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Abstract

Trade liberalization is increasingly accompanied by efforts to liberalize logistics services as nations have realized the importance of logistics services in achieving economic progress and integration. However, liberalization also brings with it costs and challenges. In this light, this article tries to assess the progress in implementing the liberalization commitments and their implications on the logistics sector using Indonesia as a case study. The implementation of Indonesia's liberalization commitments has been slow and cautious. Substantial barriers to trade in logistics services still exist, constraining the path toward economic progress and integration. Its logistics sector is also unlikely to benefit from trade liberalization, except in the maritime, air transport, and cargo-handling services. Indonesia's experience could be applicable to emerging nations that are in the process of liberalizing their respective logistics services industries, as this study contributes to the understanding of the liberalization process.

Keywords

Globalization, Trade liberalization, Logistics services, Indonesia

Introduction

There has been a general tendency toward liberalization of international trade in logistics services as nations are pushing for trade liberalization in goods under the auspices of the World Trade Organization (WTO), and in regional and bilateral trade contexts. Trade liberalization in logistics services is seen as an integral part of a strategy to improve exports and achieve

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economic development. Indonesia in particular has pursued a multitrack approach to its export interests.

However, the fear of increasing foreign competition has further raised the question of what the appropriate nature, extent, and pace of trade liberalization for Indonesia's logistics should be, given that its logistics sector is not yet as efficient and as competitive as its counterparts in the developed world. In this light, the objective of this article is to assess Indonesia's progress in implementing its liberalization commitments for logistics and identify those sectors where Indonesia is likely to gain and lose from those liberalization efforts. This issue will no doubt have relevance not only for Indonesia but also for other developing countries as they implement their liberalization commitments in logistics services. Previous studies dealing with the implications of trade liberalization for logistics sector are scarce (e.g., Fung et al. 2005) and so far no study has been undertaken to address this important but difficult issue for Indonesia.

The definition and scope for logistics adopted in this article are based on the checklist recommended by the WTO, which is also employed by the ASEAN countries in their current effort toward the integration of their logistics services. This list is drawn from the United Nations (UN) Provisional Central Product Classification (CPC) system and is used to facilitate the effort of securing liberalization through negotiations. It consists of three major categories: (1) core freight logistics services, (2) related freight logistics services, and (3) noncore freight logistics services. For a more detailed description of these categories and their respective CPC codes, see appendix A.

The rest of the article is organized as follows. The next section briefly reviews the relevant literature. Then, an overview of Indonesia's logistics sector and its economic importance is provided. An analysis of Indonesia's liberalization commitments and implementation follows. Subsequently, the methodology and findings on the likely winners and losers from trade liberalization are discussed, followed by a conclusion with some policy implications.

Review of Relevant Literature

Although there are several theoretical and empirical studies dealing with the economic implications of liberalization of logistics services in specific countries (e.g., Gillen, Harris, and Oum 2002; Balestreri, Rutherford, and Tarr 2009), no study has yet been undertaken on the economic implications of logistics services liberalization in Indonesia. There are,

however, a few studies examining the importance of logistics services to a nation's economy and to Indonesia in particular. The first set of studies establishes the link between logistics and trade performance, and the second set highlights the importance of logistics to Indonesia's international competitiveness.

Logistics and Trade Performance Nexus

The literature offers substantial evidence linking improvements in transport and logistics directly to improvements in export performance. The effects are especially strong when importers have access to multiple suppliers of highly substitutable commodities. Comparing sales by manufacturers of similar products, Hummels (1999) estimated that exporters with 1 percent lower shipping costs will enjoy a 5–8 percent higher market share. Limão and Venables (2001) estimated that differences in infrastructure quality account for 40 percent of the variation in transport costs for coastal countries and up to 60 percent for landlocked countries. Fink, Mattoo, and Neagu (2000), based on US trade with its trading partners, concluded that liberalizing the provision of port services and regulating the exercise of market power in liner shipping could reduce liner shipping costs by a third on average.

A World Bank study by Wilson, Mann, and Otsuki (2003) has shown that the Asia Pacific Economic Cooperation (APEC) countries differ substantially in the quality of their logistics and trade facilitation across a broad range of measures, including ports infrastructure, customs clearance, regulatory administration, and e-business use. They found that these differences are significantly related to differences in trade performance and concluded that substantial growth in trade within their block could be accomplished by bringing lagging countries up to median performance levels in terms of logistics.

Further, improving access to international markets raises incomes. Frankel and Romer (1999) showed that countries that are closer to world markets enjoy higher levels of trade, and that a 1 percent rise in the trade to GDP ratio increases income per person by at least 0.5 percent. Redding and Venables (2002) calculated that more than 70 percent of the variation in per capita income across countries can be explained by the geography of markets and the extent of supplier access. Better access to ports alone raises incomes by 20 percent. As to income differences within countries, internal and effectively landlocked regions have systematically lower levels of income than coastal regions, other things being equal. Comparing China's

regions, Wei and Yi (2001) demonstrated that trade levels, trade growth, and income growth rates all drop as one gets further from coastal areas. The evidence on inland regions makes an especially strong case for the importance of access to international markets.

Indonesia's Logistics and Its Importance to International Competitiveness

Past studies that estimated the actual share of logistics costs in the overall cost of exporting in Indonesia have shown varied results, depending on sources used, ranging from 14.08 percent (as estimated by Basri 2005) to 25.0 percent (as cited by the Chairman of Indonesian Logistics Association).¹ Since it is generally difficult to put an absolute value on the cost of logistics as a share of export costs, we can roughly say that logistics costs in Indonesia account for 14–25 percent of the total cost of exportation. Compared with the logistics costs in the United States and Japan that account for around 10 percent and 11 percent, respectively, this indicates a lot of room for improvements in logistics services in Indonesia (Basri 2005; Keretho 2005; Patunru, Nurridzki, and Rivayani 2007). Low port efficiency measured in terms of ship turnaround time and crane productivity and relatively high port costs in Indonesia have been cited by a number of studies (e.g., see Arvis et al. 2007; Ray 2008; Kruk 2008a, 2008b).²

Indonesia's Logistics Sector and Its Economic Importance

Like that in most developing countries, the service sector is becoming increasingly important to the Indonesian economy. Its service sector has grown significantly over the past thirty-six years such that by 2006 it accounted for almost 50 percent and 44 percent of Indonesia's total output and employment respectively (Harjono and McGuire 2006). Indonesia's logistics services sector plays a significant role in its rising economic importance. Further, since logistics is a derived demand, its competitiveness is linked with that of the industries that it serves.

