



**Asia-Pacific  
Economic Cooperation**

**Advancing** Free Trade  
for Asia-Pacific **Prosperity**

# Indonesia: Structural Reform in Air Transport Service

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**APEC Policy Support Unit**  
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# 1. BACKGROUND

The nature of Indonesia's geography with 6000 inhabited islands makes air and maritime transportation its main modes of transport. Maritime transport continues to be the main mode of transport of non-perishable goods while air transport is more suitable for business and tourist travellers and perishable goods as well.

Following economic growth in general and the growth of its tourism sector in particular, the demand for air travel in Indonesia has increased significantly, both by domestic and international travellers and shippers. Indonesia has also undertaken steps to deregulate its air transport sector, transforming the sector gradually from being a state-dominated sector to a more hybrid model where state-owned enterprise competes with private providers. Foreign participation is also allowed. Airfares were allowed to float. Entry requirements for new airlines were eased. However, air transport infrastructure and its management, such as airports, has remained the domain of the government.

The effect of these changes has been dramatic. For example, back in the 1990s, air transport was regarded as a luxury, due to its relatively high price. With the reforms outlined, airfares have substantially declined. Damuri and Anas (2005) found that the airfare for the Jakarta-Surabaya route (about 90 minutes air travel) was as high as USD 90 at the low season before the reforms. Currently, the same distance can be as low as USD 20.

What has been the impact of the deregulation on the industry, on other industries, and on the economy at large? Has the deregulation been sufficient to improve the efficiency of the sector? This study aims at assessing the impact of air transport deregulation in Indonesia. The analysis will focus on the impact of the deregulation on the industry's performance.

The study will also examine the implications of the key reforms in the air transport sector for other industry sectors, backward and forward in associated value chains. In this study we will map the industry linkages, using the Indonesian Input Output Table for the purpose of this assessment.

This paper will begin with a review of a sample of recent literature on this topic, followed by a comprehensive discussion on the regulatory changes in the sector, a description of the sector, its value chain and the analysis of the impact of the deregulation to the sector and the economy in general. The paper will conclude with a discussion of new issues relevant to the sector, lessons learned and some policy recommendations related to structural reforms of the air transport.

## 2. LITERATURE SURVEY

Air transport is highly regulated and relatively restrictive for foreign investment. Walulik (2016) examined airline investment regime in 121 states and territories and showed that airline investment rules worldwide is restrictive. Nevertheless, a large number of studies on air transport show that liberalization of the sector contributed to the improved performance of the sector.

There have been few recent analyses of Indonesia's air transport sector and its reforms. Saraswati and Hanaoka (2013) examined aviation industry policy in Indonesia as well as its preparedness for the ASEAN Single Aviation Market (ASAM). The authors presented an extensive overview of Indonesia's aviation policy, emphasizing the evolution of the industry from operating in a relatively restricted regime to a more dynamic and market-oriented one. The authors also noted the challenge of infrastructure capacity and quality. The OECD (2014) also reviewed the extent of competition in the airline industry in Indonesia and highlighted the capacity shortage and infrastructure bottlenecks impeding growth of the sector.

Studies of liberalisation in other economies or regions generally find positive results. For example, Hanaoka et al. (2014) show that the liberalization of air transport has increased competition in the Low Cost Carriers (LCCs) markets. LCCs have become the main type of airlines in ASEAN and have begun to take over the market share of the FSCs on the intra-ASEAN and domestic routes. However, Bowen (2016) emphasizes that the fast growth of LCCs in South East Asia has not done much to improve Southeast Asia's spatial inequality as LCCs are also concentrating in well-served markets.

Zhang et al. (2009) also examined the impact of deregulation and liberalization in aviation industry in the United States, Canada, and the EU. The authors argued that the deregulation and liberalization has eliminated the less efficient airlines and led to the emergence of LCCs such as Southwest, JetBlue, Ryanair, and Westjet. The study concluded that there are three major obstacles faced by LCCs in Asia, namely: (1) obstacles found in domestic policy; (2) lack of open-skies agreements among Asian economies, which makes it difficult for LCCs to increase their operational range; (3) lack of secondary airports in the major metropolitan areas.

Zhang and Findlay (2014) showed that air transport liberalization is significantly and positively associated with the extent of the movement of people. In another study, Cristea et al (2014a) assess the impact of US Open Sky Agreements (OSAs) on the performance of the sector. They use a 'difference in difference' model to compare outcomes pre and post the application of OSAs and finds that liberalizing economies see expansions in route offerings and reallocations of carrier capacity. They find that consumers enjoy lower prices and more direct flights, and leading to large increases in passenger numbers.

Cristea et al (2014b) examine the impact of more liberal policies in the Middle East. They find that more liberal policy is associated with greater passenger traffic between

economies. This result is driven primarily by larger numbers of city pairs being served, rather than by more passengers traveling along given routes.

### 3. THE INDONESIAN DEREGULATION

The major milestones in air transport policy are summarised in Figure 3.1. In the 1990s, the air transport sector was controlled by the state, as stated in Law No. 15/1992 regarding Air Transport. Article 31 of the law stipulated that the government regulated the use of facilities and services at airports, which also provided the basis of powers to regulate prices. This power was delegated to the Ministry for Transport. However, in 1997, the Minister for Transport in Decree No. 25/1997 delegated the rights to set scheduled passengers airlines' ticket prices to the airlines association (the Indonesian National Air Carrier Association (INACA)) which set a floor price (the decree did not specify a floor price but the rationale for that format of regulation was to limit predatory behaviour).

Indonesia deregulated its transport sector, including the air transport sector after the 1998 Asian Financial Crisis. The momentum for reform in the air transport sector was provided by the enactment of the Competition Law in 1999. The Law granted the authority to supervise competition to The Supervision Commission for Business Competition, the KPPU. Price fixing by INACA was among the first cases that the KPPU oversaw.

The KPPU decided that the price setting by INACA violated (Article 5, point 1) of the Competition Law. The KPPU then required the Minister for Transport to revoke the decree that granted INACA the right to set tariffs. The Minister of Transport later issued Decree No. 9/2002 amending the Decree No. 25/1997. The new decree regulated only a ceiling price for economy class travel on scheduled passenger airliners.

In 2001, Minister for Transport eased entry requirements to set up airlines companies by issuing Decree No. 11/2001, allowing new scheduled airlines to obtain a license to operate by operating only two aircraft (previously the requirement had been 5 aircraft). As a result, the total number of scheduled airlines increased from only 7 in 2000 to 27 in 2004. New airlines companies established following the issuance of this new decree including Adam Air, Celebes Air, Sriwijaya Air, Bali Air, Batavia Air, Star Airlines, Air Paradise, Kartika Airlines, Papua Air and Air Asia. However, the industry consolidation later drove out some scheduled airlines from the market, for example, Adam, Celebes, Batavia and Indonesian Airlines. A number of new airlines were also established in 2013 and 2014: Batik Air (2013), NAM Air (2013), and Indonesia AirAsia X (2014).

In 2009 Indonesia enacted a new air transport law, Law No. 1/2009, replacing the Law No. 15/1992 which was no longer compatible with the dynamics of the sector. The new air transport law also rules regarding tariffs and licensing. On licensing, the 2009 law was more restrictive than the Transport Minister Decree No. 11/2001. The Law required all civil airlines registered in Indonesia to have at least 5 units of aircraft (for scheduled airlines) and at least 1 unit of aircraft (for unscheduled airlines and cargo airlines).

On tariffs, the law set new guidelines for a maximum tariff (ceiling price) for economy class of travel on scheduled passenger airlines. The law originally did not mention a floor price. The new law allowed tariffs for non-economy class of travel on scheduled

passenger airlines and commercial cargo to float. Since then however floor prices have been re-introduced. Carriers are classified into different types (full service, medium service, and no frills) and are allowed to charge up to different fractions of the ceiling price (100 percent, 90 percent and 80 percent respectively). The Centre for Asia Pacific Aviation (CAPA)<sup>1</sup> provides the following graphic (from the Directorate General of Civil Aviation) to illustrate the classifications:

**Table 3.1 Indonesia Airline Categories**

<b>Full Service</b>	<b>Medium Service</b>	<b>No Frills</b>
<b>Services and optional requirements covered by the fares (maximum services)</b>	Some services covered by the fares (limited services)	Only essential services covered by the fares
<b>Provide free baggage (30kg for international 20kg for domestic)</b>	Limited free baggage	Baggage Fee Implemented
<b>Provide full inflight service</b>	Provide limited inflight services	Inflight service is available on charged bases

Source : Directorate General of Civil Aviation – Ministry of Transportation Republic of Indonesia

CAPA reports that of 14 airlines currently certified for scheduled passenger services,

- two are classified as full service – [Garuda Indonesia](#) and [Lion Group](#) full-service subsidiary [Batik Air](#)
- five are in the no frills category – [Garuda](#) budget subsidiary [Citilink](#), [Indonesia AirAsia](#), [Lion Air](#), [Lion](#) regional subsidiary [Wings Air](#) and [Susi Air](#).
- seven airlines are in the middle service category include [Aviastar](#), [Kalstar](#), [Sriwijaya](#), [Transnusa](#), [Trigana](#), [Xpress Air](#) and [Sriwijaya](#) subsidiary [NAM](#).

Indonesia also introduced a price floor of 30 percent of the ceiling price (see Table 3.2). CAPA reports that in practice Indonesia has routinely provided exemptions for LCCs to offer fares well below this floor but that the Transport Ministry then decided to stop allowing any exemptions to the floor and raise the floor from 30 percent to 40 percent of the ceiling. More recently, the floor has been dropped again to 30 percent of the ceiling. Although the government reintroduced the floor price in 2005, the requirement was never effectively implemented until 2014.

