large foreign affiliates engaged in telecommunication services in ASEAN, 2015** (concluded)

	Name of foreign affiliates	Host country	Estimated sales ($ million)	Name of parent firms	Home country
30	Mitra Global Telekommunikasi Indonesia	Indonesia[a]	524	Alberta Telecommunication PT	Indonesia[a]
31	Trikomsel Oke Tbk PT	Indonesia	481	Canopus Finance Ltd	Virgin Islands (British)
32	Sea Consortium Private Limited	Singapore	480	X-press Feeders Ltd	Virgin Islands (British)
33	Shenington Investments Pte Ltd	Singapore[a]	417	Asia Mobile Holdings Pte Ltd	Singapor[a]
34	Innove Communications, Inc	Philippines	402	Singapore Telecommunications Ltd	Singapore
35	GTEL Mobile JSC	Viet Nam	386	VimpelCom Ltd	Netherlands
36	Excelcomindo Pratama PT	Indonesia	335	TM International Sdn Bhd	Malaysia
37	Excelcomindo Pratama PT	Indonesia	310	Nynex Indocel Holding Sdu	Malaysia
38	Samart I-Mobile PCL	Thailand	308	TM International Sdn Bhd	Malaysia
39	Latelz Co Ltd	Cambodia[a]	305	Hello Axiata Co Ltd	Cambodia[a]
40	Nera Telecommunications Ltd	Singapore	296	Asia Systems Ltd	Singapore
41	Upper Mobile Ltd	Philippines	284	MonsterMob Group PLC	United Kingdom
42	Yahoo! Asia Pacific Pte Ltd	Singapore	277	Yahoo! Inc	United States
43	Natrindo Telepon Seluler PT	Indonesia	244	Althem BV	Virgin Islands (British)
44	Cyber Access Communications PT	Indonesia	236	Hutchison Telecommunications International (Netherlands) BV	Netherlands
45	Ericsson Telecommunications Pte Ltd	Singapore	222	Telefonaktiebolaget LM Ericsson	Sweden
46	Natrindo Telepon Seluler PT	Indonesia	197	East Asia Communications NV	Netherlands
47	PT Link Net TBK	Indonesia	186	AcrossAsia Ltd	Cayman Islands
48	Millicom Holdings Laos BV	Lao People's Democratic Republic	173	OAO "Vympel-Kommunikatsii" (Vimpelkom)	Russian Federation
49	Bayan Telecommunications, Inc	Philippines	136	Singapore Telecommunications Ltd	Singapore
50	Pacnet Global Corporation (S) Pte Ltd	Singapore	133	Telstra Corp Ltd	Saudi Arabia

Source: AJC, based on data from Toyo Keizai Shimposha, UNCTAD, Thomson Reuters and fDi Markets.

Note: These 50 firms are not necessarily the largest. They are provided for illustrative purposes. Sales are estimated in the following manner: First the ratio of sales to size of foreign affiliates (investment value, capital size, employment size, etc.) is calculated for available foreign affiliates in each ASEAN host economy; second, this ratio is applied to the affiliates whose size is available from the sources given; and third, some adjustment was made to eliminate unreasonable estimates by searching information on the affiliates in question. Nevertheless there are likely to be some, sometimes large, errors, and readers should use these data with utmost caution.

[a] Immediate investing country is different.

Annex B. **Fifty large ASEAN affiliates abroad engaged in telecommunication services, 2015** (continued)

	Name of ASEAN affiliate abroad	Host country	Estimated sales ($ million)	Name of ASEAN investing company	ASEAN home country
1	Bharti Airtel Ltd	Indonesia	14 566	Singapore Telecommunications Ltd	Singapore
2	Advanced Info Service PCL	Thailand	4 315	Singapore Telecommunications Ltd	Singapore
3	Telekom Malaysia Bhd	Malaysia	3 111	Temasek Holdings (Pte) Ltd	Singapore
4	Global Crossing Ltd	Bermuda	3 028	Singapore Technologies Telemedia Pte Ltd	Singapore
5	Telkomsel, PT (Telekomunikasi Selular)	Indonesia	2 906	Singapore Telecommunications Ltd	Singapore
6	Globe Telecom Inc	Philippines	2 589	Singapore Telecommunications Ltd	Singapore
7	Advanced Info Service PCL	Thailand	2 261	Investor Group	Singapore
8	Globe Telecom Inc	Philippines	1 847	Singapore Telecom International Pte Ltd	Singapore
9	Bharti Infratel Ltd	India	1 700	Investor Group	Singapore
10	Idea Cellular Ltd	India	1 685	TM International Bhd	Malaysia
11	Saudi Telecom Co SJSC	Indonesia[a]	1 471	Axis Telekom Indonesia PT	Indonesia[a]
12	Aircel Ltd	India	1 360	Investor Group	Malaysia
13	Warid Telecom (Pvt) Ltd	Pakistan	1 289	Singapore Telecommunications Ltd	Singapore
14	Excelcomindo Pratama Tbk PT	Indonesia	1 244	TM International Sdn Bhd	Malaysia
15	AriaWest International PT (MediaOne International BV,2 oth)	Indonesia[a]	790	Telekomunikasi Indonesia Tbk PT (Telkom)	Indonesia[a]
16	Axiata Group Bhd	Indonesia[a]	781	XL Axiata Tbk PT-Telecoms Towers (7000)	Indonesia[a]
17	Shin Corp PCL	Thailand	668	Investor Group	Singapore
18	Dialog Axiata Plc	Sri Lanka	513	Axiata Investments (Labuan) Limited	Malaysia
19	Aircel Ltd	India	477	Maxis Communications Bhd	Malaysia
20	Mitra Global Telekommunikasi Indonesia	Indonesia[a]	452	Alberta Telecommunication PT	Indonesia[a]
21	Sri Lanka Telecom Plc	Sri Lanka	379	Usaha Tegas Sdn Bhd	Malaysia
22	Shenington Investments Pte Ltd	Singapore[a]	360	Asia Mobile Holdings Pte Ltd	Singapore[a]
23	Microcell Oy	Finland	340	Flextronics International Ltd	Singapore
24	Nera Telecommunications Ltd	Singapore[a]	296	Asia Systems Ltd	Singapore[a]
25	Spice Communiations Ltd [MERGED]	Indonesia	329	Axiata Group Berhad	Malaysia
26	Samart I-Mobile PCL	Thailand	308	TM International Sdn Bhd	Malaysia
27	Equinix Inc	United States	164	Temasek Holdings (Pte) Ltd	Singapore
28	APT Satellite Holdings Ltd	Bermuda	162	Singapore Telecommunications Ltd	Singapore
29	Spice Communications Ltd	India	140	TM International Sdn Bhd	Malaysia