There are no trade data on logistics as a whole, but trade data on transport services are readily available from the United Nations Conference on Trade and Development (UNCTAD)'s database. These data are not decomposed into countries bilaterally, but are only aggregates in terms of exports and imports. However, these data on trade in transport services (an important component of international trade in logistics services) should provide some indication of Indonesia's logistics trade performance compared to other founding member countries for which data are available.³

As shown in table 1, the trade performance of Indonesia's transport sector over the period of 1990–2009 (the latest year for which data are available) has not been contributing to Indonesia's current account balance.

Table 1/Exports and Imports of Transportation Services in Selected ASEAN Countries (million USD)

Year	Indonesia		Malaysia		Philippine		Singapore		Thailand	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1990	70	2,795	1,198	2,531	246	980	2,225	3,513	1,327	3,576
1991	81	3,187	1,389	3,023	242	1,062	2,517	3,794	1,484	4,185
1992	89	3,574	1,593	3,181	273	1,199	2,766	3,582	1,526	4,539
1993	44	3,667	1,613	3,433	218	1,425	3,173	4,015	1,964	5,005
1994	..	3,913	1,871	4,356	233	1,457	4,042	4,797	1,842	5,862
1995	..	4,861	2,466	5,609	274	2,051	8,296	9,290	2,455	7,780
1996	..	5,244	2,822	5,433	358	2,287	8,935	10,107	2,618	7,845
1997	..	5,400	2,861	5,549	357	2,673	8,780	10,377	2,417	6,890
1998	..	3,730	2,271	4,088	324	1,983	9,064	9,574	2,671	4,604
1999	..	3,274	2,492	4,720	307	2,011	10,690	11,094	3,017	5,305
2000	..	4,016	2,802	5,890	464	2,052	11,889	12,814	3,250	6,760
2001	..	3,877	2,748	5,736	590	2,019	11,531	12,383	3,057	6,830
2002	1,058	5,150	2,855	5,892	877	2,303	12,015	10,905	3,265	7,121
2003	856	4,824	2,767	6,260	951	2,419	13,557	13,308	3,503	8,484
2004	2,279	5,474	3,163	7,842	1,001	3,095	16,923	17,815	4,350	10,830
2005	2,841	7,030	4,056	8,396	1,041	3,125	17,904	19,876	4,626	13,999
2006	2,102	8,181	4,146	9,523	1,151	3,451	22,512	23,838	5,379	16,302
2007	2,207	9,501	7,146	10,975	1,323	3,844	28,364	29,144	6,371	18,181
2008	2,800	13,895	6,755	11,380	1,368	4,255	28,934	29,867	7,277	22,994
2009	2,443	12,045							5,707	17,121

Sources: UNCTAD Handbook of Statistics 2006–7; UN Services Trade Database (www.unitednations.com)

The discrepancy between its export and import of transportation services has been quite substantial over the years. It is clear that Indonesia's export of transport services has not been performing as well as that in Singapore, Malaysia, and Thailand.

Indonesia's Liberalization Commitments and Barriers to Implementation and Progress

In an effort to open up more markets for its exports of goods and services and further liberalize the international trading environment, Indonesia has pursued a number of approaches that may be categorized into three major forms: (1) multilateral under the auspices of the World Trade Organization (WTO), (2) regional within the framework of the ASEAN Economic Community (AEC), and (3) bilateral in the context of Indonesia's individual relationships with its individual trading partners.

Indonesia's Liberalization Commitments

As an active member of the WTO, Indonesia is committed to the “most-favored nation” principle and has participated in a number of negotiations under the General Agreement on Trade in Services (GATS) where countries have to make bilateral offers and requests in the context of the member countries’ limitations on market access (MA) and national treatment (NT). As a founding member of ASEAN, Indonesia has committed itself to the ASEAN vision of an economically integrated Southeast Asian region. In particular, it has officially supported the objectives under the ASEAN Roadmap for the Integration of Logistics Services. In bilateral contexts Indonesia has also upheld certain commitments under the Japan-Indonesia Economic Partnership Agreement (JIEPA), which came into force in 2007. Table 2 summarizes Indonesia’s international trade in logistics services commitments under the WTO, ASEAN, and JIEPA.

Table 2/Indonesia International Trade in Logistics Services Commitments

	WTO	ASEAN	JIEPA
General	Indonesia is committed to the liberalization of logistics services across the board to reap the benefits of international trade.	Indonesia is committed to the implementation of the ASEAN Roadmap for the integration of logistics services by 2013.	Indonesia is committed to the implementation of the terms under the JIEPA agreement.
Key Specific Commitments	Undertake substantial and meaningful market access (MA) and national treatment (NT) commitments as well as other commitments as may be needed to ensure the effectiveness of liberalization commitments. In respect of core services essential to logistics operations, MA and NT commitments with right of establishment should be provided so as to enable commercially meaningful liberalization; where limitations and restrictions are to be scheduled, they may be time-limited to be phased out. Ensure that access is provided on reasonable and non-discriminatory basis. Ensure that procedures and formalities are not unnecessarily burdensome.	Achieve substantial liberalization of logistics services in the following sectors: maritime cargo-handling services (CPC 741), storage/ warehousing (CPC 742), transport agency (CPC 748), other auxiliary services (CPC 749), courier (CPC 7512), packaging services (CPC 876), maritime transport services (CPC 7212), air transport (CPC 732), rail transport (CPC 7112) and road transport services (CPC 7213). Enhance competitiveness of logistics services providers through trade and logistics facilitation. Expand capability of logistics service providers. Enhance human resource development. Enhance multimodal transport infrastructure and investment.	Undertake substantial market access and national treatment commitments as specified in the Agreement. Ensure that Indonesia's commitments are consistent with the economic objectives and priorities of JIEPA. Ensure that Indonesia's commitments are accompanied by capacity building and other programs aimed at strengthening Indonesia's international competitiveness.

Sources: WTO 2003; ASEAN 2007; JIEPA 2007; Tongzon 2009.