<sup>1</sup> <http://centreforaviation.com/analysis/indonesias-price-floor-for-airlines-is-misguided-a-bad-precedent-and-will-be-counterproductive-204752>

**Table 3.2 Floor Price from Time to Time**

<b>Year</b>	<b>Regulation in Floor Price</b>	<b>Contents</b>
<b>2002</b>	Ministerial Decree 9, 2002	Article 1 : the enactment of the basic tariff and distance rate
<b>2005</b>	Ministerial Decree 36, 2005	Article 5 : the enactment of the reference tariff
<b>2006</b>	Ministerial Decree 11, 2006	Article 5 : the enactment of the reference tariff
<b>2010</b>	Ministerial Decree 26, 2010	Article 12 : the enactment of the ceiling price
<b>2014</b>	Ministerial Decree 51, 2014 Ministerial Decree 59, 2014	Article 15 : the enactment of the ceiling price
<b>2014</b>	Ministerial Decree 91, 2014	Article 1 : air transport enterprises in setting normal rates minimum 40 percent of the upper limit according to the group of services provided
<b>2015</b>	Ministerial Decree 126, 2015	Article 9 : air transport enterprises in setting normal rates minimum 30 percent of the upper limit according to the group of services provided
<b>2016</b>	Ministerial Decree 14, 2016	Article 9 : air transport enterprises in setting normal rates minimum 30 percent of the upper limit according to the group of services provided

Source : Indonesia's regulations for air transport

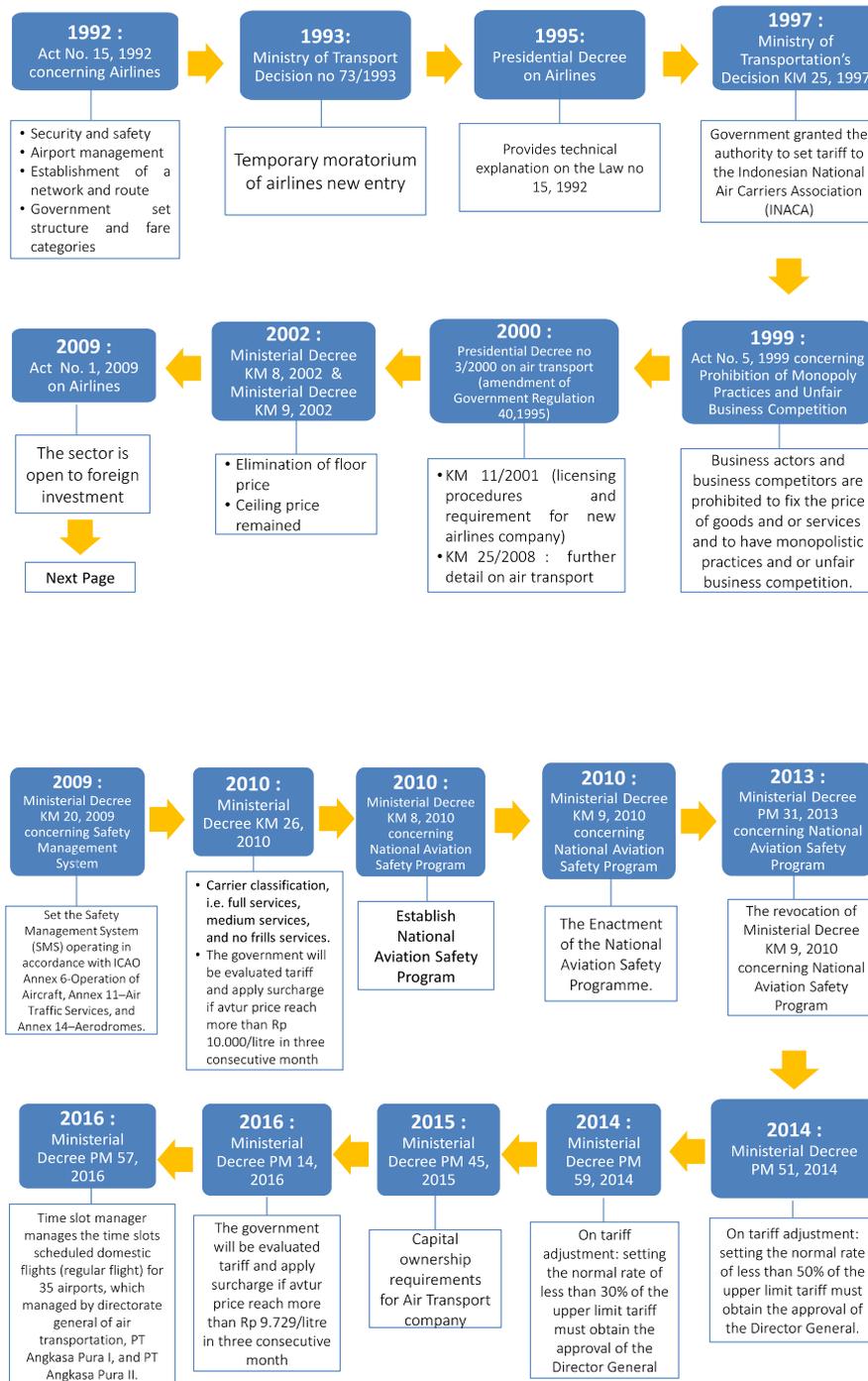
While the new air transport law of 2009 continued to limit foreign equity in the commercial airline business. It was not clear about foreign investment in other subsectors. For this, the negative list of investment, often referred as DNI (Daftar Negatif Investasi), is the reference. The current negative list of investment lists foreign equity limits on air transport (Table 3.3). The foreign equity limit on supporting services, including computer-based reservation system, passenger and cargo ground handling, and aircraft leasing is 67 percent. Similarly, foreign equity in freight forwarding services, airport support services and general airlines sales agencies is capped at 67 percent. The subsectors, which are closed to foreign investment, are cargo condition survey services and survey of air transport facilities.

**Table 3.3 Foreign Equity Limits**

<b>Sector</b>	<b>Subsector</b>	<b>Foreign Equity limits (in percent)</b>
<b>Air Transport</b>	Scheduled and non-scheduled domestic air transport services	49
	Scheduled international air transport services	49
	Supporting services, include computer-based reservation system, passenger and cargo ground handling, and aircraft leasing	67
	Airport services	49
	Air expedition freight forwarding services	67
	Airport support services	67
	General airline sales agent	67
<b>Services Auxiliary to All Forms of Transport</b>	Cargo condition survey service	0
	Survey of land, sea, and air transportation facilities	0
	Supporting business in terminals	67
	Freight forwarding services	67
	Warehousing	67
	Multimode Transportation	49

Source. Presidential Regulation No. 44/2016.

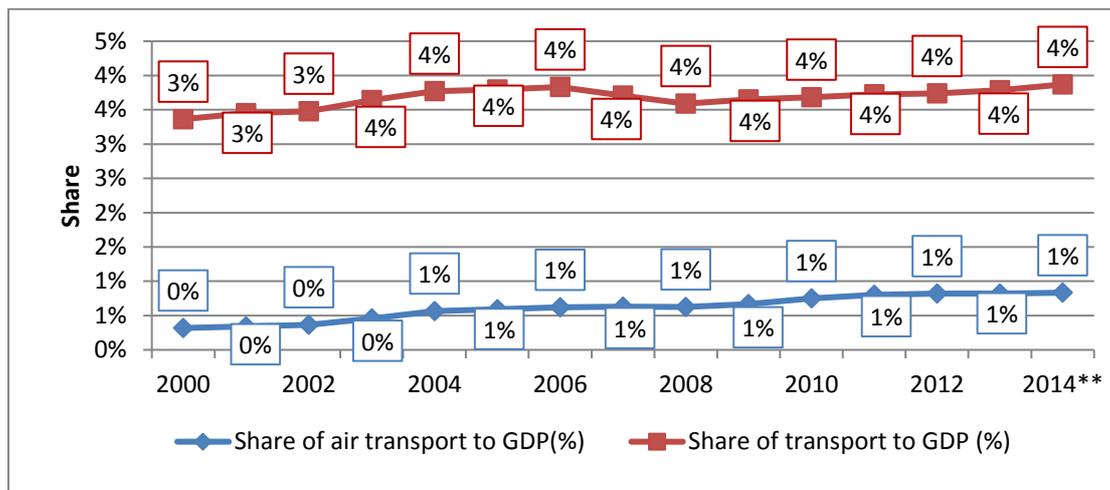
Figure 3.1 Policy Changes, 1990-2016



## 4. AIR TRANSPORT IN INDONESIA

The transport sector, on average contributed about 4 percent to GDP (at constant price) in the past 10 years. In the year 2000, the contribution of the sector to GDP was only 3 percent and from 2003, the sector's contribution to GDP increased to 4 percent. Air transports was about 25 percent of transport sector. Its contribution to the GDP increased from very small in the year 2000 to about 1 percent since 2004 (see Figure 4.1).

**Figure 4.1 Contribution of Transport and Air Transport in GDP (in percent)**



Source. Indonesia Statistics (BPS)

Air transport in Indonesia has been in excess demand. The first indicator is from the Indonesia's Input Output (IO) Table. First, the ratio of domestic demand to domestic output shows that the domestic demand for air transport has been higher than domestic output.<sup>2</sup> However, the gap is decreasing over time.

**Table 4.1 Air Transport: Domestic Demand and Output, 1995, 2005, 2010 (in percent)**

No	Indicators	1995*	2005**	2010***
1	Domestic Demand/ Domestic Output	117.9	114	105.1
2	Share of Export to Domestic Product	20.5	18.03	13.4
3	Share of Import to Domestic Demand	38.4	28	17.6

Source. Author's calculation based on Indonesia's Input Output Table

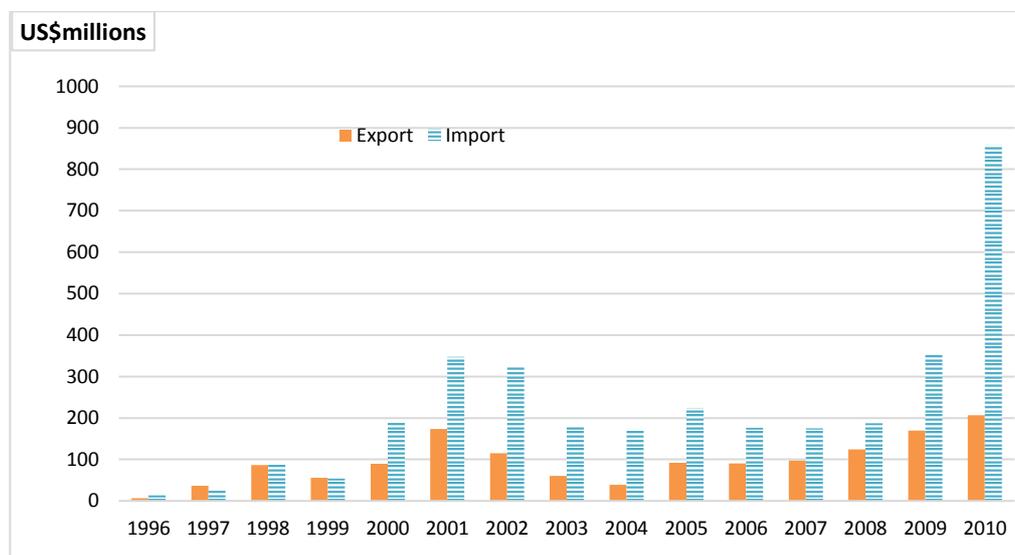
Notes. \* 172 Sectors \*\* 175 sectors \*\*\* 185 sectors

Second, the World Bank Trade in Services Database (Figure 4.1) shows that Indonesia's exports of air transport services are smaller than its imports. The deficit in absolute terms increased from USD 7.8 million in 1996 to USD 652 million in 2010. However relative to the total sales, the trade data also shows a declining trend in the deficit, due to the rapid growth of the domestic market. The ratio of imports to domestic

<sup>2</sup> IO table 1995 comprises 172 sectors, IO Table 2005 comprises 175 sectors, and IO Table 2010 comprises 185 sectors.

demand in Table 4.1 has fallen (alongside a fall in the ratio of exports to domestic output).