Annex B. **Fifty large ASEAN affiliates abroad engaged in telecommunication services, 2015** (concluded)

	Name of ASEAN affiliate abroad	Host country	Estimated sales ($ million)	Name of ASEAN investing company	ASEAN home country
30	China Satellite Mobile Communications Group Ltd	Hong Kong	121	Armarda Group Ltd	Singapore
31	--	Australia	80	Optus	Singapore
32	China Unifiednet Holdings Ltd	China	64	Next-Generation Satellite Communications Ltd	Singapore
33	MediaRing Ltd	Singapore[a]	54	Venture One Finance Ltd	Singapore[a]
34	Cambodia Samart Communication Co Ltd	Cambodia	49	TM International Sdn Bhd	Malaysia
35	--	Peru	44	Viettel	Viet Nam
36	Uecomm Pty Ltd	Australia	44	Singapore Telecommunications Ltd	Singapore
37	Redtone International Bhd	Malaysia	43	Berjaya Philippines Inc.	Philippines
38	--	Australia	40	SingTel Optus	Singapore
39	NewSat Ltd	Australia	38	Ching Chiat Kwong	Singapore
40	Multi Skies Nusantra Ltd	Hong Kong	37	Telemedia Pacific Communications Pte Ltd	Singapore
41	Singtel (Europe) Ltd	United Kingdom	32	Singapore Telecommunications Ltd	Singapore
42	--	Viet Nam	30	Nextnation	Malaysia
43	Wisdom Choice Investments Ltd	China	28	GMO Ltd	Malaysia
44	--	Israel	25	SingTel (Singapore Telecommunications)	Singapore
45	--	Malaysia	24	Pacnet International	Singapore
46	Singapore Telecom Japan Co, Ltd	Japan	22	Singapore Telecommunications Ltd	Singapore
47	MTK Wireless Ltd	United Kingdom	21	Mediatek Singapore Pte. Ltd.	Singapore
48	Rekajasa Akses PT	Indonesia	21	Capital Managers Asia Pte Ltd	Singapore
49	Singapore Telecom Korea Ltd	Korea	21	Singapore Telecommunications Ltd	Singapore
50	--	Australia	19	Optus	Singapore

Source: AJC, based on data from Toyo Keizai Shimposha, UNCTAD, Thomson Reuters and fDiMarkets.

Note: These 50 firms are not necessarily the largest. They are provided for illustrative purposes. Sales are estimated in the following manner: First the ratio of sales to size of foreign affiliates (investment value, capital size, employment size, etc.) is calculated for available foreign affiliates in each ASEAN host economy; second, this ratio is applied to the affiliates whose size is available from the sources given; and third, some adjustment was made to eliminate unreasonable estimates by searching information on the affiliates in question. Nevertheless there are likely to be some, sometimes large, errors, and readers should use these data with utmost caution.

[a] Immediate investing country is different.

ANNEX C.

SPECIFIC SCHEDULE OF COMMITMENTS FOR "TELECOMMUNICATION SERVICES" UNDER AFAS (9^{TH} PACKAGE, SIGNED IN NOVEMBER 2015) BY ASEAN MEMBERS

Legend for this annex:

(1) means mode 1 (cross-border supply of services); (2) means mode 2 (consumption abroad); (3) means mode 3 (commercial presence); (4) means mode 4 (movement of natural persons).

The meaning of the alphabetical classification in the right hand column of each specific commitment table is as follows.

N: none (no restriction)

A: limitations on the number of service suppliers whether in the form of numerical quotas, monopolies, exclusive service suppliers or the requirements of an economic needs test;

B: limitations on the total value of service transactions or assets in the form of numerical quotas or the requirement of an economic needs test;

C: limitations on the total number of service operations or on the total quantity of service output expressed in terms of designated numerical units in the form of quotas or the requirement of an economic needs test;[22]

D: limitations on the total number of natural persons that may be employed in a particular service sector or that a service supplier may employ and who are necessary for, and directly related to, the supply of a specific service in the form of numerical quotas or the requirement of an economic needs test;

E: measures which restrict or require specific types of legal entity or joint venture through which a service supplier may supply a service; and

F: limitations on the participation of foreign capital in terms of maximum percentage limit on foreign shareholding or the total value of individual or aggregate foreign investment" (Part III: Specific Commitments, Article XVI: Market Access, subparagraph 2).

Under AFAS, the restriction types A, B and C are actually not used by the ASEAN member states in the sector "Telecommunication Services". In addition to these six types of market-access restrictions, the following two restrictions are observed.

G: Government approval requirement; and

H: Tax or fee payment requirement.

[22] Subparagraph 2(c) does not cover measures of a Member which limit inputs for the supply of services.

Brunei Darussalam

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT	Additional Commitments
Voice Telephone Services (CPC 7521)	(1) Subject to commercial arrangements with licensed operator(s) (2) Subject to commercial arrangements with licensed operator(s) (3) None	(1) E (2) E (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Circuit - switched data transmission services (7523**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Packet- switched data transmission services (7523**)	(1) None (2) None (3) Only through locally incorporated JV corporation with Brunei Darussalaman individuals or Brunei Darussalaman controlled corporations; Foreign equity participation should not exceed 70%	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Telex services (CPC7523**) Telegraph services (CPC7522**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None, except as indicated in the horizontal section	(1) N (2) N (3) None, except as indicated in the horizontal section	
Facsimile services (7521** + 7529**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Private leased circuit services (CPC 7522**+7523**)	(1) None (2) None (3) Foreign equity participation should not exceed 70%	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Electronic mail (7523**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Voice Mail (7523**)	(1) Subject to commercial arrangements with licensed operator(s) (2) None (3) None	(1) E (2) N (3) N	(1) None (2) None (3) None, except as indicated in the horizontal section	(1) N (2) N (3) None, except as indicated in the horizontal section	
On-line information and database retrieval (7523**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Electronic data interchange (EDI) (7523**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Enhanced/value-added facsimile services, including store and forward and retrieve (7523**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	