Indonesia's logistics policy is supposed to complement its overall trade objective of promoting Indonesia's export performance by increasing its export of logistics services and by managing the flow of logistics services such that they contribute to the productivity and international competitiveness of the Indonesian economy.⁴ Achieving this objective in logistics services trade will necessarily move Indonesia closer to its strategic vision: to realize international trade as a core driver for increasing national competitiveness and the welfare of the Indonesian people.⁵

Barriers to Implementation and Progress

Despite Indonesia's declaration of trade liberalization commitments, implementation in the area of logistics services has been slow and cautious. Several barriers to free trade in logistics services still exist in Indonesia. In fact, Indonesia was rated by the ASEAN-based logistics providers as having the most significant barriers to free trade among the ASEAN countries (De Souza et al. 2007). These barriers range from market access and regulatory barriers, protectionism, institutional barriers, to administrative and infrastructure barriers that directly and indirectly prohibit trade in logistics services. For a good discussion of the various types of barriers, see Fung et al. (2005). Market access barriers in the forms of restricted foreign equity participation, regulatory and institutional barriers, and administrative barriers particularly in relation to the customs procedures and inspections are the most significant factors found across the various logistics sectors in Indonesia (De Souza et al. 2007).

Market Access and Regulatory Barriers

Indonesia's logistics sector is still highly shielded from foreign competition by certain restrictions its government imposes on the entry of foreign logistics services into its domestic market. These restrictions are mainly in the forms of foreign equity participation limits, joint venture and representative office requirements for several categories in the core, and related and noncore logistics services. Although the related freight services have the largest number and most substantive commitments, the restrictions on market access in this sector are quite substantial.

Specifically, there is a 49 percent maximum foreign equity participation limit for cargo-handling service suppliers, transport agency service suppliers (except for customs clearance, which is reserved for locals only), maritime transport service suppliers (excluding cabotage), internal waterways services, air transport service suppliers, air transport supporting service suppliers, road transport service suppliers, and courier service suppliers. Moreover, no foreign equity participation is permitted for rail

transport service suppliers, establishment and operation of land terminals for road freight transport services, technical testing and analysis service suppliers, and commission agents' service suppliers and various distribution service suppliers. There are also joint venture requirements between foreign and domestic service suppliers for shipping services while there are representative office requirements for scheduled foreign air transport service suppliers.

There are no specific regulations for the core logistics services with respect to the various modes of supply. In particular, freight forwarding as an industry should be given legal recognition in Indonesia's legal framework. Currently, it is not clearly defined and is, therefore, not exempted from VAT, further constraining the development and international competitiveness of Indonesia's domestic freight forwarding industry.⁶

The liberalization process in logistics services has been very slow, especially in the maritime transport and distribution subsectors. The progress has been inhibited mainly due to political sensitivities and the tendency to discriminate in favor of domestic enterprises.⁷ For example, the purposes of limiting the foreign equity ownership in port and ship operating companies based in Indonesia to less than 50 percent are twofold. It is intended to both maintain the control by domestic operators and discourage some foreign mega-operators from participating in the management of Indonesia's port and shipping sector.⁸

Protectionism

The role of protectionism is best illustrated by Indonesia's current cabotage policy. Although there has been some discussion in academic journals on cabotage in Indonesia (e.g., see Dick 2008; Ray 2008), there seems to have been no sufficient public discussion and consultation on this issue (Ray 2008). Cabotage, which prohibits foreign registered ships from operating in domestic shipping or carrying cargo between domestic ports, has led to the high cost and inefficiency of domestic shipping services. The lack of foreign competition and the undersupply of domestic shipping capacity have given rise to excessively high freight rates and inefficient delivery of freight within the country.⁹ Although shipping lines could have made multiple port calls to fill up their slots to make the calls economically viable, this is not allowed under the cabotage rule. Consequently, many foreign-registered shipping lines have not provided shipping services to small and distant island ports.

Although the cabotage policy can be justified from the political and strategic perspective, the prohibition of the world-class shipping

operators from participating in domestic shipping has limited competition in the domestic shipping service market to the detriment of the shippers, Indonesian operators, and other users. They are, in effect, denied state-of-the-art technology and management know-how of world-class shipping operators such as Maersk and other non-ASEAN carriers that have established reputations as efficient and reliable shipping operators. The more stringent cabotage policy under the shipping law of 2008 is further evidence to the government's attempt to protect local shipping interests. For more detailed discussion of this issue, see Ray (2008) and Dick (2008).

Institutional Barriers

There is no lead government agency to oversee logistics and to coordinate the formulation and dissemination of policies and regulations for logistics services (Tongzon 2009). The absence of a lead agency has not only led to duplication and inconsistencies in the formulation and dissemination of policies and regulations for logistics services to the private sector, but has also not given logistics the special attention that it deserves.¹⁰ The need for *coordination among the various relevant government agencies* cannot be overemphasized. The relevant agencies involved in the various aspects of the logistics chain need to have their functions coordinated to avoid any duplication and inconsistencies in the formulation of policies and regulations.¹¹

Administrative Barriers

Indonesia has to further simplify the administrative procedures in the exporting and importing processes by reducing the number of government agencies involved and the length of time spent in the processes. Currently, there are a number of government agencies with which the importers and exporters have to deal in the export and import processes. In the import processes under the red channel (where goods are to be checked and examined by customs), customs clearance at the port of Tanjung Priok takes an average of four and a half days from the time import declaration of containerized goods is received to the time the goods are inspected (Mitsubishi UFG Research and Consulting 2008). This does not fare well when compared to only two days in Malaysia, two and a half days in Thailand, and one or two days in Singapore.

There is a lack of an integrated regulatory framework that covers all aspects of logistics services. Currently, various regulations and business

licenses covering the various aspects of logistics services are under the jurisdiction of different government agencies. Such fragmentation makes it difficult for prospective logistics investors to apply for licenses to conduct logistics services in Indonesia.¹²

Infrastructure Barriers

Indonesia is in the process of establishing a National Single Window (NSW). NSW aims to facilitate and expedite customs processing by using electronic submission of customs declarations, and by linking electronically the various stakeholders across the supply chain. Indonesia has recently implemented a pilot project for its NSW at the port of Tanjung Priok and other major ports and airports. However, based on the feedback obtained from the interviewees, there is much to be done to ensure that it is sufficiently robust and flexible to cope with all import and export transactions, peak loads, security, and e-payments.