**Figure 4.2 Indonesia: Air Transport, Exports and Imports, 1996-2010**



Source. World Bank Trade in Services database

Using the IO table, we can calculate an output multiplier and indicators of various linkages of the air transport sector. Table 5 shows that the sector has high multiplier effect to the economy. The output multiplier is relatively similar among the three IO Tables. Based on IO 2010 for example, a 1million increase in final demand and therefore sector output will increase the total output of the economy by 2.37million. The extent of linkage is also strong: air transport has a Backward Linkage (BL) of 1.22 (ranked 34<sup>th</sup> for BL) and a Forward Linkage (FL) of 0.82 (ranked 80<sup>th</sup> for FL) in 2010. If BL or FL is greater than 1, it indicates the sector has high linkage. Air transport has a stronger backward linkage that forward linkage that its growth affecting more the input suppliers (sectors) than its users (sectors).

**Table 4.2 Indonesia Air Transport: Multiplier and Linkages**

No	Indicators	1995*		2005**		2010***	
		Value	Rank	Value	Rank	Value	Rank
1	Output Multiplier	2.29	39	2.37	33	2.37	34
2	Backward Linkage	1.20	39	1.21	33	1.22	34
3	Forward Linkage	1.16	36	0.93	57	0.82	80

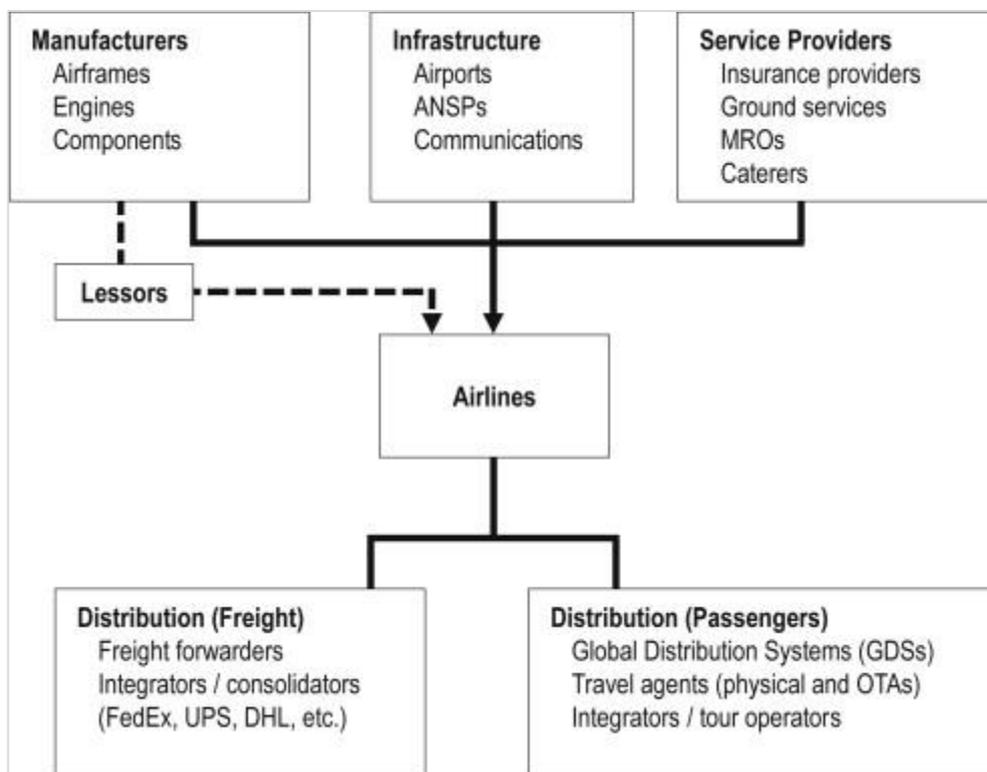
Source. Author's calculation based on Indonesia's Input Output Table

Notes. \* 172 Sectors \*\* 175 sectors \*\*\* 185 sectors

## 5. AIR TRANSPORT VALUE CHAIN IN INDONESIA

The main inputs of the airline business are fuel, aircraft and its maintenance. Apart from those main inputs, the airline business also relies on other services, such as food and beverages services, insurance, trade and other services. ICAO (2013) in its review of the aviation value chain to include airport and air navigation services, aircraft leasing services and manufacturing, maintenance repair and overhaul services, fuel supply, ground handling and systems for selling tickets including online systems. Tretheway and Markhvida (2014) provide the following graphic of the aviation value chain which distinguishes clearly between airlines and their input suppliers.

**Figure 5.1 Aviation Value Chain**



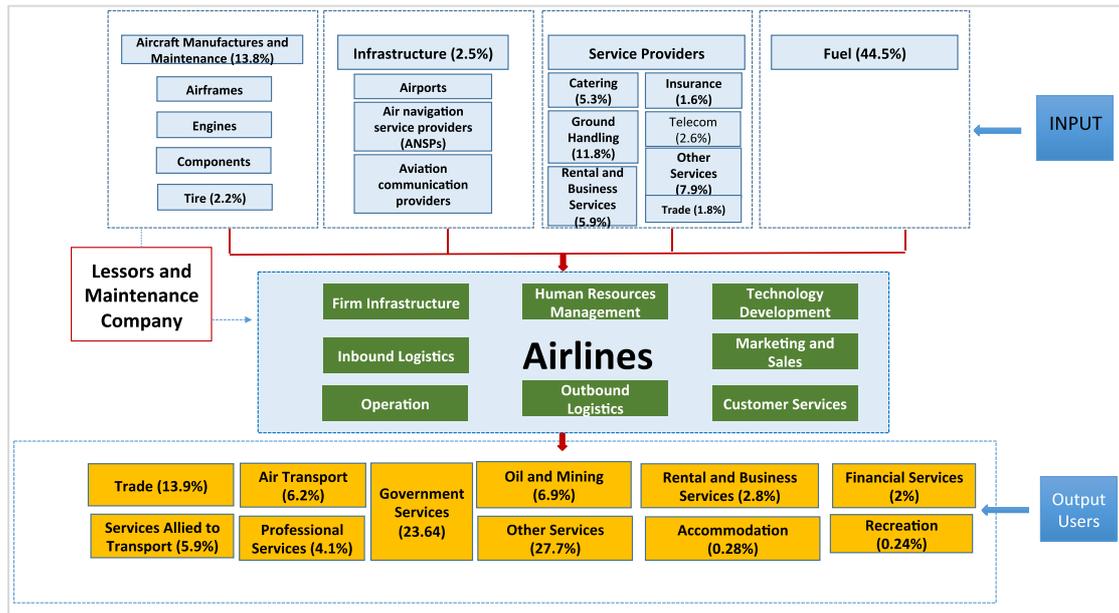
Source: Figure 1 in Tretheway and Markhvida (2014)

We try to map out the value chain of the air transport based on Indonesia's Input Output (IO) Table (see Figure 5.1).

Although, the proportions differ across time, the input elements of the airline business are the same: fuel, aircraft and maintenance, infrastructure and other services related to air transport. Based on the 2010 IO table, the largest input is fuel, about 44.5 percent, followed by aircraft and maintenance (13.8 percent), services allied to air transport, i.e., ground handling (5.3 percent), food and beverage (5.3 percent), rental and business services (5.9 percent), telecommunication (2.6 percent), insurance (1.6 percent), trade (1.8 percent) and other services (7.9 percent). We compare IO Tables of 2010 to 2005 and 1995 Tables. Based on the 2005 IO Table, fuel was about 30 percent of total input of the sectors listed (see Appendix 1 for a complete comparison).

We also try to map the main users of the sector based on the IO Table. Figure 5.2 shows that the largest users of air transport services are general government services (28.1 percent), followed by trade services (13.9 percent), air transport itself (6.2 percent), services allied to transport (5.9 percent), professional services (4.1 percent), oil and mining sector (6.9 percent), rental services and business support system services (2.8 percent) and other services (27.7 percent). We also compare the IO tables of 2010 to 2005 and the 1995 IO Table. Based on the 2005 IO Table, the largest sector remains the government sector (23.6 percent) followed by the trade sector (17.3 percent), air transport itself (11.8 percent), and business services (9.9 percent). Appendix 1 contains a complete comparison.

**Figure 5.2 Air Transport Value Chain**



Source. Authors' calculation based on Indonesia's IO Table

## 6. AIR TRANSPORT AND GLOBAL VALUE CHAIN

Although sea transport remain to be the main important modes of transport for raw material and intermediate inputs, air transport shows an increasing role in the global value chain. Live animals and perishable inputs from agriculture and fishery sectors for restaurants worldwide are often transported by air. Air cargo also holds an important niche in the transport of lightweight, high-value commodities (Popescu, et al, 2010).