Code and Protocol Conversion	(1) None (2) None (3) Only through locally incorporated JV corporation with Brunei Darussalaman individuals or Brunei Darussalaman controlled corporations. Foreign equity participation should not exceed 70%.	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Online Information and Data Processing (incl transaction processing) (CPC 843*)	(1) None (2) None (3) Only through locally incorporated JV corporation with Brunei Darussalaman individuals or Brunei Darussalaman controlled corporations	(1) N (2) N (3) E	(1) None (2) None (3) None	(1) N (2) N (3) N	
Public Non-Fixed*	(1) None, except subject to commercial arrangements with licensed operator(s).* (2) None, except subject to commercial arrangements with licensed operator(s) (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None, except as indicated in horizontal section	(1) N (2) N (3) N	This offer is based on the new licensing regime under the new Telecommunications Order 2001. This offer is for reselling of services using infrastructure owned by an AITI licensee as per the new licensing framework of the regulatory authority under Telecommunications Order 2001.
Local Services Public Switched Voice Telephone Services	(1) Subject to commercial arrangements with licensed operator(s) (2) None (3) None	(1) E (2) N (3) N	(1) None (2) None (3) None, except as indicated in the horizontal section	(1) N (2) N (3) N	
Public payphone services*	(1) None, except subject to commercial arrangements with licensed operator(s) * (2) None, except subject to commercial arrangements with licensed operator(s) (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None, except as indicated in horizontal section	(1) N (2) N (3) N	This offer is based on the new licensing regime under the new Telecommunications Order 2001.
International Service: Public Switched Voice Telephone Services	(1) Subject to commercial arrangements with licensed operator(s) (2) Subject to commercial arrangements with licensed operator(s) (3) None	(1) E (2) E (3) N	(1) None (2) None (3) None, except as indicated in horizontal section	(1) N (2) N (3) N	
Mobile Services: Public Cellular Mobile Telephone Service.	(1) Subject to commercial arrangements with licensed operator(s) (2) Subject to commercial arrangements with licensed operator(s) (3) None	(1) E (2) E (3) N	(1) None (2) None (3) None, except as indicated in horizontal section	(1) N (2) N (3) N	

Prepaid Telecommunications Services	(1) None, except subject to commercial arrangements with licensed operator(s) (2) None, except subject to commercial arrangements with licensed operator(s) (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None, except as indicated in horizontal section	(1) N (2) N (3) N	This offer is based on the new licensing regime under the new Telecommunications Order 2001.
Paging Services (CPC 75291)	(1) None (2) None (3) Only through locally incorporated JV corporation with Brunei Darussalaman individuals or Brunei Darussalaman controlled corporations. Foreign equity participation should not exceed 70%	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Trunked Radio service	(1) Subject to commercial arrangements with licensed operator(s) (2) Subject to commercial arrangements with licensed operator(s) (3) None	(1) E (2) E (3) N	(1) None (2) None (3) None, except as indicated in the horizontal section	(1) N (2) N (3) N	
Video text (CPC 75299*)	(1) Subject to commercial arrangements with licensed operator(s) (2) Subject to commercial arrangements with licensed operator(s) (3) N	(1) E (2) E (3) N	(1) None (2) None (3) None, except as indicated in the horizontal section	(1) N (2) N (3) N	

Cambodia

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT	Additional Commitments
Voice telephone services (CPC 7521) Packet-switched data transmission services (CPC 7523**) Circuit-switched data transmission services (CPC 7523**) Telex services (CPC 7523**) Telegraph services (CPC 7522) Facsimile services (CPC 7521**+ 7529**) Private leased circuit services (CPC 7522**+7523**)	(1) None (2) None (3) None, except subject to requirement for local share holding of up to 49%.	(1) N (2) N (3) EF51	(1) None (2) None (3) None	(1) N (2) N (3) N	Cambodia undertakes obligations contained in the Reference Paper attached.
E-mail (CPC 7523**) Voice-mail (CPC 7523**) On-line information and data base- retrieval (CPC 7523**) Electronic Data Interchange (CPC 7523**) Enhanced/value added facsimile services, incl. store and forward, store and retrieve (CPC 7523**) Code and protocol conversion On-line information and/or data processing (including transaction processing) (CPC 843**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Paging services (CPC 75291)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Internet services provision, excluding voice telephony and facsimile	(1) Unbound (2) None (3) None	(1) U (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	
Other services: - Mobile services	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Cambodia commits to permit licensed suppliers of mobile telecommunications services choice of technology used in the supply of such services.

Indonesia

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT
Voice Telephone Services (CPC 7521)	(1) None (2) None (3) Joint venture with foreign equity participation up to 49%	(1) N (2) N (3) EF49	(1) None (2) None (3) None	(1) N (2) N (3) N
Public local telephone services (CPC 75211) Fixed wireline access technology only	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to 70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) N (2) N (3) Services shall be provided in certain provinces and or necessary areas	(1) N (2) N (3) G
Packet-switched data transmission services (CPC 7523**)	(1) None (2) None (3) Joint venture with foreign equity participation up to 49%.	(1) N (2) N (3) EF49	(1) None (2) None (3) None	(1) N (2) N (3) N
Circuit-switched data transmission services (CPC 7523**)	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to 70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
Telex Services Telegraph Services Facsimile (CPC 7521** + 7529**)	(1) None (2) None (3) Joint venture with foreign equity participation up to 70 %	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N
Private leased circuit services (CPC 7522** + 7523**)	(1) None (2) None (3) Joint venture with foreign equity participation up to 49%.	(1) N (2) N (3) EF49	(1) None (2) None (3) None	(1) N (2) N (3) N
Dedicated network services (CPC 75222)	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to 70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) None (2) None (3) (a) Services shall be provided in certain provinces and or necessary areas (b) Services shall be provided only for closed user group (c) Network provider is prohibited to connect to other networks	(1) N (2) N (3) G
Electronic mail services (CPC 75232) Electronic mail box (CPC 75232)	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to 70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
Voice mail services (CPC 7523)	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to 70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
On-line information and database retrieval (CPC 7523**)	(1) None (2) None (3) Only through joint venture with local private sector. Foreign Equity Participation is limited to 51%.	(1) N (2) N (3) F51	(1) None (2) None (3) None	(1) N (2) N (3) N

Electronic data interchange (EDI) (CPC 7523**)	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to 70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
Enhanced/ value added facsimile services, including store and forward, store and retrieve (CPC 7523**)	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
Code and protocol conversion	(1) None (2) None (3) Aggregate foreign equity participation is permitted up to 70% provided that: up to 49% through foreign direct investment and the remaining percentage through other mechanisms.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
On-line information and or data processing (including transaction processing) (CPC 843**)	(1) None (2) None (3) Joint venture foreign equity participation up to 49%.	(1) N (2) N (3) EF49	(1) None (2) None (3) None	(1) N (2) N (3) N
Local services: c) Teleconferencing Services (CPC 75292)	(1) None (2) None (3) Joint venture with foreign equity participation up to 49%.	(1) N (2) N (3) EF49	(1) None (2) None (3) None	(1) N (2) N (3) N
Long Distance and International: Services: Teleconferencing Services (CPC 75292)	(1) None (2) None (3) Joint venture with foreign equity participation up to 49%.	(1) N (2) N (3) EF49	(1) None (2) None (3) None	(1) N (2) N (3) N
Regional and National Paging Service (CPC 75291)	(1) None (2) None (3) Joint venture with foreign equity participation up to 70%.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
Internet Access Services	(1) None (2) None (3) Joint venture with foreign equity participation up to 49%.	(1) N (2) N (3) EF49	(1) None (2) None (3) None	(1) N (2) N (3) N
Computer time sharing services (CPC 84330) Video text services (CPC 75299)	(1) None (2) None (3) Joint venture with foreign equity participation up to 70%.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N
File transfer services (CPC 75299) Home telemetering alarm (CPC 75299) Entertainment services (CPC 75299) Management information services (CPC 75299)	(1) None (2) None (3) Joint venture with foreign equity participation up to 70%.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N