Progress in Implementation

The progress in liberalization implementation can be gauged from two proxy indicators: (1) Indonesia's share of world merchandise exports, and (2) its share of global trade (in the absence of data on foreign direct investment flows into Indonesia's logistics sector). As shown in table 3, Indonesia's shares of world merchandise exports and global trade made some progress as reflected in its rising shares starting from 2003, especially for 2008–2009. While the growth of its shares is quite significant compared to other ASEAN countries, these shares are marginal at less than 1 percent of the world merchandise exports (0.85–0.93%) and global trade (0.82–0.86%), respectively. In fact, its shares are lower than those of Singapore, Malaysia, and Thailand. Considering its relatively large GDP and population size, this means that its trade performance needs to be further enhanced to become a significant contributor to Indonesia's economic growth. Further, in 2008 Indonesia's trade in transportation services only accounted for 3.27 percent of its GDP, about similar to that of the Philippines, but much lower compared to that of Singapore (32.29%), Thailand (11.06%), and Malaysia (8.17%). In the context of logistics facilitating and inducing trade, this implies that there is indeed a lot of scope to improve the contribution of its logistics sector to its merchandise exports and global trade.

Table 3a/ASEAN Shares of World Merchandise Exports (%), 2000–2009

	2000	2003	2006	2007	2008	2009
Brunei	0.033597	0.042328	0.062905	0.05466	0.063709	0.057398
Cambodia	0.02119	0.027893	0.029013	0.027898	0.027046	0.03992
Indonesia	0.962268	0.804877	0.832224	0.814949	0.850158	0.932826
Laos		0.001898	0.003327	0.002728	0.005137	0.009904
Malaysia	1.520353	1.383905	1.298109	1.258524	1.206775	1.256133
Myanmar	0.018494	0.058845	0.029021	0.042376	0.041081	0.050777
Philippines	0.589808	0.477603	0.39143	0.360446	0.304182	0.306926
Singapore	2.142999	2.10783	2.24247	2.137683	2.098256	2.160392
Thailand	1.064142	1.060506	1.00379	1.096857	1.085605	1.220953
Vietnam			0.305763	0.344897	0.38331	0.453891
World	100	100	100	100	100	100

Sources: ASEAN Secretariat (www.aseansec.org); UN Services Trade Database (www.unitednations.com).

Table 3b/ASEAN Shares of Global Trade (%), 2000–2009

	2000	2003	2006	2007	2008	2009
Brunei	0.024925	0.030012	0.037532	0.034805	0.039551	0.038349
Cambodia	0.021352	0.033031	0.026526	0.027062	0.02717	0.035616
Indonesia	0.736412	0.615692	0.667009	0.673157	0.82419	0.854977
Laos	0	0.00317	0.004084	0.003902	0.008145	0.011871
Malaysia	1.369052	1.23983	1.176665	1.153435	1.048887	1.123017
Myanmar	0.02628	0.041483	0.0232	0.031135	0.032247	0.040845
Philippines	0.558775	0.48493	0.408717	0.37832	0.32715	0.336113
Singapore	2.102322	1.947637	2.101978	2.007799	2.036988	2.066389
Thailand	1.005885	1.02743	1.024793	1.047846	1.091425	1.147243
Vietnam	0	0	0.318418	0.392609	0.437632	0.504645
World	100	100	100	100	100	100

Sources: ASEAN Secretariat (www.aseansec.org); UN Services Trade Database (www.unitednations.com).

Implications of Liberalization for Indonesia's Logistics Sector

Whether Indonesia is going to accelerate the process of liberalizing its logistics sector largely hinges on how Indonesia perceives the likely impacts. In particular, the question of which sectors and subsectors will benefit or lose from liberalization will affect the nature, extent, and pace of trade liberalization in logistics services.

Areas of Competitive Advantage and Disadvantage

Due to the lack of export and import data on the various components of logistics services, it is not possible to address this issue based on the standard economic approach. The standard approach to quantify Indonesia's competitive advantage makes use of world market shares and revealed comparative indices, for which statistical data on logistics services by sector are unavailable.¹³

Methodology Used

In the absence of statistical trade data on logistics services by sector for Indonesia, the article adopts the data triangulation technique to obtain a more complete picture of the current logistics situation in Indonesia. It involves the use of the Heckscher-Ohlin (H-O) model, results of previous studies, and questionnaire-based interviews. This technique allows for cross verification of the H-O model with information gathered from previous studies, and from interviews with policymakers, logistics service providers, their respective logistics industry associations, and selected research institutes.

It is assumed based on the H-O model that a country has a competitive advantage in a certain type of logistics service if it is relatively endowed with those resources that are used more intensively in the production of that type of service. For example, endowed with relatively abundant and cheap but low-skilled labor, Indonesia should have competitiveness in the production of labor-intensive logistics services. For a more detailed discussion of this model, see Leamer (1995). The H-O model has been criticized for its simplistic assumption of a two-factor world with competitive markets. However, in the absence of actual data on exports and imports of logistics services by sector, this approach can be employed for the purpose of this article since a country's relative resource endowment *ceteris paribus* can determine its competitive advantage. To offset its inherent limitations and to allow for other factors that can affect a nation's competitive advantage, this approach is supplemented by the results of previous studies on logistics services pertinent to Indonesia's comparative advantage. In addition, questionnaire-based interviews with the policymakers, representatives of the Indonesian logistics industry, and relevant research institutes provide further supplements.

The policymakers are the government agencies and ministries directly involved in the administration and formulation of logistics policies (e.g., Indonesia's departments of Trade, Transport, and Finance). These

national agencies and ministries provided a good source of information in relation to Indonesia's implementation of liberalization commitments as well as the factors affecting their implementation. The logistics industry associations in ASEAN (such as Indonesia's Freight Forwarders Association and ASEAN Freight Forwarders Association) and selected research institutes mainly provided information about the structure, profile, overall performance and capacity, and international competitiveness of Indonesia's logistics industry. Moreover, the logistics industry associations supplied useful feedback on behalf of their members with respect to the level of liberalization commitments and the likely implications for Indonesia's logistics industry. The interviews with a sample of logistics companies produced further inputs on the level of implementation of the liberalization commitments in Indonesia and the challenges facing them. Since they were promised at the interviews that their inputs would be treated in the strictest confidentiality, their names are not specifically cited in this article.