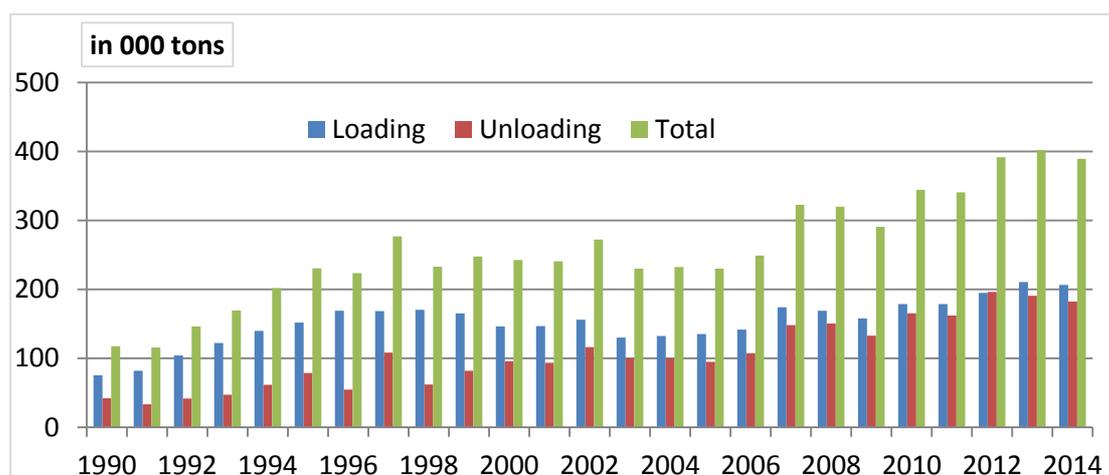
In Indonesia, international air cargo, loaded and unloaded, increased from about 117,000t in 1990 to 389,000t in 2014. The average growth for the period of 1990-2014 was about 6 percent per annum. Figure 6.1 shows that the volume of loaded cargo is always higher than unloaded cargo except for 2012. Apart from fresh products, international cargo also delivers parts and components.

In Indonesia, there are 4 cargo airlines, with 3 scheduled cargo airlines (PT Cardig Air, PT TRI-MG Intra Asia Airlines, PT MY INDO Airlines) and 1 non-scheduled cargo airlines (PT Asialink). See the Appendix for details of cargo airlines. We describe the activities of each airline to provide a picture of the areas of specialisation of air transport in the cargo sector.

- Cardigair delivers fresh tuna, aircraft engines, live animals, and car parts. It serves Jakarta –Singapore, Jakarta – Balikpapan, Balikpapan –Singapore and Wamena Jayapura regularly but also serves other routes on a charter basis, including Hongkong and Thailand.
- PT TRI-MG Intra Asia Airlines operates cargo aircraft on scheduled routes for contract charters and non-scheduled routes for ad-hoc charters. The company serves the oil and gas industry, computer, electronic and spare parts businesses. It serves Jakarta - Singapore (JKT - SIN), Balikpapan - Singapore (BPN – SIN, Jakarta - Balikpapan (JKT - BPN).
- PT MY Indo Airlines delivers airmail, dangerous goods, live animals, perishable cargo (vegetables, seafood, chilled meat, flowers and spare parts), artwork cargo, and heavy weight cargo (including extremely large, heavy or non-standard shipments, such as pipes, generators, pumps and other drilling or off-shore equipment). PT MY Indo Airlines serves Halim Perdanakusuma-Balikpapan, Halim Perdanakusuma-Singapore and Balikpapan-Singapore.
- PT Asialink Cargo Express<sup>3</sup> delivers fresh products (fruits and vegetables), marine products (crab, salmon, shrimp, and lobster), dangerous goods, automotive products (pistons, gaskets, bulbs, brake pads), electronics, and oil gas.

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<sup>3</sup> <http://www.asialinkcargo.co.id/>

**Figure 6.1 Indonesia: International Cargo, 1990-2014**

Source. Indonesia Statistics (BPS)

Grosso and Shepherd (2011) examine the response of cargo traffic to changes in regulatory regimes. They find that air transport matters more for some sectors than others. In particular, they find that liberalisation of air transport regulation is associated with larger effects on cargo volumes of time sensitive products and of parts and components. They conclude that 'economies seeking greater integration in international production networks could greatly benefit from a more liberal aviation policy regime'. (p. 203).

## 7. THE IMPACT OF DEREGULATION

A significant growth of the air transport sector follows the series of deregulations on the sector. We will discuss each element in the Structure Conduct Performance framework. Several aspects are considered, including output and price.

### 7.1 MARKET STRUCTURE

The number of airlines increased significantly following the reopening up of the sector for new entrance in 2001. Before entry was eased, there were only six scheduled airlines in Indonesia.<sup>4</sup> The state-owned enterprises, Garuda Indonesia and Merpati Nusantara dominated the industry. In 1992, both captured about 90 percent of the market. In 1996, however the share of these two dropped to 68 percent (ADB, 1997). In 1993, the government temporarily closed the industry for new entry. However, the moratorium was lifted in 2001. As a result a number of new airlines emerged. By 2004, 28 new airlines were licensed. By this time, Merpati Nusantara and Garuda Indonesia captured about 38 percent of Indonesia's air travel market, while the new entrants captured 35 percent of the market (Damuri and Anas, 2005).

In the past ten years, the industry has consolidated. After the euphoria of having a large number of air transport providers, naturally some of the new entrants closed down, either due to lack of capacity for managing airlines or financial difficulties. Scheduled airlines declined to only 17 in 2014 (OECD, 2014) and only 12 this year as in Table 7.1. Adam Air for example, established in 2003, after experiencing a number of fatal accidents ended up with its license revoked in 2008. Some other airlines also went bankrupt including Batavia Air, which filed for bankruptcy in 2013. Merpati Nusantara, the state-owned airline, ceased operation in February 2014.

**Table 7.1 Scheduled Airlines, 2016**

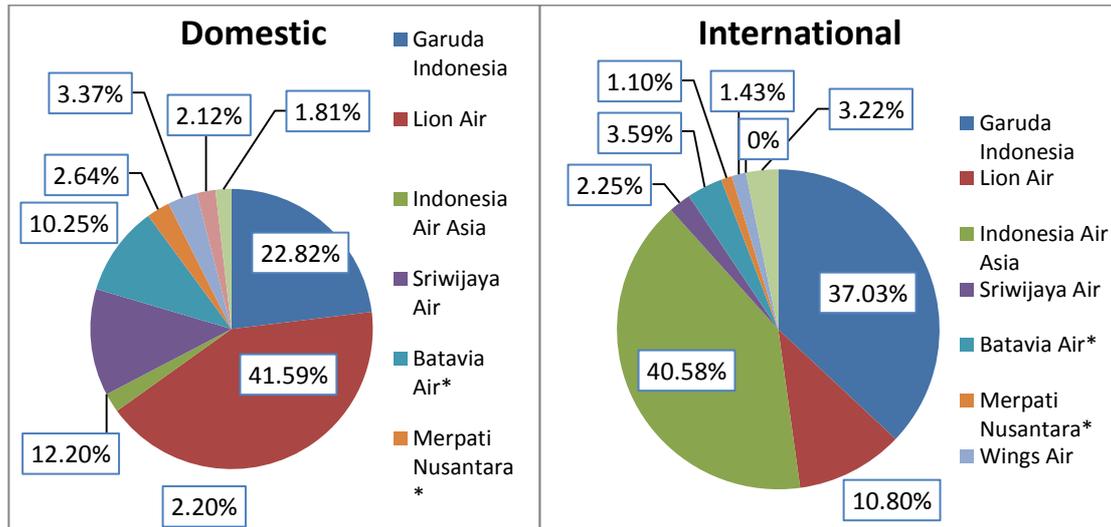
No.	Airlines
1	PT Garuda Indonesia
2	PT Mandala Airlines (AOC REVOKED May , 2015)
3	PT Indonesia AirAsia
4	PT Lion mentari Airlines
5	PT Wings Abadi Airlines
6	PT Sriwijaya Air
7	PT Kal Star Aviation
8	PT Travel Express Aviation
9	PT Citilink Indonesia
10	PT Transnusa Aviation Mandiri
11	PT Batik Air Indonesia
12	PT Asi Pudjiastuti Aviation
13	PT Aviastar Mandiri
14	PT Sky Aviation (Revoke)

Source. Ministry of Transport, accessed March 30, 2016

<sup>4</sup> Two states owned enterprises: Garuda Indonesia, Merpati Nusantara. Four private companies: Sempati Air, Bouraq Indonesia, Mandala Airlines and Dirgantara Air Service.

While Garuda was the dominant player in the industry back in 1990s, the largest domestic carrier in Indonesia now is the Lion Air, with a market share of 42 percent (Figure 7). Meanwhile, international routes were dominated by Indonesia Air Asia and Garuda Indonesia with total share of more than 75 percent (Saraswati and Hanaoka, 2013). While Garuda serves international routes from the largest hubs, i.e., Soekarno Hatta and Denpasar, Indonesia Air Asia serves international routes from smaller international airports.