Lao People's Democratic Republic

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT
C. Telecommunication Services The following services can be supplied only on a facilities basis, for public use, with regard to local and national long-distance services. (a) Voice telephone service (CPC 7521) (b) Packet-switched data transmission services (CPC 7523**) (Electronic message and information services (CPC 75232)) (c) Circuit-switched data transmission services (CPC 7523**) (Data and message transmission services(CPC 7523)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N
(d) Telex services (CPC 7523**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N
(e) Telegraph services (CPC 7522) (f) Facsimile services (CPC 7529) (g) Private leased circuit services (CPC 7522**+7523**) Other: Paging services(CPC 75291)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N
(h) Electronic-mail (CPC 7523**) (i) Voice mail (CPC 7523**) (j) Online information and data base retrieval (CPC 7523**) (k) Electronic data interchange (EDI) (CPC 7523**) (l) Enhanced / value-added facsimile services, incl. store and forward, store and retrieve (CPC 7523**) (m) code and protocol conversion (n) On-line information and / or data processing (incl transaction processing) (CPC 843**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N
Telecommunication consulting services (CPC 75440)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N
Audiovisual Services a. Motion Picture and Video tape production and distribution services (CPC 9611) - Motion Picture Production (CPC 96112 excl. video tape) - Motion Picture Distribution (CPC 96113 excl. video tape) b. Motion Picture Projection service (CPC 9612)	(1) None (2) None (3) Joint venture, with minimum 49% foreign equity share	(1) N (2) N (3) EF49	(1) None (2) None (3) Unbound, except as indicate in the horizontal commitment	(1) N (2) N (3) U
Radio and Television Services (CPC 9613) - Radio Services only for production of radio programmes (CPC 96131) - Television Services only for production of TV programmes (CPC 96132)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) Unbound, except as indicate in the horizontal commitment	(1) N (2) N (3) U

Malaysia

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT	Additional Commitments
Basic Telecommunications 1. Voice service (wired or wireless) (CPC 7521) 2. Packet-switched data transmission services, including frame-relay services (CPC 7523) 3. Circuit switched data transmission services (CPC 7523) 4. Facsimile Service (CPC 7521**, CPC 7529**) 5. Private leased circuit service (CPC 7522** & CPC 7523**)	(1) None (2) None (3) Foreign shareholding of up to70 per cent in these service providers is allowed	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	Pro-competition regulatory principle in respect of interconnection arrangement and competition (Refer to Annex I)
Telex services (CPC 7523)	(1) None (2) None (3) Foreign shareholding of up to 70 per cent is allowed	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Telegraph services (CPC 7522)	(1) None (2) None	(1) N (2) N	(1) None (2) None	(1) N (2) N	
	(3) Only through locally incorporated JV corporation with Malaysian individuals or Malaysian controlled corporations; or Foreign shareholding of up to 70 per cent is allowed	(3) EF70	(3) None	(3) N	
Data and message transmission services Covering electronic mail, voice mail, on-line information and database retrieval, enhanced facsimile, code and protocol conversion (CPC 7523)	(1) None (2) None (3) Foreign shareholding of up to 70 per cent is allowed.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Basic Telecommunications Paging services (CPC 75291)	(1) None (2) None (3) Foreign shareholding of up to 70 per cent is allowed	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Other telecommunication services 7. Domestic/International satellite services and satellite links/capacities (inclusive of mobile satellite) 8. Satellite earth station 9. International switching and other international gateway 10.Mobile services analogue/digital cellular 11. Trunked radio services 12. Video transport services	(1) None (2) None (3) Foreign shareholding of up to 70 per cent is allowed	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	Pro-competition regulatory principle in respect of interconnection arrangement and competition (Refer to Annex I)

Mobile telephone service (CPC 75213)	(1) None (2) None (3) Foreign shareholding of up to 70 per cent is allowed	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Mobile data services (CPC 7523)	(1) None (2) None (3) Foreign shareholding of up to 70 per cent is allowed	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Interconnection services (CPC 7525 and CPC 76250) Integrated telecommunication services (CPC 7526, CPC 75260)	(1) None (2) None (3) Foreign shareholding of up to 70 per cent is allowed	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Audiovisual Services Motion picture, video tape and audio recording distribution services (CPC 96113) Motion picture or video tape production services (CPC 96112) Other services in connection with motion picture or video tape production and distribution (CPC 96114)	(1) None (2) None (3) Only through a locally incorporated joint-venture corporation with Malaysian individuals or Malaysian-controlled corporations or both and the aggregate foreign shareholding shall not exceed 51 per cent	(1) N (2) N (3) F51	(1) None (2) None (3) None	(1) N (2) N (3) N	
Motion picture projection services (CPC 96121) Video tape projection services (CPC 96122)	(1) None (2) None (3) Foreign equity shall not exceed 51 per cent	(1) N (2) N (3) F51	(1) None (2) None (3) None	(1) N (2) N (3) N	
Broadcasting services covering transmission from foreign broadcast station of foreign broadcast matter from foreign territory through television or radio (CPC 7524*)	(1) None (2) None (3) Unbound*	(1)N (2)N (3)U	(1)None (2)None (3)Unbound*	(1) N (2) N (3) U	
Sound Recording services. Covering production, distribution and public display of sound recordings, but excluding all broadcasting and audiovisual services and materials that are broadcasting-related.	(1) None (2) None (3) Foreign equity shall not exceed 51 per cent	(1) N (2) N (3) F51	(1) None (2) None (3) None	(1) N (2) N (3) N	

Myanmar

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT	Additional Commitments
I. Facsimile Services (CPC 7521**+7529**) II. enhanced/ value-added facsimile services incl, store and forward, store and retrieve (CPC 7523**) III. Packet-switched data transmission services (CPC 7523**) IV. Circuit-Switched data transmission Services (CPC 7523**) V. Private Leased Circuit Services (CPC7522**+7523**)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Subject to horizontal commitments
Telex services (CPC 7523**)	(1) None (2) None (3) Commercial Presence of foreign service suppliers and/ or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) None (2) None (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labor b. Foreign organizations and persons are not allowed to own land in Myanmar. However, land may be acquired on long term lease, depending on the individual circumstances.	(1) N (2) N (3) E	
Telegraph services (CPC 7522)	(1) N (2) N (3) Commercial Presence of foreign service suppliers and/ or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) N (2) N (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labor b. Foreign organizations and persons are not allowed to own land in Myanmar. However, land may be acquired on long term lease, depending on the individual circumstances.	(1) N (2) N (3) E	