To lend the interview results to content analysis, the interviewees were asked to rate each logistics subsector from 1 (very low) to 5 (very high) in terms of international competitiveness, employment generation, contribution to economic growth, strategic importance, and world growth. They were also asked to justify their answers. Appendix B contains a copy of the questionnaire used for the interview. These results were then analyzed objectively and systematically to derive the findings in this paper. For a detailed discussion of content analysis as a technique for data analysis, see Holsti (1969). Twenty-five individuals were interviewed. To ensure that the interviewees' responses are accurate and reliable, only those persons who are responsible for the formulation of logistics strategy or have sufficient knowledge of the Indonesian logistics industry were included in the sample. Other studies (e.g., Tongzon and Wu 2005; Chang, Tongzon, and Lee 2008) have also conducted statistical analysis based on twenty-five and twenty-eight observations, respectively.

Areas of Competitive Advantage

Indonesia's competitive advantage based on the H-O model should be found in those logistics services that use more low- or semi-skilled labor, in which Indonesia is relatively abundant. However, given their limited access to capital and state-of-the-art technology constrained by less-developed infrastructure and institutional quality, Indonesia's logistics services are relatively inefficient and deal mostly with low-valued and basic

logistics operations. It is, therefore, difficult for Indonesia to export these types of services under modes 1–3 of supply.¹⁴ Further, certain regulations have limited the market access for logistics services in this country. Thus, in the short run Indonesia's capacity and competitive advantage should only lie in exporting its low- and semi-skilled labor under mode 4 in certain sectors that require these types of labor.¹⁵ Indonesia has already been an exporter of seamen for foreign commercial ships. There are currently 300,000 Indonesian nationals working in Malaysia as domestic helpers (Jakarta Post 2008a). It is foreseeable that Indonesia can become a major exporter of low- and semi-skilled workers for the ports, airports, and other logistics service subsectors in other labor-scarce countries in the region and beyond.

The above inferences derived from the H-O theory are further supported by the questionnaire-based expert opinion interview results, as shown at the first column of table 4. Based on their ratings (where a rating of 4 to 5 denotes Indonesia's strong competitive advantage), Indonesia is perceived to be highly competitive under mode 4, but only in some subsectors. The service subsectors where Indonesia is perceived to have a strong competitive advantage under mode 4 include cargo handling, storage and warehousing, transport agency, other auxiliary services, maritime transport, internal waterways transport, road transport, air transport, retailing, other supporting services, and packaging services. Except for the cargo handling, maritime, and air transport services, where Indonesia also has a competitive advantage under modes 1–3 of supply, Indonesia's competitive advantage is perceived to be confined only to mode 4. The expert opinion survey has also revealed that Indonesia's basic (i.e., core freight logistics) and freight-related logistics sectors can make significant contribution to the Indonesian economy in terms of employment generation and value added.¹⁶

Indonesia potentially holds a competitive advantage in exporting the above services under other modes of supply (modes 1–3), provided that Indonesia can implement the required institutional reforms, develop its transport infrastructure (e.g., expansion and upgrading its road and rail networks, seaports and airports), and address other constraints facing its logistics industry. For example, in packaging services Indonesia can develop a competitive advantage under modes 1–3 due to its well-established packaging industry, which boasts annual revenues of Rp 20 trillion (US\$2.18 billion). Provided that there is a stable source of polypropylene (PP), which is used in plastic-based packaging material, this industry is likely to have a bright prospect (Jakarta Post 2008b).

Table 4/Indonesia's Rating of Logistics Services Using Certain Criteria

Sectors	Indonesia's International Competitiveness		Employment Generation in Indonesia	Value Added/ Contribution to Indonesia's Economic Growth	Strategic Importance for Indonesia	World Growth Prospect
	Modes 1-3	Mode 4				
I. Core Freight Logistics						
Cargo handling	3	5	4	4	4	5
Storage and warehousing ¹	2	4	4	4	4	4
Transport agency	2	4	4	4	4	4
Other auxiliary services ^a	2	4	4	4	4	4
IIa. Freight Transport						
Maritime transport	3	5	4	5	5	5
Internal waterways	2	4	2	4	5	5
Air transport	3	4	3	4	5	5
Rail transport	1	2	3	5	5	4
Road transport	1	5	3	5	5	4
IIb. Other Related Services						
Technical testing and analysis	2	3	2	3	3	4
Couriers	2	2	4	4	4	3
Commission agents	2	2	4	4	3	3
Wholesale trade	2	2	4	5	5	4
Retailing	2	5	4	5	5	4
Other supporting services ^b	2	5	4	4	3	3
III. Noncore Freight Logistics						
Packaging	2	4	4	3	3	3
Leasing/rental of vessels	2	3	2	3	4	3
Leasing/rental of aircraft	2	3	2	3	4	3
Computer & related	1	2	3	3	4	3
Management consulting	1	2	2	3	4	3

Source: Based on the interview results.

Notes: The ranking ranges from 5 = very high; 4 = high; 3 = moderate; 2 = low; 1 = very low. The ratings are averages and rounded up to eliminate any decimal points.

^a Other auxiliary services include bill auditing, freight brokerage, freight inspection, weighing and sampling services, freight receiving and acceptance services, and transportation documentation preparation services.

^b Other supporting services refer to supporting services not covered which include supporting services for railway and road transport, and towing services. Bus station services and supporting services for air transport do not fall into this category.

Areas of Competitive Disadvantage

As discussed in the preceding section, except in the maritime, air transport, and cargo handling services, Indonesia’s logistics is not internationally competitive under modes 1–3 and is, therefore, likely to lose revenues from the trade liberalization of logistics services with serious short-term adjustment costs for Indonesia.

Another way to assess Indonesia’s competitive disadvantage in the export of logistics services under modes 1–3 is to look at Indonesia’s logistics performance index and other indicators compared with the other ASEAN countries. The assessment is based on the most recent worldwide survey of the world’s multinational freight forwarders and main express carriers undertaken by Arvis et al. (2010) from the World Bank. Their findings show that, in the global context, Indonesia ranks forty-third in terms of overall logistics performance. As can be seen from table 5, compared to other ASEAN countries Indonesia’s overall logistics performance, although higher than those of other former centrally planned economies in Southeast Asia, is far below those of Singapore, Malaysia, Thailand, and the Philippines. In terms of domestic logistics costs, it is the third-weakest performer, leading only Singapore and Laos (Arvis et al. 2007).