Figure 7.1 Market Share, 2012



Source. Saraswati & Hanaoka, 2013

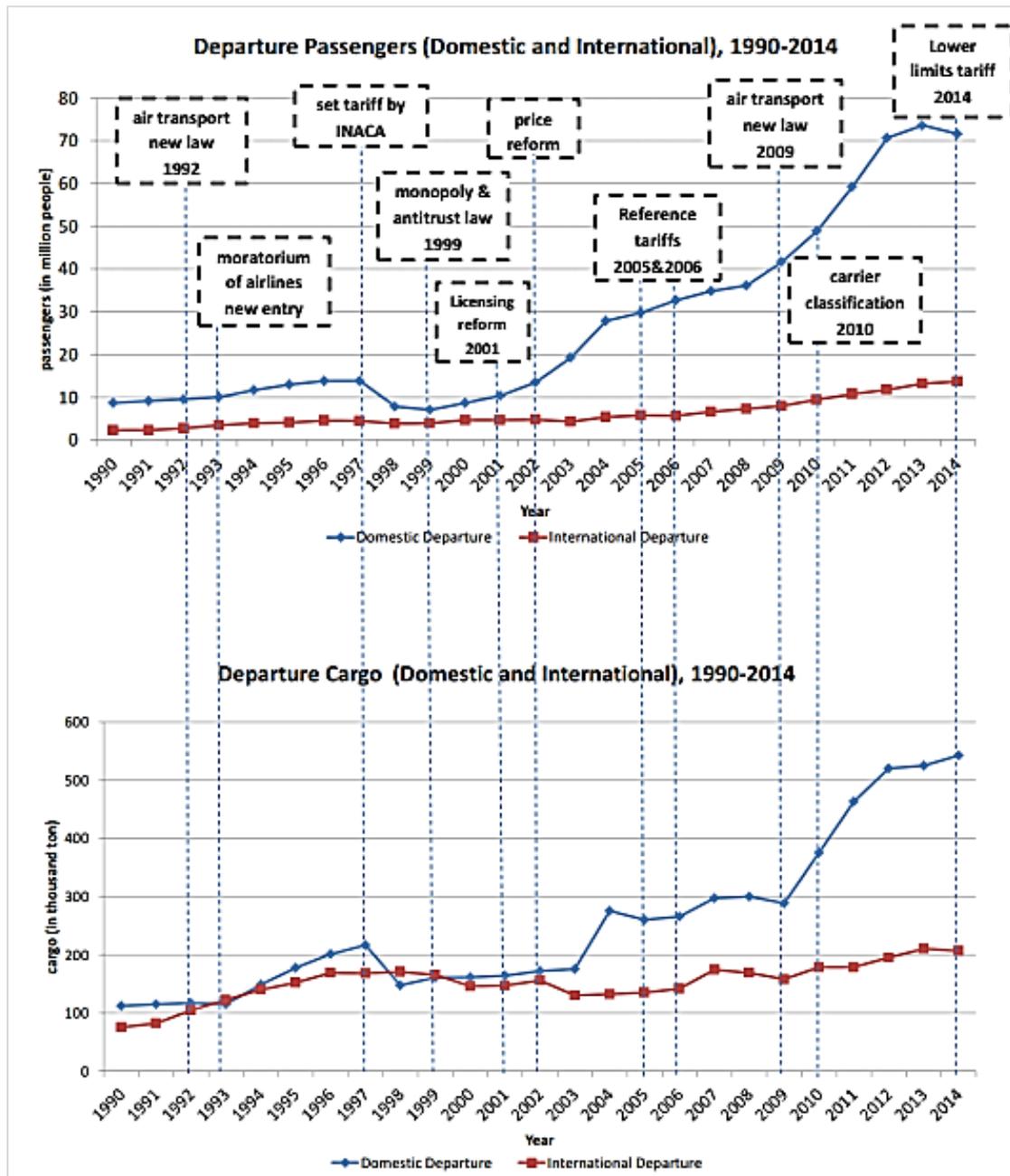
## 7.2 AIR TRAFFIC

Air traffic grew very fast in the past 15 years. During the period of 1990-2014, domestic passenger departing from any airports in Indonesia increased by 11 percent p.a on average. Meanwhile, international passengers departing from Indonesia increased by about 8 percent p.a. In 2014, total domestic passengers (departing and arriving) in any airports in Indonesia were about 152.5 million, almost 4 times the traffic in 2003 of only 42.2 million. Total international passengers were about 27 million, more than three times the quantity in 2003.

Domestic cargo also shows a significant increase, from 370,500t in total for 2003 to 935,500t in 2014. The need for faster inter-city and inter-island transport of perishable goods is among the reasons for the increase. Similarly, international cargo also increased, although the increase was not as big as that of domestic cargo. In 2003, the total international air cargo was only 230,300t which increased to 389,300 ton in 2014.

Figure 7.3 shows the changes in passenger numbers and cargo volumes, alongside key milestones in the reforms of policy. Passengers and cargo departing from Indonesia’s airports during the 1990-2014 follow an increasing trend. However, a significant increase took place after 2002, following the price and entry reforms.

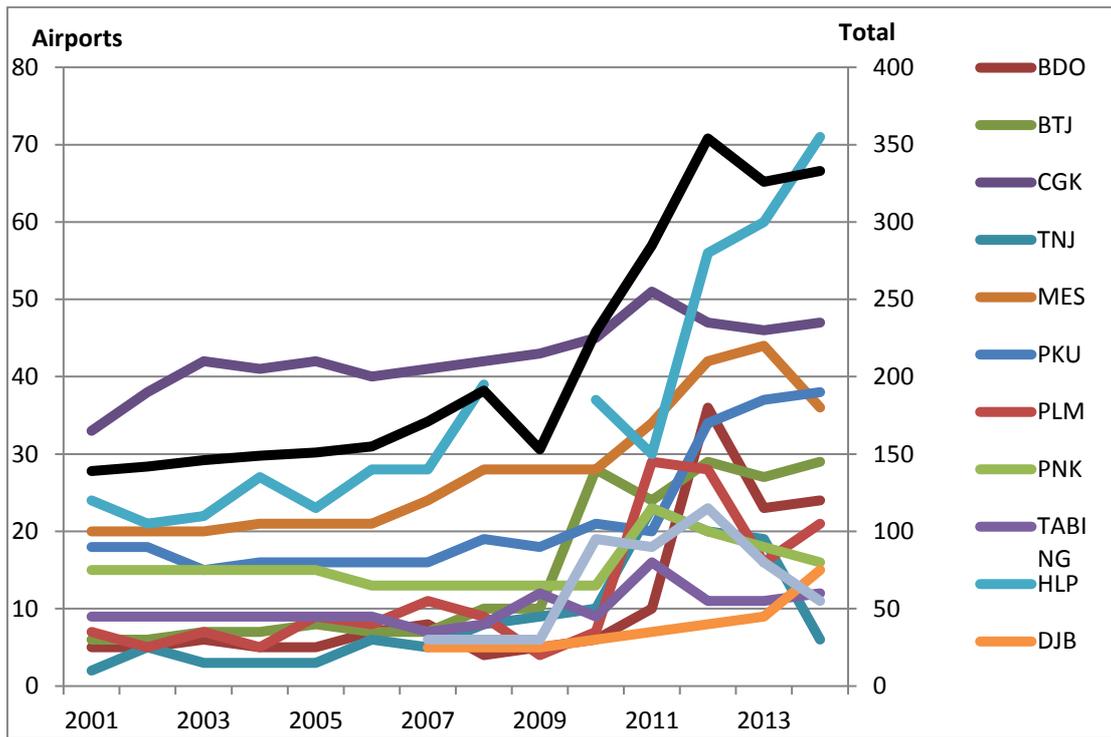
Figure 7.2 Air Traffic (Domestic &amp; International Flights) 1990-2014 (in million person)



Source. Indonesia Statistics (BPS), 2016

The number of routes has also increased, particularly at secondary airports. Figure 7.4 shows that total number of routes for 13 airports increased from 139 in 2001 to 333 in 2014. The significant increase took place in secondary airports, such as Bandung (BDO). Meanwhile, big airports, particularly in Jakarta (CGK) demonstrate their operating constraints, since no significant increase in the number of routes was possible.

**Figure 7.3 Number of Routes in 13 Airports, 2001-2014**



Source. Adapted from Setiawan et al, 2016

### 7.3 AIR FARES

Although, price data is relatively difficult to get, especially for a long timeframe, some indications are available from earlier studies. The removal of floor price in early 2000 has resulted in a competitive price, in economy class travel in particular. Ministry of Transport (2005) provides indicator that price had significantly decreased during the period of 2000-2004 following this change. As shown in Table 7.2, the average price for all routes in the year 2000-2001 and 2002 were much higher than the price in 2003. Price continued to drop in 2004.

**Table 7.2 Average Airfare for Economy and Middle Class**

No	Route	1996-1999 (Rp)	2000-2001 (Rp)	%	2002 (Rp)	%	2003 (Rp)	%	2004 (Rp)	%
1	CGK-BPN	356,000	1,382,000	288	1,037,250	-25	494,174	-52	396,092	-20
2	CGK-BDJ	189,000	1,059,000	460	791,950	-25	456,791	-42	324,600	-29
3	CGK-BTH	256,000	974,000	280	684,750	-30	434,159	-37	348,724	-20
4	CGK-DPS	251,000	1,138,000	353	733,933	-36	542,420	-26	386,872	-29
5	CGK-DJB	189,000	719,000	280	914,600	27	305,281	-67	245,785	-19
6	CGK-JOG	143,000	566,000	296	456,950	-19	270,654	-41	236,080	-13
7	CGK-UPG	377,000	1,572,000	317	1,085,889	-31	549,487	-49	422,500	-23
8	CGK-MES	368,000	1,550,000	321	1,060,350	-32	519,332	-51	436,255	-16
9	CGK-PDG	276,000	1,070,000	288	797,000	-26	364,299	-54	332,447	-9
10	CGK-PLM	144,000	550,000	282	451,000	-18	292,143	-35	260,704	-11
11	CGK-MDC	597,000	2,275,000	281	1,250,988	-45	629,029	-50	598,477	-5
12	CGK-PGK	143,000	544,000	280	453,475	-17	296,611	-35	272,807	-8
14	CGK-SRG	122,000	465,000	281	377,250	-19	299,799	-21	290,312	-3
15	CGK-SOC	144,000	591,000	310	443,200	-25	334,338	-25	296,119	-11
16	CGK-SUB	206,000	804,000	290	602,756	-25	290,504	-52	265,831	-8

Note: Pink: increase, Green: decrease

Source. Ministry of Transport (2005).

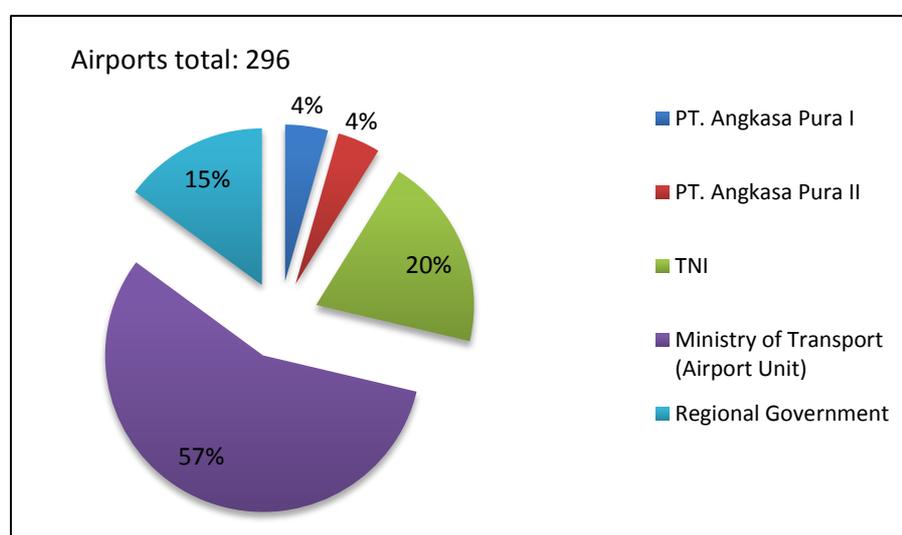
## 8. NEW ISSUES

Since the introduction of the policy reforms outlined a number of new issues have emerged which we review in this section.