Electronic mail (CPC 7523**)	(1) N (2) N (3) Commercial Presence of foreign service suppliers and/or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) N (2) N (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labor b. Foreign organizations and persons are not allowed to own land in Myanmar. However, Land may be acquired on long term lease, depending on the individual circumstances.	(1) N (2) N (3) E	
Voice mail (CPC 7523**)	(1) N (2) N (3) Commercial Presence of foreign service suppliers and/or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) N (2) N (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labour b. Foreign organizations and persons are not allowed to own land in Myanmar. However, Land may be acquired on long term lease, depending on the individual circumstances.		
On-line information and data base retrieval (CPC7523**)	(1) N (2) N (3) Commercial Presence of foreign service suppliers and/or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) N (2) N (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labor b. Foreign organizations and persons are not allowed to own land in Myanmar. However, Land may be acquired on long term lease, depending on the individual circumstances.		

Electronic data interchange (EDI) (CPC 7523**)	(1) N (2) N (3) Commercial Presence of foreign service suppliers and/ or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) N (2) N (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labour b. Foreign organizations and persons are not allowed to own land in Myanmar. However, Land may be acquired on long term lease, depending on the individual circumstances.	(1) N (2) N (3) E	
Code and protocol conversion (CPC 7523**)	(1) None (2) None (3) Commercial Presence of foreign service suppliers and/ or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) None (2) None (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labour b. Foreign organizations and persons are not allowed to own land in Myanmar. However, Land may be acquired on long term lease, depending on the individual circumstances.	(1) N (2) N (3) E	
On-line information and/ or data processing (incl. transaction processing) (CPC 843**)	(1) None (2) None (3) Commercial Presence of foreign service suppliers and/ or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) E	(1) None (2) None (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labour b. Foreign organizations and persons are not allowed to own land in Myanmar. However, Land may be acquired on long term lease, depending on the individual circumstances.	(1) N (2) N (3) E	

Public telephone services (CPC 7521)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Subject to horizontal commitments
Mobile telephone service (CPC 75213)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Subject to horizontal commitments
Paging services(CPC 75291)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Subject to horizontal commitments
Private Leased Circuit Services (CPC7521)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Subject to horizontal commitments
Packet-switched Data Transmission Services (CPC 7523**) (e) Data and message transmission services (CPC 7523) Circuit-switched Data Transmission Services (CPC 7523**) (e) Data and message transmission services (CPC 7523)	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Subject to horizontal commitments
Telecommunication equipment maintenance services (CPC 75450)	(1) None (2) None (3) Commercial Presence of foreign service suppliers and/ or providers are permitted in accordance with the Foreign Investment law (2012), the Republic of Union of Myanmar. The investment may be carried out in any of the following forms. (i) carrying out an investment by a foreigner with one hundred percent foreign capital on the business permitted by the Commission; (ii) carrying out a joint venture between a foreign and a citizen or the relevant Government department and organization; (iii) carrying out by any system contained in the contract which approved by both parties.	(1) N (2) N (3) EG	(1) None (2) None (3) a. Foreign service suppliers and / or providers have to comply with existing Laws, rules and regulations concerning investment, taxations, immigration and labor b. Foreign organizations and persons are not allowed to own land in Myanmar. However, land may be acquired on long term lease, depending on the individual circumstances.	(1) N (2) N (3) E	

Philippines

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT	Additional Commitments
The following services are offered only on a facilities basis, for public use, using either wired or wireless technology except cable television (CATV). a. Voice telephone services (CPC 7521) - Local services - Toll services · Domestic · International b. Packet-switched data transmission services (CPC 7523**) c. Circuit-switched data transmission services (CPC 7523**) d. Telex Services (CPC 7523**) e. Telegraph Services (CPC 7522)	(1) Subject to commercial arrangement with licensed operators (2) None (3) Entry is subject to the following requirements and conditions: a) Franchise from Congress of the Philippines b) Certificate of Public Convenience and Necessity (CPCN) from the National Telecommunications Commission c) Foreign equity is permitted up to 40%. d) Resale of private leased lines is not allowed2. e) Private leased circuit services shall not be connected to a public network (PSTN). f) Call back, dial back and other similar schemes, which result in the same operation, are not authorized.	(1) E (2) N (3) EF40	(1) None (2) None (3) Entry is subject to the following requirements and conditions: a) The number of non-Filipino citizens in the Board of Directors of an entity shall be proportionate to the aggregate share of foreign capital of that entity. b) All executives and managers must be citizens of the Philippines. Limitations listed in the horizontal section shall also apply.	(1) N (2) N (3) D	The Philippine Reference Paper on Regulatory Principles will be reviewed in the future in accordance with the develop-ments of its laws and regulations.
f. Facsimile services (CPC 7521**+7529**) g. Private Leased Circuit Services (CPC 7522**+7523) h. Other - Cellular Mobile Telephone Service (CPC 75213) - Satellite services	g) Subject to the availability and efficient utilisation of radio frequencies. h) Only duly enfranchised and certificated telecommunications, broadcast and/or cable TV entities can access satellite space segment service providers. i) Philippine satellite operators shall be given the preference to provide the space segment capacity requirements of enfranchised entity after all factors are equally considered. j) Satellite space segment service provisioning in the Philippines shall be on the basis of reciprocal arrangements.				