This ASEAN cross-country comparison suggests that Indonesia’s logistics sector has a competitive disadvantage in the export of logistics services (modes 1–3) compared to Singapore, Malaysia, Thailand, and the Philippines on the assumption that the logistics performance index reflects a country’s ability to export logistics services. Reinforcing

Table 5/ASEAN Cross-Country Comparison in Terms of Logistic Performance Index (LPI)

Country ^a	LPI	Customs	Infrastructure	International Shipments	Logistics Competence	Tracking and Tracing	Timeliness
Singapore	4.09	4.02	4.22	3.86	4.12	4.15	4.23
Malaysia	3.44	3.11	3.50	3.50	3.34	3.32	3.86
Thailand	3.29	3.02	3.16	3.27	3.16	3.41	3.73
Philippines	3.14	2.67	2.57	3.40	2.95	3.29	3.83
Vietnam	2.96	2.68	2.56	3.04	2.89	3.10	3.44
Indonesia	2.76	2.43	2.54	2.82	2.47	2.77	3.46
Lao PDR	2.46	2.17	1.95	2.70	2.14	2.45	3.23
Cambodia	2.37	2.28	2.12	2.19	2.29	2.50	2.84
Myanmar	2.33	1.94	1.92	2.37	2.01	2.36	3.29

Source: Arvis et al. 2010.

^a All ASEAN member countries are represented with the exception of Brunei, which has the smallest economy in ASEAN.

the findings based on the questionnaire-based interviews presented in table 4, Indonesia's logistics sector was found to be one of the most inefficient and highest cost sectors that adversely affect Indonesia's international competitiveness (Arvis et al. 2007, 2010). The relatively poor logistics performance was attributed to its relatively poor infrastructure quality and competency of its logistics providers, and the relatively high domestic logistics costs. The major factors that contribute to high domestic logistics costs in Indonesia and constrain the flow of cargoes throughout the logistics chain have been found to lie in the lack of adequate road and air transport networks, and excessively high domestic shipping costs (which constitute a major part of domestic logistics costs in the export of goods). Based on a comprehensive survey of domestic trucking costs along nine routes in Indonesia, the Asia Foundation (2008) has further confirmed Indonesia's unreliable and highly expensive road transportation. A combination of poor road infrastructure and payment of a host of charges (official as well as unofficial) have inflated the total cost of transportation and eroded the profits of transport services providers and users. Since approximately 70 percent of Indonesia's freight is transported by road, this has had a significant implication for Indonesia's national cost competitiveness (Asia Foundation 2008; Arvis et al. 2010).

The logistics cost disadvantage of Indonesia is more specifically illustrated by comparing the cost of shipping containers from the port of Tanjung Priok to the port of Los Angeles, relative to shipment from other main regional ports. As table 6 shows, the cost of shipping twenty-foot containers from the port of Tanjung Priok to the port of Los Angeles is much higher than shipping from the rest of the main regional ports, except for the ports of Manila and Phnom Penh (higher by a range of US\$80–160 per twenty-foot container).

Table 6/ASEAN Cross-Country Comparison: Cost of Shipping

No	From	To	Currency	20-foot	40-foot	ROUTING
1	Port Klang, Malaysia	LA	USD	1,260	1,600	via HKG
2	Port of Singapore	LA	USD	1,270	1,612	Direct
3	Port of Ho Chi Minh, Vietnam	LA	USD	1,340	1,700	via HKG
4	Port of Bangkok, Thailand	LA	USD	1,340	1,700	via HKG
5	Port of Tanjung Priok, Malaysia	LA	USD	1,420	1,800	via HKG
6	Port of Manila, Philippines	LA	USD	1,450	1,717	via Kaohsiung
7	Port of Phnom Penh, Cambodia	LA	USD	1,740	2,200	via HKG

Source: DHL.

Note: These charges are as of April 30, 2009.

This shipping cost disadvantage is due to the lack of direct shipping services between the port of Tanjung Priok and other final destination ports. As such, Indonesian cargoes have to be transshipped at the port of Hong Kong or port of Singapore, resulting in a higher shipping cost than direct shipments. The lack of direct shipping services at the port of Tanjung Priok is further driven by a number of factors, including its insufficient cargo base, which does not allow for the realization of economies of scale from the shipping lines’ perspective.¹⁷ From the Indonesian shippers’ perspective, the high frequency of shipping services at hub ports is another factor that makes the ports of Singapore and Hong Kong more attractive than direct shipments from the port of Tanjung Priok. Other contributing factors include Indonesia’s low port efficiency and reliability, inadequate infrastructure, and bureaucratic delays that result in a longer ship-turnaround time and, thus, higher operating costs.

However, the enhancement of Indonesia’s capacity and international competitiveness for the logistics sector in the long run can be achieved if appropriate and effective policies and measures are in place to bring in appropriate foreign logistics providers or investors. Ensuring an effective transfer of technology from these foreign logistics providers or investors is also vital, especially for those logistics services that can significantly contribute to Indonesia’s logistics services exports. In this respect, the liberalization of the logistics services sector—especially in the rail and road transport subsectors, and the auxiliary services for these two modes of transport—should go a long way in bringing down the cost of transport and improve the efficiency of delivery across the logistics chain. Table 7 lists the categories of logistics services that can be reformed to enhance Indonesia’s international competitiveness under mode 3 and their rationale.

Table 7/Areas of Competitive Disadvantage and the Rationale for Reforms

Service Sector	Target Service Sector and Mode of Supply	Rationale
I. Core Freight Logistics	Cargo-handling services (CPC 741)–mode 3 Storage and warehousing services (CPC 742)–mode 3 Transport agency services (CPC 748)–mode 3 Other auxiliary services (CPC 749)–mode 3	Opening Indonesia’s cargo-handling services to foreign and private competition will improve competition in the port sector and thus enhance Indonesia’s competitiveness in the trade of goods. Reform in this sector will lead to more modern and adequate storage and warehousing facilities in Indonesia which has been constrained by lack of adequate and modern storage and warehousing. More foreign transport agencies and auxiliary services will improve the adequacy and efficiency of transport and reduce the cost of exporting as foreign transport agencies will bring with them the latest technology and best practices.

Service Sector	Target Service Sector and Mode of Supply	Rationale
II. Related Freight Logistics	Railway transport services (CPC 7112)–mode 3 Road transport services (CPC 7123)–mode 3 Air transport services (CPC 732)–mode 3 Technical testing and analysis services (CPC 8676)–mode 3	Reform in rail, road and air transport services can provide greater capacity and efficiency for the delivery of Indonesia's traded goods to its export markets. These in turn will further facilitate the movement of goods with access to the latest technology and best practice management. This will make Indonesia's manufactured exports and export of services more internationally competitive by having access to state-of-the-art testing technologies and standards
III. Noncore Freight Logistics	Data processing services (CPC 843)–mode 3 Database services (CPC 844)–mode 3 Management consulting and related services (CPC 865)–mode 3	This will stimulate more automation in the delivery of logistics services and facilitate the adoption of electronic data interchange among the various parties in the logistics chain. Moving Indonesia to a higher valued logistics exports through technology transfer.