### 8.1 CONGESTION

Indonesia has 296 airports economy wide, with 26 of them commercially operated by state owned airport management, Angkasa Pura I and II. Angkasa Pura I is managing 13 airports in the eastern part of Indonesia, while Angkasa Pura II is managing the other 13 airports in the western part of Indonesia.<sup>5</sup> The remaining are managed by the unit under Ministry of Transport, the Air Force or regional government (see Figure 8.1).

**Figure 8.1 Total Airport in Indonesia by Operators**



Source : Indonesia Statistics (BPS)

Congestion has been a feature of the last few years. The Soekano Hatta (Soeta) International Airport in Jakarta, which has a capacity for 22m passengers, accommodated 53.8m passengers in 2015 (Jakarta Post, 2016). Several other airports are also reported to operate beyond their capacity, such as Husein Sastranegara International Airport in Bandung. This has resulted in delays. To address the issues, AP

<sup>5</sup> AP II manages Soekarno Hatta, Halim Perdana Kusuma International Airport, Sultan Mahmud Badarudin International Airport, Supadio Airport, Kualanamu International Airport, Minangkabau International Airport, Sultan Syarif Kasim II International Airport, Husein Sastranegara International Airport, Sultan Iskandar Muda International Airport, Raja Haji Fisabilillah International Airport, Depati Amir Airport, Sultan Thaha Airport and Silangit Airport. AP I manages Ngurah Rai International Airport, Juanda International Airport, Sultan Hasanuddin International Airport, Sultan Aji Muhammad Sulaiman Sepingan International Airport, Frans Kaisiepo Airport, Sam Ratulangi International Airport, Adisucipto International Airport, Adisumarmo International Airport, Syamsudin Noor International Airport, Achmad Yani International Airport, Lombok International Airport, Pattimura Airport and El Tari International Airport

II had increased its runway capacity from 72 per hours to 86 per hour in the second semester of 2015.<sup>6</sup>

The state-owned airport management (AP I and AP II) had also started the expansion of their airports to keep up with the fast growing demand. Major airports currently either had expanded or undergone massive expansion. Soekarno-Hatta Airport will soon have a new terminal adjacent to Terminal 3. The new terminal is about 422,804 square meters with a commercial area of 70,000 sq m. It will host around 180 tenants and will be able to accommodate 15 million passengers in the first phase and 25 million passengers in the second phase. It will also have at least seven baggage conveyor belts, 206 check-in counters and 24 self check-in and bag drop counters to avoid long lines (*Jakarta Post*, 22 April 2016).

Soekarno-Hatta International Airport absorbed Rp10 trillion for the first phase of its expansion. The expansion was funded partly by the state budget (PMN) and partly by corporate loans from state banks and internal AP funds. AP II is on progress to expand Soeta third runway and phase 2 and 3 of the terminals. The next phase of expansion will be additional runway and further expansion of Terminal 3. Given that Soekarno-Hatta International Airport accommodated 53.8m passengers last year, the expansion remains to be too limited. The pressures for Soekarno-Hatta International Airport need to be addressed.

AP II also built a new terminal building at Husein Sastranegara International Airport in Bandung. The new terminal is about 17,000 square-meters which can accommodate about 3 million people per year. The new terminal began operation in April 2016. The current air traffic to Bandung stood at 10000 passengers per day with 70-80 flights per day. The old terminal building can accommodate only 500,000 passengers per year. This airport also shifted some burden for to Husein Sastranegara, as Jakarta and Bandung are about 170kms apart.

The cost of airport revitalization is not small. Table 8 shows the list of expansion projects and expansion that had already finished and the estimated cost. With the growing tourist destinations, there is demand for airport upgrading outside those airports managed by AP I and AP II.

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<sup>6</sup> <https://m.tempo.co/read/news/2015/06/04/090672027/pergerakan-pesawat-di-bandara-soekarno-hatta-jadi-86-per-jam>

**Table 8.1 Airport Expansion**

<b>Airport</b>	<b>Expansion</b>	<b>Total Cost (IDR Trillions)</b>
Soekarno Hatta	Ongoing	4.7
Halim Perdana Kusuma International Airport		
PLN Sultan Mahmud Badarudin International Airport	Ongoing	
Supadio Airport	2015	
Kualanamu International Airport	2013	
Minangkabau International Airport		
Sultan Syarif Kasim II International Airport	2012	
Husein Sastranegara International Airport	2016	0.139
Sultan Iskandar Muda International Airport		
Raja Haji Fisabilillah International Airport		
Depati Amir Airport		
Sultan Thaha Airport	2016	0.3
Silangit Airport	Ongoing	0.119
Ngurah Rai International Airport	2014	3.1
Juanda International Airport	2014	1.1
Sultan Hasanuddin International Airport		
Sultan Aji Muhammad Sulaiman Sepinggan International Airport	2014	2.1
Frans Kaisiepo Airport		
Sam Ratulangi International Airport		
Adisucipto International Airport	2015	5.0
Adisumarmo International Airport		
Syamsudin Noor International Airport		
Achmad Yani International Airport	Ongoing	2.0
Lombok International Airport	Ongoing	2.3
Pattimura Airport		
El Tari International Airport		

Source: Angkasa Pura I and Angkasa Pura II

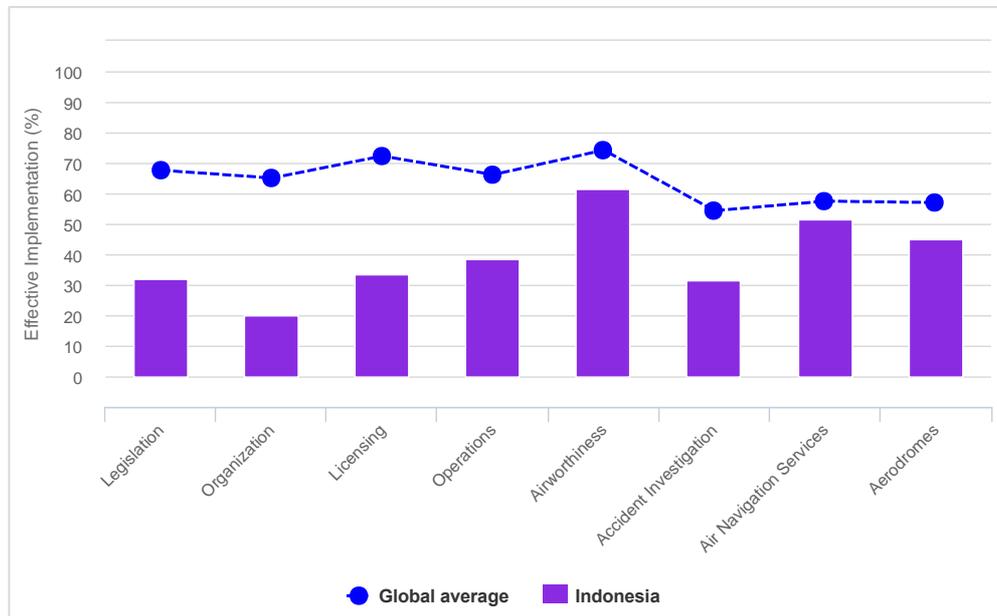
## 8.2 AIR TRANSPORT SAFETY

Air transport safety is one of the crucial issues related to Indonesia aviation business. A number of global ratings indicate concern over Indonesia's air safety monitoring quality. First, the ICAO USOAP<sup>7</sup> indicates Indonesia's safety rating is below the global average (<http://www.icao.int/safety/Pages/default.aspx>). Core areas audited by the USOAP are: primary aviation legislation and civil aviation regulations; civil aviation organization; personnel licensing and training; aircraft operations; airworthiness of aircraft; aircraft accident and incident investigation; air navigation services; and

<sup>7</sup> The ICAO USOAP is the safety audit to determine the status of States' establishment of safety oversight measures and resources, as well as relevant ICAO Standards and Recommended Practices (SARPs), associated procedures, guidance material and safety-related practices. The USOAP was expanded in 2005 to cover provisions contained in all safety-related Annexes to the Convention on International Civil Aviation (Chicago Convention).

aerodromes and ground aids. The rating is between 0 to 100 percent, with 0 percent being "Not Implemented" and 100 percent being "Fully Implemented". Based on 2014 audits, the ICAO USOAP for Indonesia was below the global average (Figure 8.2).

**Figure 8.2 ICAO USOAP Safety Audit Results 2014: Indonesia**



Source. ICAO

Second, the US Federal Aviation Authority (FAA) also issued its international aviation safety assessment (IASA) in 2015. Following the ICAO audit, US FAA downgraded Indonesia to Category 2, which means that Indonesia does not meet the ICAO standard.<sup>8</sup>

Third, following the ICAO audit result, the European Union banned all air carriers certified by the authorities with responsibility for regulatory oversight of Indonesia, with the exception of Garuda Indonesia, Airfast Indonesia, Ekspres Transportasi Antarbenua, Indonesia Air Asia, Citilink, Lion Air and Batik Air.<sup>9</sup>

Straits Times (2015) reported 40 fatal air crashes in Indonesia since 2001 in contrast to only 6 in Britain over the same period: a passenger on board an Indonesian carrier was estimated to be 25 times likelier to die in a crash than one in an American airliner.

Related to air safety, other concerns in the aviation business in Indonesia are the quality of air traffic controller. Tempo (2013) argued that the combination of heavy traffic and shortage of air traffic controllers at Soeta International Airports put air traveller at risk. Tempo reported that an air traffic-controlling supervisor at Soeta Airport also has to handle daily traffic control due to a shortage of human resources. At the time of Sukoi Superjet 100 demo airplane crashed on Mount Salak in Indonesia in 2012, the Safety Investigation Committee (KNKT) pointed out three major causes of the crash, which included the failure of the air traffic control at Soekarno Hatta to provide indication of the height of Mount Salak.