i. voice mail (CPC 7523**) j. on-line information and database retrieval (CPC 7523**) k. electronic data interchange l. Videotext	(1) Only through duly enfranchised and certificated domestic public telecommunications carriers (2) None (3) Operation subject to securing of : a) Franchise from Congress of the Philippines b) Certificate of Public Convenience and Necessity (CPCN) from the National Telecommunications Commissions	(1) G (2) N (3) G	(1) None (2) None (3) None	(1) N (2) N (3) N	
Value added services i.e. m. electronic mail (CPC 7523**) n. value added facsimile service (CPC 7523**) o. code and protocol conversion p. on-line information and/or data processing (CPC 843**)	(1) Unbound3 (2) None (3) Entry is subject to the following requirements: a) Foreign equity is permitted up to 40% b) Must register with the Philippines regulatory body but is not allowed to build its own network.	(1) U (2) N (3) EF40	(1) None (2) None (3) Entry is subject to the following requirements and conditions: a) The number of non-Filipino citizens on the Board of Directors of an entity shall be proportionate to the aggregate share of foreign capital of that entity. b) All executives and managers must be citizens of the Philippines Limitations listed in the horizontal section shall also apply.	(1) N (2) N (3) D	
Other Telecommunication services: Content development services sold to telecommunications companies	(1) Subject to commercial arrangement with licensed operators (2) None (3) None, except that only up to 70% foreign equity participation is allowed	(1) G (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Data and message transmission services Data network services (CPC 75231) Electronic message and information services (CPC 75232)	(1) Unbound (2) None (3) Entry is subject to the following requirements and conditions: a) Franchise from Congress of the Philippines b) Certificate of Public Convenience and Necessity (CPCN) from the National Telecommunications Commission c) Foreign equity is permitted up to 40%. d) Resale of private leased lines is not allowed4 e) Private leased circuit services shall not be connected to a public network (PSTN). f) Call back, dial back and other similar schemes, which result in the same operation, are not authorised. g) Subject to the availability and efficient utilisation of radio frequencies.	(1) U (2) N (3) EF40	(1) None (2) None (3) Entry is subject to the following requirements and conditions: a) The number of non-Filipino citizens in the Board of Directors of an entity shall be proportionate to the aggregate share of foreign capital of that entity. b) All executives and managers must be citizens of the Philippines. Limitations listed in the horizontal section shall also apply.	(1) N (2) N (3) D	

	h) Only duly enfranchised and certificated telecommunications, broadcast and/or cable TV entities can access satellite space segment service providers. i) Philippine satellite operators shall be given the preference to provide the space segment capacity requirements of enfranchised entity after all factors are equally considered. j) Satellite space segment service provisioning in the Philippines shall be on the basis of reciprocal arrangements. Limitations listed in the horizontal section shall also apply.				
Paging services (CPC 75291)	(1) Unbound (2) Unbound (3) Entry is subject to the following requirements and conditions: franchise from Congress foreign equity is limited to 40% subject to the availability and efficient utilisation of radio frequencies	(1) U (2) U (3) F40	(1) None (2) None (3) The number of non-Filipino citizens in the Board of Directors of an entity shall be proportionate to the aggregate share of foreign capital of that entity.	(1) N (2) N (3) D	
a. Production services of animated cartoons of any kind (CPC 96112**)	(1) None (2)None (3) Up to 70 per cent foreign equity participation is allowed, provided the services provider exports 70% or more of its output.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
b. Motion picture projection services in private screening rooms (CPC 9612)	(1) None (2) None (3) Up to 70 per cent foreign equity participation is allowed.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
e. Sound Recording Recording of music on records, tapes and compact discs	(1) None (2) None (3) Up to 70 per cent foreign equity participation is allowed.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Other: Colour correction services (i.e., adding, modifying or excluding colour of audio visual works)	(1) None (2) None (3) UP to 70 per cent foreign equity participation is allowed.	(1) N (2) N (3) F70	(1) None (2) None (3) None	(1) N (2) N (3) N	

Singapore

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT
Basic Telecommunication Services (facilities-based) a) Public Switched Services[1] (local and international) b) Leased Circuit Services (local and international)	(1) Subject to commercial arrangements with licensed operator(s) (2) None (3) A cumulative total of 73.99% foreign shareholding, based on 49% direct investment and 24.99% indirect investment is allowed	(1) E (2) N (3) F73.99	(1) None (2) None (3) None	(1) N (2) N (3) N
Mobile Services[2]: a) Public Mobile Data Service (PMDS) b) Public Trunked Radio Service (PTRS) c) Public Radio Paging Service (PRPS) d) Public Cellular Mobile Telephone Service (PCMTS)	(1) Subject to commercial arrangements with licensed operator(s) (2) None (3) A cumulative total of 73.99% foreign shareholding, based on 49% direct investment and 24.99% indirect investment is allowed	(1) E (2) N (3) F73.99	(1) None (2) None (3) None	(1) N (2) N (3) N
Resale basis: a) Public Switched Services (local and international) (not including the use of leased circuits connected to the public switched network) b) Leased Circuit Services (local and international) (without connection to the public switched network) c) Public Cellular Mobile Telephone Services d) Public Radio Paging Services	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N
Value - Added Network (VAN) Services[3] The services covered are: - Store-and-retrieve VAN services (S&R), - store-and-forward VAN services (S&F), - electronic mail, - voice mail, - on-line information and data base retrieval, - electronic data Interchange, - code and protocol conversion - on-line information and/or data processing Others - Telecommunications consulting services	(1) None (2) None (3) None	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N

Thailand

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT	Additional Commitments
Public local, domestic long distance and international services: (a) Fixed-line voice telephone services (a) Mobile telephone services (CPC 75213)	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.3 of the horizontal section.	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	Thailand will introduce into its Schedule of Specific Commitments on public telecommunication services its treatment on the subjects relating to competitive safeguards, interconnection, universal service, public availability of licensing criteria, separation of regulatory and operational functions, and the allocation and use of scarce resources.
(d) Telegraph services (CPC 7523**) (e) Telex services (CPC 7523**) (f) Facsimile services (CPC 7521**+7529**)	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.1 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	Thailand will introduce into its Schedule of Specific Commitments on public telecommunication services its treatment on the subjects relating to competitive safeguards, interconnection, universal service, public availability of licensing criteria, separation of regulatory and operational functions, and the allocation and use of scarce resources.
Private leased circuit services: Dedicated network services (CPC 75222)	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.1 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	Thailand will introduce into its Schedule of Specific Commitments on public telecommunication services its treatment on the subjects relating to competitive safeguards, interconnection, universal service, public availability of licensing criteria, separation of regulatory and operational functions, and the allocation and use of scarce resources.

Domestic leased circuits (part of CPC 75299)	(1) (a) Service providers must use network operated by suppliers duly licensed (b) Radio application service is subject to frequency availability (2) None (3) (a) Shall be a Thai registered company with foreign equity participation not exceeding 40 per cent of the registered capital and the number of foreign shareholders must not exceed 40 per cent of the total number of shareholders of the company (b) Must use public telecommunication network under national telecommunication authorities (c) Selection of service providers shall be based on open tender	(1) G (2) N (3) F40	(1) None (2) None (3) No limitation as long as foreign equity participation does not exceed 40 percent	(1) None (2) None (3) F40	
(h) Electronic mail (CPC 7523**) (i) Voice mail (CPC 7523**)	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.1 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	
(j) On-line information and data base retrieval (CPC 7523**)	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.1 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	Thailand will introduce into its Schedule of Specific Commitments on public telecommunication services its treatment on the subjects relating to competitive safeguards, interconnection, universal service, public availability of licensing criteria, separation of regulatory and operational functions, and the allocation and use of scarce resources.