Source: Author

Notes: CPC means Central Product Classification employed by the WTO in classifying the different types of logistics services.

Conclusion

Indonesia, like other developing countries, is facing a serious dilemma. Although it has embraced the principle of liberalization in this era of globalization, short-run political considerations and institutional and regulatory constraints have slowed the implementation of liberalization committed for its logistics sector. Further, it is likely that Indonesia will continue to adopt a cautious approach toward liberalization, unless necessary and appropriate reforms are effectively implemented to enhance the capacity and international competitiveness of its logistics sector. The findings of this article reveal that except in the maritime, air transport, and cargo-handling services, Indonesia does not have a competitive advantage in the export of logistics services under modes 1–3. Therefore, services under modes 1–3 are likely to lose from the liberalization of logistics services in the short run. It is only in the area of mode 4 (supply of labor services) where Indonesia is likely to gain, although only in some sectors.

However, logistics plays a crucial role in the economic development process of developing countries. Apart from facilitating international trade, it contributes to the enhancement of a nation's export competitiveness. The importance of logistics to Indonesia is further accentuated by the fact that logistics costs in Indonesia are considered to be quite high by international standards. Introducing more foreign competition into its logistics

sector and improving access to the most efficient logistics services is crucial to Indonesia's export success, as evidenced in many empirical studies (e.g., Estache, González, and Trujillo 2002). On the other hand, logistics services export is an important component of Indonesia's international trade objective. Enhancing its export of logistics services through liberalization should, therefore, have beneficial effects on Indonesia's overall export performance.

In this context, Indonesia has to engage in international trade in logistics services. In pursuing international trade, Indonesia has to focus its exports on those logistics services where it has major and potential competitive advantage in terms of resource endowments and market access. Concurrently, Indonesia should further liberalize those logistics services where Indonesia has a competitive disadvantage, but which can enhance Indonesia's international competitiveness. In prioritizing these services, however, the political sensitivities and strategic interests have to be taken into account. At the same time, more domestic and regional initiatives should be pursued to enhance its logistics sector's capacity and international competitiveness (e.g., human resource and infrastructure development, and trade facilitation measures, particularly in the area of customs administration, institution building and government regulations).

The partial approach adopted in this article may not be consistent with the logic of logistics as door-to-door services. However, it is sufficient to achieve the objectives of this article and is appropriate to address the current concerns in Indonesia regarding the implications of trade liberalization in the various sectors of logistics services. Given the lack of data on logistics trade performance by sector, the paper relies partly on a "deductive" process by employing the H-O model in determining areas of Indonesia's competitive advantage and disadvantage. Although the H-O model is not without limitations, it is supplemented by the use of questionnaire-based interviews with industry and government experts on Indonesia's logistics. Further, although the article has recommended a path of continued liberalization, it has not discussed in detail the issue of how Indonesia should embark on such a path of liberalization and how to deal with the "losers" of logistics reforms. This undertaking will be left to the politicians to decide based on the country's economic and political situations. Clearly, there are many issues worth investigating in the area of logistics liberalization in Indonesia that could be good subject matter for future study. This article has addressed one of the most important and pressing, but less discussed policy issues facing Indonesia's logistics sector. Indonesia's experience in

this regard could provide other countries with some valuable insights into the challenges and opportunities in the process of liberalizing logistics and how to deal with them.

Appendix A

Scope for Logistics Services

Categories	Codes
I. Core Freight Logistics Services	
Cargo-handling services	CPC 741
Container-handling services	CPC 7411
Other cargo handling	CPC 7419
Storage and warehousing services	CPC 742
Transport agency services	CPC 748
Other auxiliary services	CPC 749
II. Related Freight Logistics Services	
(1) Freight transport services	
Maritime Transport Services	CPC 7212
Internal Waterways Transport Services	CPC 7222
Air Transport Services	
Air freight transport	CPC 732
Rental of aircraft with crew	CPC 734
Rail Transport Services	
Freight transport	CPC 7112
Road Transport Services	
Freight transport	CPC 7123
Rental of commercial vehicles with operator	CPC 7124
without operator	CPC 83102
(2) Other related logistics services	
Technical Testing and Analysis Services	CPC 8676
Courier Services	CPC 7512
Commission Agents' Services	CPC 621
Wholesale Trade Services	CPC 622
Retailing Services	
Food retailing services	CPC 631
Non-food retailing services	CPC 632
Sale of motor vehicles	CPC 6111
Sale of parts and accessories of motor vehicles	CPC 6113
Sales of motorcycles and snowmobiles and related parts and accessories	CPC 6121
(Other supporting services not covered (CPC 743, 7113, 744 excluding 7441, and 746).	
III. Noncore Freight Logistics Services	
Packaging services	CPC 876
Leasing or rental services concerning vessels without crew	CPC 83103
Leasing or rental services concerning aircraft without operator	CPC 83104
Computing and related services	
Data-processing services	CPC 843
Database services	CPC 844
Management consulting and related services	CPC 865

Notes: CPC 743: Supporting services for railway transport; CPC 7113: Pushing or towing services; CPC 744: Supporting services for road transport; CPC 7442: Highway, bridge and tunnel operation services; CPC 7443: Parking services; CPC 7449: Other supporting services for road transport; CPC 7441: Bus station services; CPC 746: Supporting services for air transport.

Appendix B
Interview Questionnaire

Name: _____
Company: _____
Phone: _____
Email: _____

1. Rating of Indonesia’s logistics services based on certain criteria

Direction: The following are the various sectors of logistics services based on UN/WTO classifications. Please rate each sector of logistics services in Indonesia from 5 (highest) to 1 (lowest) based on the criteria specified:

Sectors	Indonesia's International Competitiveness	Employment Generation in Indonesia	Value Added/ Contribution to Indonesia's Economic Growth	Strategic Importance for Indonesia	World Growth Prospect
I. Core Freight Logistics					
Cargo handling					
Storage and warehousing					
Transport agency					
Other auxiliary services ^a					
Ila. Freight Transport					
Maritime transport					
Internal waterways					
Air transport					
Rail transport					
Road transport					
Ilb. Other related services					
Technical testing and analysis					
Couriers					
Commission agents					
Wholesale trade					

Sectors	Indonesia's International Competitiveness	Employment Generation in Indonesia	Value Added/ Contribution to Indonesia's Economic Growth	Strategic Importance for Indonesia	World Growth Prospect
Retailing					
Other supporting services ^b					
III. Noncore Freight Logistics					
Packaging					
Leasing/rental of vessels					
Leasing/rental of aircraft					
Computer and related					
Management consulting					

Notes: The ranking ranges from 5 = very high; 4 = high; 3 = moderate; 2 = low; 1 = very low.