<sup>8</sup> [https://www.faa.gov/aircraft/air\\_cert/airworthiness\\_certification/](https://www.faa.gov/aircraft/air_cert/airworthiness_certification/)

<sup>9</sup> [http://ec.europa.eu/transport/modes/air/safety/air-ban/doc/list\\_en.pdf](http://ec.europa.eu/transport/modes/air/safety/air-ban/doc/list_en.pdf)

Based on our discussion with air transport stakeholders, the shortage of quality human resources is the main impediments to meet the ICAO safety standards. The number of inspectors at the DG Air Transport could not keep up with the growth of the sector. Stakeholders, however, have been discussing how to fill the gap in the short run. One of the solutions was to lend some of their experienced pilots as inspectors to the DG's safety directorate. The longer run solution requires systematic improvement of the human resources, recruitment and training.

### **8.3 FLOOR PRICE VS. SAFETY**

Responding to the recent accident of AirAsia flight QZ8501, Indonesia's government reintroduced floor price. Ministerial Decree 59/2014 requires air transport providers who set their tariff less than 40 percent of the upper bound of related services categories to obtain approval from related Director General. The Director for Air Transport at the Ministry of Transport argues that the floor price is used to ensure airlines do not lower safety levels. The concern is that price competition drives airlines for predatory pricing and neglect safety standards. As the Minister said, "We want the aviation sector to be healthy, not cheap. If it's cheap, there are many things that might not be done."<sup>10</sup>

The argument, however is unconvincing since the ICAO audit referred to earlier was actually pointing at the weakness at the regulatory side rather than in the airlines. The government needs to improve its capacity in monitoring airworthiness of airlines, quality of the airlines crews and controlling air traffic. Ministry for Transport should also work closely with the Competition Commission to prevent predatory pricing and ensure airlines comply with safety standard.

Setiawan et al (2016) assessed the impact of the floor price on airfare using difference in difference on a travel agent's air ticket prices for the period 2013-2015. They found that the floor price increased the average ticket price by Rp 75,368 (US\$ 6). The authors argue that the floor price only affects pricing of the low cost carriers. Garuda Chief Executive Arif Wibowo also said that "in fact, it means that we will not be attacked by competitors that have predatory pricing. It's still far from Garuda's average price,"<sup>11</sup>

Tony Fernandez of AirAsia did ask the government to lower the floor price to 30 percent (Jakarta Post, April 25, 2016). The Ministerial decree no. 14/2016 then revised the floor price back to 30 percent of the ceiling price. But even so, Indonesia has shifted back towards a 1990s air transport regulatory regime on pricing and licensing.

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<sup>10</sup> <http://www.reuters.com/article/us-indonesia-airplane-regulations-idUSKBN0KH0O620150108>

<sup>11</sup> See the previous footnote.

## **9. ASEAN OPEN SKY POLICY AND INDONESIA'S PARTICIPATION**

ASEAN Open Skies Policy (AOSP) [also known as the ASEAN Single Aviation Market (ASAM)] is one of the key pillars to support the establishment of the AEC via facilitating the free, efficient, safe, and secure movement of people and goods within and potentially beyond ASEAN. There are economic and technical elements of the ASEAN Single Aviation Market. Economic elements are those of market access, charters, airline ownership and control, tariffs, commercial activities, competition law and policy/state aid, consumer protection, airport user charges, dispute resolution, and dialogue partner engagement. The technical elements include aviation safety, aviation security, and air traffic management.

The operationalization of ASEAN Open Skies comprises of three agreements: the ASEAN Multilateral Agreement on the Full Liberalisation of Air Freight Services (MAFLAFS), the ASEAN Multilateral Agreement on Air Services (MAAS), and the ASEAN Multilateral Agreement on the Full Liberalisation of Passenger Air Services (MAFLPAS). Ratification of those three agreements will allow any airlines designated by an ASEAN Member State to operate both passenger and cargo scheduled services between its home economy and a point with international airport in another Member State, and then to a point with international airport of a third Member State, without limitations on capacity and schedule.

The ratification of the protocols under the three agreements has not been smooth. Indonesia was among the late signatory members to ratify the agreement. It was only April 2016 when Indonesia together with Laos signed the agreement (see Appendix 3 for Indonesia's schedule of ratification of protocols under ASAM agreements).

With ASAM in place, does it not mean that ASEAN carriers are free to fly across ASEAN sky? Unfortunately not!

ASEAN members limit the access of other ASEAN carriers to several airports within their jurisdiction. Indonesia, for example, limits access of ASEAN carriers to five designated airports - Jakarta Soekarno-Hatta (Jakarta), Medan Kuala Namu (North Sumatra), Surabaya (East Java), Denpasar (Bali), and Makassar (South Sulawesi). Laos also limits access to Vientiane and Luang Prabang. The Philippines excludes Manila from AOSP. The secondary limitation to the access is the availability of slot time at the designated airports. The problem is some of the airports have slot time constraints for the next 1-2 years, e.g. Soekarno Hatta airports. Although the new terminal building at Soekarno Hatta is fully operating later this year, the slot time is constrained by availability of runways. For the longer run perspective, ASAM will benefit travellers in Indonesia as Indonesia is currently expanding its major airports, including finishing the third runway of Soekarno Hatta by the end of 2017. But in the meantime, the application of policy on access to airports is limiting its impact.

Ahsan et al (2015) also argue that restrictions remain on the rights to fly routes that do not connect to the carrier's home economy, on the application of the 'community carrier principle' (where ownership can be accumulated in order to access the benefits of the

agreements). They also point to forces in favour of further reform. These include that they call the ‘growing confidence’ of Indonesian carriers (evident in

Indonesia’s policy change noted above), the pressure for open regimes from interests associated with secondary cities, and the value of a common approach when dealing with large non-members such as China. Also Tan (2013) argues that some economies have more liberal arrangements with economies outside ASEAN than they do with their ASEAN partners: these agreements could provide benchmarks for internal commitments.

## **10. LESSON LEARNED AND POLICY RECOMMENDATION FOR STRUCTURAL REFORMS**

The reform of air transport policy in Indonesia has led to significant changes in prices and is associated with a rise in passenger numbers. Partly the growth in load is related to overall growth in the economy but the capacity in the sector has also expanded. This has been facilitated by changes in licensing including for foreign carriers. Service quality has increased with more cities being served more often.

The inter-sectoral effects have been important. The growth of the sector has led into growth in sectors supplying inputs, including energy and manufacturing sectors. The better performance of the sector has supported the improved performance of other sectors, including tourism and business services.

Despite these positive experiences, the reform has been unstable, with a more recent return to the effective imposition of a floor price and tighter rules on licensing. This experience is in part a response to the growth of the sector itself and the safety (including congestion) issues with which growth has been associated. IATA has presented options for the solutions to these issues, and their proposals do not include economic instruments like price controls or rules on entry. Instead they involve the adoption of international standards and systems to improve safety and to manage capacity (in airports and with respect to air traffic control) more efficiently. Instead, the response has been to slow down the reform process, rather than deal directly with the source of the problem.

This outcome leads to the following observations on lessons from the Indonesian experience.

- One is the value of targets and instruments in the selection of policy. The most efficient instrument is directly related to the policy problem. As just noted, a recent example is the use of price controls for the purpose of meeting safety targets. More effective is the direct application of safety policy for the purpose of targets in that area. The application of an indirect measure has other side effects, often not anticipated, impedes the process of competition and the design of options in terms of quality and price, and risks additional costs for consumers including exporters of other goods and services.
- Another is the importance of policy and capacity in complementary areas, in this case, airports. Airport capacity including runway landing slots are a more important constraint on entry than is policy. Awareness of the linkages between the sector undergoing reform and the rest of the economy is important to appreciate. The risk is that the benefits of reform are captured instead by input suppliers, or absorbed in higher costs associated with other services.

- Trethewey and Markhvida (2014) argue that other parts of the aviation value chain can exercise market power. In that case, liberalisation of the airline activity would lead to competition among airlines, higher traffic volumes, greater demand for other inputs and a redistribution of rents along the chain. Indeed, the authors also report IATA data which shows relatively low returns on capital in airlines compared to other activities in the last decade.<sup>12</sup> This leads to a case for the application of competition policy (and reform as well where regulation is the source of the problem) to those other sectors.
- A third observation is the value of international commitments to continue to drive reform and provide some guidance to the next steps in reform. While slow to commit to ASEAN arrangements, Indonesia has now been drawn into the process of regional integration, having built its own confidence through domestic reform.

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<sup>12</sup> <https://www.iata.org/whatwedo/Documents/economics/profitability-and-the-air-transport-value%20chain.pdf>

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## APPENDIX

### APPENDIX 1. CALCULATING MULTIPLIER AND LINKAGES

#### Multiplier Analysis

Multipliers are basically contracted from Leontief inverse (matrix). (For detailed mathematical steps in composing Leontief inverse (matrix), see Miller and Blair (2009)

$$\begin{aligned} \Delta X &= AX + \Delta Y \\ \Delta X &= (I - A)^{-1} \cdot \Delta Y \end{aligned} \quad \dots\dots\dots (2)$$

$$\Delta X = L \cdot \Delta Y \quad \dots\dots\dots (3)$$

$X = ([X_i]_{n \times 1})$ , the column vector of the total output changes received of endogenous variables.  $A = ([a_{i,j}]_{n \times n})$ , is the matrix of technical coefficient, which is obtained by dividing each component in any of endogenous variables by its column sum value. This indicates spending on sector  $i$ 's output from sector  $j$  as inputs of its total expenditure.  $Y = ([Y_i]_{n \times 1})$ , is the column vector of final demand or exogenous variable changes.  $L = ([l_{i,j}]_{n \times n}) = (I - A)^{-1}$  is Leontief inverse matrix.