(l) Enhance/ Value added facsimile Services including store and forward, store and retrieve (CPC 7523*) (m) Code and protocol conversion	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.1 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	
(n) On-line information and/or data processing services provided over public telecommunications network (part of CPC 843, excluding transaction processing)	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.1 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	Thailand will introduce into its Schedule of Specific Commitments on public telecommunication services its treatment on the subjects relating to competitive safeguards, interconnection, universal service, public availability of licensing criteria, separation of regulatory and operational functions, and the allocation and use of scarce resources.
Data base access services (part of CPC 7523)	(1) Service providers must use networks operated be suppliers duly licensed (2) None (3) a) Shall be a Thai registered company with foreign equity participation not exceeding 25 per cent of the registered capital b) Must use networks operated by suppliers duly licensed	(1) G (2) N (3) F25	(1) None (2) None (3) No limitation as long as foreign equity participation does not exceed 25 per cent	(1) N (2) N (3) F25	
(o) Other: Paging services (CPC 75291	(1) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (2) None, other than - traffic shall be routed through gateways in Thailand operated by suppliers duly licensed; - the provision of concerned services shall be agreed by the supplier duly licensed of both ends. (3) As indicated in 3.3 of the horizontal section.	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	Thailand will introduce into its Schedule of Specific Commitments on public telecommunication services its treatment on the subjects relating to competitive safeguards, interconnection, universal service, public availability of licensing criteria, separation of regulatory and operational functions, and the allocation and use of scarce resources.

Telecommunications terminal equipment leasing services (CPC 75410)	(1) None, subject to commercial arrangement with licensed operators (2) None (3) As indicated in 3.3 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Domestic VSAT	(1) a) Service providers must use network operated by suppliers duly licensed; b) Radio application service is subject to frequency availability (2) None (3) a) Shall be a Thai registered company with foreign equity participation not exceeding 40 per cent of the registered capital and the number of foreign shareholders must not exceed 40 per cent of the total number of shareholders of the company b) Must use public telecommunication network under national telecommunication authorities	(1) G (2) N (3) F40	(1) None (2) None (3) No limitation as long as foreign equity participation does not exceed 40 per cent	(1) N (2) N (3) F40	
Telecommunications equipment sales services (part of CPC 75420)	(1) None (2) None (3) As indicated in 3.3 of the horizontal section	(1) N (2) N (3) EF70	(1)None (2)None (3)None	(1) N (2) N (3) N	
Telecommunication Consulting Services (CPC 75440)	(1) None (2) None (3) As indicated in 3.1 of the horizontal section	(1) N (2) N (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	
Videotext Teleconference	(1) (a) Service providers must use network operated by suppliers duly licensed (b) Radio application service is subject to frequency availability (2)None (3) (a) Shall be a Thai registered company with foreign equity participation not exceeding 40 per cent of the registered capital and the number of foreign shareholders must not exceed 40 per cent of the total number of shareholders of the company (b) Must use public telecommunication network under national telecommunication authorities (c) Selection of service providers shall be based on open tender	(1) G (2) N (3) EF40	(1) None (2) None (3) No limitation as long as foreign equity participation does not exceed 40 percent	(1) N (2) N (3) F40	
Communication equipment maintenance services on a fee or contract basis (CPC 75450)	(1) None (2) None (3) As indicated in 3.1 of the horizontal section	(1) None (2) None (3) EF70	(1) None (2) None (3) None	(1) N (2) N (3) N	

Viet Nam

Sector or Subsector	Limitation on Market Access	A-H classification of MA	Limitation on National Treatment	A-H classification of NT	Additional Commitments
Basic Telecommunications a. Voice telephone services including local, long distance and international (CPC 7521) b. Packet-switched data transmission services (CPC 7523**) c. Circuit-switched data transmission services (CPC 7523**) d. Telegraph services (CPC 7522) e. Telex services (CPC 7523**) f. Facsimile services (CPC 7521**+7529**) g. Private leased circuit services (CPC 7522**+7523**)	(1) None, except: Wire-based and mobile terrestrial services: Service must be offered through commercial arrangements with an entity established in Viet Nam and licensed to provide international telecommunication services. Satellite-based services: Subject to commercial arrangements with Vietnamese international satellite service suppliers duly licensed in Viet Nam, except satellite-based services offered to: - Since 11 January 2007: off-shore/on sea based business customers, government institutions, facilities-based service suppliers, radio and television broadcasters, official international organization' representative offices, diplomatic representatives and consulates, high tech and software development parks who are licensed to use satellite-earth stations; - Since 11 January 2010: multinational companies, which are licensed to use satellite-earth stations. (2) None (3) None, except: Non facilities-based services: Since 11 January 2007 joint ventures with telecommunications service suppliers duly licensed in Viet Nam will be allowed. Foreign capital contribution shall not exceed 51% of legal capital of the joint ventures. Since 11 January 2010: joint venture will be allowed without limitation on choice of partner. Foreign capital contribution shall not exceed 65% of legal capital of the joint ventures. Facilities-based services: joint venture with telecommunications service suppliers duly licensed in Viet Nam will be allowed. Foreign capital contribution shall not exceed 49% of legal capital of the joint ventures. 51% gives management control of the joint venture. In the telecommunications sector, foreign investors in BCC will have the possibility to renew current arrangements or to convert them into another form of establishment with conditions no less favorable than those they currently enjoy.	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Viet Nam undertakes the obligations in the Reference Paper attached hereto. For consortium submarine cable links where Viet Nam is member, foreign service suppliers shall be permitted to control fully- owned submarine cable transmission capacity (e.g. IRU or consortium ownership) terminating at a licensed cable landing station in Viet Nam, and to provide such capacity to international facilities- based service suppliers licensed in Viet Nam. Since 11 January 2011, foreign service suppliers shall be permitted to provide such capacity to international VPN and IXP service suppliers licensed in Viet Nam.
(o*) Other services - Videoconference services (CPC 75292) - Video Transmission services, excluding broadcasting - Radio based services includes: - Mobile telephone (terrestrial and satellite) - Mobile data (terrestrial and satellite) - Paging - PCS - Trunking - Internet Exchange Service (IXP)					