^a Other auxiliary services include bill auditing, freight brokerage, freight inspection, weighing and sampling services, freight receiving and acceptance services, transportation documentation preparation services.

^b Other supporting services refer to supporting services not covered, which include supporting services for railway and road transport, towing services, excluding bus station services and supporting services for air transport.

2. In which sectors does Indonesia have a competitive advantage vis-à-vis other countries? Competitive disadvantage? Why?
3. In which sectors does Indonesia have potential competitive advantage? Why?
4. How important is logistics to Indonesia's economy?
5. What are to date Indonesia's liberalization commitments under WTO, ASEAN and bilaterally?

Notes

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1. The estimate of 25 percent came from the chairman of the Indonesian Logistics Association during the interview.
2. It was cited by one shipping lines manager that port costs account for a third of its total shipping cost between Medan, Indonesia, and South China. The terminal handling charge for containers at the port of Tanjung Priok, Indonesia,

is more expensive than that at the port of Singapore, while Tanjung Priok's port productivity is very low by international standards. For example, it costs exporters approximately US\$800 per container to ship domestically in Indonesia between Medan and Jakarta, which is almost the same cost of shipping containers internationally from Jakarta to Japan. Although shipping is only part of the overall door-to-door logistics cost, this is an important indicator of logistics cost in Indonesia, which relies heavily on maritime transport for its international freight movements. Ocean shipping rates are not regulated but are subject to market forces.

3. Transportation services constituted the largest component of logistics services among US manufacturing firms (Davis and Drumm 2002).
4. National Medium Term Development Plan 2004–2009, Government of Indonesia, 2003.
5. Strategic Plan 2004–2009, Ministry of Trade, 2003.
6. This point was raised by Jakob Sorensen, Maersk Indonesia and European Business Chamber of Commerce at the second Indonesia Transport and Logistics Expo and Conference 2008, Jakarta, Indonesia, August 21–23.
7. The main legal instruments for regulating Indonesia's logistics service sector are the Presidential Decree No. 111/2007, Presidential Decree No. 112/2007, and Government Regulation 82/1999. Ministerial Decrees from the Ministry of Trade that affect the regulation of the logistics service sector are also issued from time to time. The main regulators of the logistics service sector are the Ministry of Trade, the Ministry of Transport, and the Ministry of Information and Communication.
8. Investors from ASEAN member countries are, however, allowed to have up to 51 percent of shares in shipping and port operating companies by 2010. The regulation also requires a reciprocate offer from the investor's country of origin (Asia Pulse 2009).
9. This is the view expressed during the interviews with shippers and freight forwarders in Indonesia.
10. According to the chairman of the Indonesian Logistics Association, sometimes different and separate regulations across all ministries for the various aspects of logistics services are conflicting and producing complex procedures for business enterprises. Currently, business licenses (e.g., a license to open a freight forwarding business) are separate from technical licenses (e.g., a license to run a fleet of trucks for haulage), and it is unclear as to which one applies to which type of company. Coordination, rather than more regulations, is particularly important in the policy formulation and implementation of logistics services due to the interconnectivity and interdependence of the various activities in the logistics chain.
11. One example cited at one of the interviews conducted relates to the lack of coordination among the relevant ministries to clarify the regulations on courier services. Since the passing of the Negative List (i.e., list of logistics sectors subject to restrictions) issued in 2007, small- and medium-scale courier services has been reserved for the domestic firms and fully close to foreign investors. However, for large-scale courier services, foreign equity participation is possible, but subject to a 49 percent

limit. Even so, a number of applications from foreign firms to engage in large-scale courier service operations in Indonesia have been rejected by the Indonesian Board of Investments on the basis that the whole courier services sector is reserved for domestic firms. Clarity of regulations and more coordination among the relevant ministries could make Indonesia more attractive for foreign investments in the logistics services sector, and thus enhancing Indonesia's long-term international competitiveness. It should be noted, however, that there have been recent policy coordination efforts to develop the national logistics strategy as part of Indonesia's logistics blueprint for national logistics reform, including the establishment of a national logistics council. The World Bank has been spearheading this development of Indonesia's national logistics strategy with active cooperation from the government and private sectors.

12. For example, there is one license for land transport business and another license for storage and warehousing operation, each to be obtained from different government agencies.
13. Very limited data availability on export and import performance of the logistics sector in Indonesia is one of the major constraints that prevent the use of a more objective and standard approach to identify the areas in logistics where Indonesia has a competitive advantage and disadvantage.
14. Mode 1 of supply refers to the export of logistics services across borders; for example, an Indonesian freight forwarder is transporting cargoes on behalf of an Indonesian exporter to a Malaysian importer in Malaysia. Mode 2 refers to consumption abroad; for example, a Singaporean registered shipping company may use an Indonesian stevedoring company to handle its cargoes at Indonesian ports. Mode 3 relates to commercial presence; for example, when an Indonesian logistics provider establishes a branch in other countries.
15. Mode 4 of supply refers to the temporary movement of natural persons across borders; for example, an Indonesian crane operator may be temporarily contracted to operate a crane in a Japanese port.
16. Although a broader economic impact assessment of the trade liberalization in logistics is an important issue from a public policy perspective, this is not within the scope of this article. The implications in terms of employment generation and other macroeconomic implications could be another interesting area for future research.
17. Indonesia has a large number of small and inefficient ports inhibiting cargo aggregation, leading to higher transportation and cargo handling costs. Indonesia has over 140 operational ports. Of these, 43 ports are feeder ports that act as transshipment points to the major Indonesian gateways such as Jakarta and Surabaya. Attracting frequent and competitive direct liner services has been difficult as cargo is dispersed over a large number of smaller ports and carried by its fleet of smaller and older vessels. Thus, frequent transshipment by smaller feeder vessels will continue to be the most efficient solution, unless a cost-effective consolidation occurs.

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