Output multiplier is the initial unit's worth of sector  $j$  output needed to satisfy the additional final demand (Miller and Blair, 2009). It can be obtained by the column sums of Leontief inverse matrix. Mathematically, it follows;

$$OM_j = \sum_{i=1}^n l_{ij}$$

#### Linkage Analysis

A key sector in the economy must have strong interdependency with other sectors, neither with its input-supplier sector or output-demander sectors. The simplest tools to measure the interdependency among sectors are backward and forward linkage. Sectors that have high value backward linkage (BL) can be said that they are important to others production activities. They buy products of other sectors to a significant extent for their input production. On the other hand, High value of forward linkage (FL) indicates that output of particular sector is needed by others. Typical of these sectors would have input production supplier role in the economy. The rule of thumb for backward and forward linkage is more than 1 ( $>1$ ) or less than 1 ( $<1$ ). BL or FL more than 1 means have strong interdependency with others and vice versa. The construction of backward and forward linkage follows;

$$BL_j = \frac{\sum_{i=1}^n l_{ij}}{\frac{1}{n} \cdot \sum_{j=1}^n l_{ij}}$$

$$FL_i = \frac{\sum_{j=1}^n l_{ij}}{\frac{1}{n} \cdot \sum_{i=1}^n l_{ij}}$$

## APPENDIX 2.

Table 1. Cargo Airlines

Type	Airlines	Status	Number of scheduled routes	Scheduled Routes	Aircraft	Number of Aircraft	Aircraft Capacity	Number of non-scheduled routes (chartered)	Chartered Flight	Goods
Scheduled and Non Scheduled - Cargo	PT Cardig Air	Operate	4	Jakarta-Singapore; Jakarta-Balikpapan; Balikpapan-Singapore; Wamena-Jayapura	Boeing 737-300F	3	Maximum 18 tons gross payload on 8 to 9 pallets	31	Banda Aceh; Medan; Padang; Pekanbaru; Batam; Palembang; Semarang; Surabaya; Yogyakarta; Denpasar; Balikpapan; Banjarmasin; Makassar; Kendari; Manado; Ternate; Ambon; Kupang; Islamabad (Pakistan); Hongkong; U-Tapao-Pattaya (Thailand); Singapore; Dili (Timor Leste); Darwin, Christmas Island (Australia); Port Moresby (Papua New Guinea)	general cargo, perishable goods, live animals, dangerous goods and aircraft engine.
Scheduled and Non Scheduled - Cargo	PT TRI-MG Intra Asia Airlines	Operate	3	Jakarta-Balikpapan; Singapore-Jakarta; Singapore-Balikpapan	Boeing 737-300F; Beechjet 400XP and Super King Air B200C (for medivac flights), etc	11	16 tons	15	Jakarta-Makassar; Jakarta-Ambon; Jakarta-Luwuk; Jakarta-Manado; Jakarta-Berau; Jakarta-Sorong; Jakarta-Timika; Jakarta-Kualanamu; Jakarta-Batam; Jakarta-Kupang; Jakarta-Surabaya; Singapore-Kualanamu; Singapore-Batam; Singapore-Surabaya; Surabaya-Kuala Lumpur	also provide medical evacuation services (Medivac)

Type	Airlines	Status	Number of scheduled routes	Scheduled Routes	Aircraft	Number of Aircraft	Aircraft Capacity	Number of non-scheduled routes (chartered)	Chartered Flight	Goods
Scheduled and Non Scheduled - Cargo	PT MY INDO Airlines	Operate	3	Jakarta-Balikpapan; Jakarta-Singapore; Balikpapan-Singapore	Boeing 737-300 F and Boeing 737-200 F	3	Boeing 737-300 F (16,3 tons) and Boeing 737-200 F (12 tons)	3	Jakarta-Balikpapan; Jakarta-Singapore; Balikpapan-Singapore	airmail, dangerous goods, live animals, vegetables, seafood, chilled meat or flowers, pharmaceutical goods, valuable goods (vehicle; gold, platinum group metals; legal banknotes, travellers' cheques, securities, share coupons, and stamps; precious stones, including diamonds rubies, emerald, sapphires, opals and pearls; jewellery, watches and articles made of silver, gold and platinum), shoes, textiles, and spare parts, among others, artworks, antiques and musical instruments, pipes, generators, pumps and other drilling or off-shore equipment
Non Scheduled - Cargo	PT Asialink Cargo Express	Operate	-	-	F-27 Friendship-500 (3) and Fokker 50-	4	7,06 tons	16	Batam-Pangkal Pinang; Batam-Palembang; Batam-Jambi; Batam-Padang; Batam-Pekanbaru; Batam-Medan; Pangkal Pinang-Jakarta; Pontianak-Balikpapan; Batam-	fresh product, marine product, dangerous product, automotive products,

Type	Airlines	Status	Number of scheduled routes	Scheduled Routes	Aircraft	Number of Aircraft	Aircraft Capacity	Number of non-scheduled routes (chartered)	Chartered Flight	Goods
									Singapore; Batam-Kuala Lumpur; Batam-Penang; Batam-Matak; Batam-Pulau Natuna Besar; Batam-Kuching; Batam-Pontianak; Kuching-Bandar Seri Begawan	electronics, oil & gas,

**APPENDIX 3.****Table 1. ASEAN Transport Instruments and Status of Ratification – Air Transport**

<b>Instruments</b>		<b>Indonesia: Date of Ratification</b>
ASEAN Multilateral Agreement on the Full Liberalisation of Air Freight Services (MAFLAFS)		28 August 2015
Protocol 1	Unlimited Third, Fourth and Fifth Freedom Traffic Rights among Designated Points in ASEAN	28 August 2015
Protocol 2	Unlimited Third, Fourth and Fifth Freedom Traffic Rights among All points with International Airports in ASEAN	28 August 2015
ASEAN Multilateral Agreement on Air Services		24 November 2011
Protocol 1	Unlimited Third and Fourth Freedom Traffic Rights within the ASEAN Sub-Region	24 November 2011
Protocol 2	Unlimited Fifth Freedom Traffic Rights within the ASEAN Sub-Region	24 November 2011
Protocol 3	Unlimited Third and Fourth Freedom Traffic Rights between the ASEAN Sub-Region	27 November 2012
Protocol 4	Unlimited Fifth Freedom Traffic Rights between the ASEAN Sub-Region	27 November 2012
Protocol 5	Unlimited Third and Fourth Freedom Traffic Rights between the ASEAN Capital Cities	30 May 2014
Protocol 6	Unlimited Fifth Freedom Traffic Rights between the ASEAN Capital Cities	30 May 2014
ASEAN Multilateral Agreement on the Full Liberalisation of Passenger Air Services (MAFLPAS)		April 2016
Protocol 1	Unlimited third and fourth freedom traffic rights between any ASEAN cities	April 2016
Protocol 2	Unlimited fifth freedom traffic rights between any ASEAN cities	April 2016
Air Transport Agreement between the Government of the Member States of the Association of Southeast Asian Nations and the Government of the People's Republic of China		April 2016
Protocol 1	April 2016	April 2016
Protocol 2	April 2016	April 2016

Source. Ratification Status Air Transport Agreements (<http://www.asean.org/storage/images/2015/December/Air-Transport-Section/Ratification%20status%20Air%20Transport%20Agreements-151208.pdf>)

## APPENDIX 4.

Table 1. Input Output of Air Transport

No	1995				2005				2010			
	Input		Output		Input		Output		Input		Output	
	Sectors	Share	Sectors	Share	Sectors	Share	Sectors	Share	Sectors	Share	Sectors	Share
1	Petroleum Refineries Products	17.3%	Air Transport	20.5%	Petroleum Refineries Products	30.8%	General Government	23.64%	Petroleum Refineries Products	44.5%	General Government	28.1%
2	Aircraft And Its Repair	17.1%	General Government	16.1%	Aircraft And Its Repair	16.6%	Trade Service	17.29%	Aircraft And Its Repair	13.8%	Trade except car and motorcycles	13.9%
3	Services Allied To Trans-Port	16.6%	Trade	10.6%	Services Allied To Transport	14.5%	Air Transport	11.76%	Services Allied To Trans-Port	11.8%	Air Transport	6.2%
4	Business Services	14.6%	Business Services	8.3%	Air Transport	6.4%	Business Service	9.91%	Rental Services and Business Support Services	5.9%	Services Allied To Trans-Port	5.9%
5	Air Transport	12.6%	Banking And Other Financial Intermediaries	5.5%	Restaurant Services	6.3%	Bank	2.54%	Food and beverages services	5.3%	Professional, Scientific and Technical Services	4.1%
6	Restaurant (Food and beverages)	5.4%	Crude Oil	2.2%	Business Services	6.3%	Coal	2.10%	Telecommunication Service	2.6%	Crude Oil	3.8%
7	Insurance	2.8%	Services Allied To Transport	1.4%	Trade Services	4.6%	Service allied to transport	1.59%	Air Transport	2.5%	coal and lignite	3.1%
8	Trade	2.3%	Coal	1.3%	Tire	3.1%	Cigarette	1.22%	Tire	2.2%	Rental Services and Business Support Services	2.8%
9	Communication Service	1.37%	Cigarette	0.9%	Insurance and pension fund	2.6%	Crude Oil	0.12%	Trade except car and motorcycles	1.8%	Cigarette	2.4%
10	Tire	0%	Professional, Scientific and Technical Services	0.0%	Communication Service	1.04%	Professional, Scientific and Technical Services	0.00%	Insurance Service	1.6%	Financial Banking Services	2.0%
	Other Sectors	10.0%	Other Sectors	33.1%	Other Sectors	7.9%	Other Sectors	29.8%	Other Sectors	7.9%	Other Sectors	27.7%

Source. BPS, Authors calculation

**APPENDIX 5.****Table 1. Indonesia Airport Code**

<b>Code</b>	<b>City</b>	<b>Airport</b>
BDO	Bandung	Husein Sastranegara Airport
BTJ	Banda Aceh	Sultan Iskandar Muda Airport
CGK	Jakarta	Soekarno Hatta Airport
TNJ	Tanjung Pinang	Raja Haji Fisabilillah Airport
KNO	Medan	Kualanamu/Medan Airport
PKU	Pekanbaru	Sultan Syarif Kasim II Airport
PLM	Palembang	Sultan Mahmud Badaruddin II Airport
PNK	Pontianak	Supadio Airport
TABING	Padang	Padang/Tabing Airport
HLP	Jakarta	Halim Perdana Kusuma Airport
DBJ	Jambi	Sultan Thaha Airport
PGK	Pangkal Pinang	Depati Amir Airport
DTB	Siborong-borong	Silangit Airport

Source. Indonesia Directorate General of Air Transportation