Basic telecommunication services (o*) Other services - Virtual Private Network (VPN)	(1) None, except: Wire-based and mobile terrestrial services: Service must be offered through commercial arrangements with an entity established in Viet Nam and licensed to provide international telecommunication services. Satellite-based services: Subject to commercial arrangements with Vietnamese international satellite service suppliers duly licensed in Viet Nam, except satellite-based services offered to: - Since 11 January 2007: off-shore/on sea based business customers, government institutions, facilities-based service suppliers, radio and television broadcasters, official international organization' representative offices, diplomatic representatives and consulates, high tech and software development parks who are licensed to use satellite-earth stations; - Since 11 January 2010: multinational companies19, which are licensed to use satellite-earth stations.	(1) N	(1) None	(1) N	Viet Nam undertakes the obligations in the Reference Paper attached hereto. For consortium submarine cable links where Viet Nam is member, foreign service suppliers shall be permitted to control fully- owned submarine cable transmission capacity (e.g. IRU or consortium ownership) terminating at a licensed cable landing station in Viet Nam, and to provide such capacity to international facilities- based service suppliers licensed in Viet Nam. Since 11 January 2011, foreign service suppliers shall be permitted to provide such capacity to
	(2) None (3) None, except: Non facilities-based services: joint ventures shall be allowed without limitation on choice of partner. Foreign capital contribution shall not exceed 70% of legal capital of the joint ventures. Facilities-based services: joint venture with telecommunications service suppliers duly licensed in Viet Nam will be allowed. Foreign capital contribution shall not exceed 49% of legal capital of the joint ventures.	(2) N (3) EF70	(2) None (3) None	(2) N (3) N	International VPN and IXP service suppliers licensed in Viet Nam.

Value added services: h. Electronic mail (CPC 7523**) i. Voice mail (CPC 7523**) j. On-line information and database retrieval (CPC 7523**) k. Electronic data interchange (EDI) (CPC 7523**) l. Enhance/value-added facsimile services, including store and forward, store and retrieve (CPC7523**) m. Code and protocol conversion n. On-line information and data processing (incl. transaction processing) (CPC 843)	(1) None, except: Wire-based and mobile terrestrial services: Service must be offered through commercial arrangements with an entity established in Viet Nam and licensed to provide international telecommunication services. Satellite-based services: Subject to commercial arrangements with Vietnamese international satellite service suppliers duly licensed in Viet Nam, except satellite-based services offered to: - Since 11 January 2007: off-shore/on sea based business customers, government institutions, facilities-based service suppliers, radio and television broadcasters, official international organization' representative offices, diplomatic representatives and consulates, high tech and software development parks who are licensed to use satellite-earth stations; - Since 11 January 2007: multinational companies, which are licensed to use satellite-earth stations. (2) None (3) None, except: Non facilities-based services: business cooperation contracts or joint ventures will be allowed. Foreign capital contribution shall not exceed 70% of legal capital of the joint ventures. Facilities-based services: business cooperation contracts or joint ventures (JV) with telecommunications service suppliers duly licensed in Viet Nam will be allowed. Foreign capital contribution shall not exceed 50% of legal capital of the joint ventures. 51% gives management control of the joint venture. In the telecommunications sector, foreign investors in BCC will have the possibility to renew current arrangements or to convert them into another form of establishment with conditions no less favorable than those they currently enjoy.	(1) N (2) N (3) N	(1) None (2) None (3) None	(1) N (2) N (3) N	Viet Nam undertakes the obligations in the Reference Paper attached hereto.

Value added services (o) Other - Internet Access Services IAS	(1) Wire-based and mobile terrestrial services: None, except: Service must be offered through commercial arrangements with an entity established in Viet Nam and licensed to provide international telecommunication services. Satellite-based services: Subject to commercial arrangements with Vietnamese international satellite service suppliers duly licensed in Viet Nam, except satellite-based services offered to: - Since 11 January 2007: off-shore/on sea based business customers, government institutions, facilities-based services suppliers, radio and television broadcasters, official international organization' representative offices, diplomatic representatives and consulates, high tech and software development parks who are licensed to use satellite-earth stations; - Since 11 January 2010: multinational companies19, which are licensed to use satellite-earth stations. (2) None (3) Non facilities-based services: Since 11 January 2007: joint ventures with telecommunications suppliers duly licensed in Viet Nam will be allowed. Foreign capital contribution shall not exceed 51% of legal capital of the joint ventures. Since 11 January 2010: joint venture will be allowed without limitation on choice of partner. Foreign capital contribution shall not exceed 65% of legal capital of the joint ventures. Facilities-based services: joint venture (JV) with telecommunications service suppliers duly licensed in Viet Nam will be allowed. Foreign capital contribution shall not exceed 50% of legal capital of the joint ventures.	(1) E (2) N (3) EF51	(1) None (2) None (3) None	(1) N (2) N (3) N	Viet Nam undertakes the obligations in the Reference Paper attached hereto.
(a) Motion picture production (CPC 96112, excl. video tape)	(1) Unbound. (2) Unbound. (3) Only in the forms of business cooperation contracts or joint ventures with Vietnamese partners who are authorized to provide these services in Viet Nam. Foreign capital contribution may not exceed 51% of the legal capital of the joint venture.	(1) U (2) U (3) EF51	(1) Unbound. (2) Unbound. (3) None	(1) U (2) U (3) N	

Motion picture distribution (CPC 96113, excl. video tape)	(1) Unbound. (2) None (3) Only through business cooperation contract or joint venture with Vietnamese partners who are authorized to provide these services in Viet Nam. Foreign capital contribution shall not exceed 51% of the legal capital of the joint venture.	(1) U (2) N (3) EF51	(1) Unbound. (2) None (3) None	(1) U (2) N (3) N	
(b) Motion picture projection service (CPC 96121)	(1) Unbound. (2) None (3) Only through business cooperation contracts or joint venture with Vietnamese partners who are authorized to provide these services in Viet Nam. Foreign capital contribution shall not exceed 51% of legal capital. Viet Nam's houses of culture, film projection place, public cinema clubs and societies and mobile projection teams are not allowed to engage in business cooperation contract or joint-venture with foreign service suppliers.	(1) U (2) N (3) EF51	(1) Unbound. (2) None (3) None	(1) U (2) N (3) N	
(e) Sound recording	(1) Unbound. (2) None (3) Unbound.	(1) U (2) N (3) U	(1) Unbound. (2) None (3) Unbound.	(1) U (2) N (3) U	

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For Cambodia, http://www.miti.gov.my/miti/resources/AFAS_9_Consolidated_Schedule_-_CA_HC_(AFAS__5).pdf
For Indonesia, http://www.miti.gov.my/miti/resources/AFAS_9_Consolidated_Schedule_-_ID_SOC_(CCS_78).pdf
For Lao People's Democratic Republic, http://www.miti.gov.my/miti/resources/AFAS_9_Consolidated_Schedule_-_LA_SOC_(CCS_78).pdf
For Malaysia, http://www.miti.gov.my/miti/resources/AFAS_9_Consolidated_Schedule_-_MY_SOC_(CCS_78).pdf
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For Thailand, http://myservices.miti.gov.my/documents/10180/f0c1be7c-124f-47bf-b4f9-2fd6300ab7d1
For Viet Nam, http://www.miti.gov.my/miti/resources/AFAS_9_Consolidated_Schedule_-_VN_SOC_(20150911).pdf

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