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Supply Chain Connectivity: Enhancing Participation in the Global Supply Chain

Epictetus E. Patalinghug

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Supply Chain Connectivity: Enhancing Participation in the Global Supply Chain[1]

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Philippine Institute for Development Studies

[1] This paper is an output of the APEC 2015 Research Project commissioned by the Department of Foreign Affairs. The main objective of the project is to provide the analytical framework that will form part of the basis for the substantive priorities the Philippines will push for as APEC host economy in 2015. The project's main output is a set of policy studies with recommendations that can serve APEC 2015 purposes and can be used as inputs to the Philippine government's future development planning, strategizing, and visioning exercise in a post-2015 scenario.

Supply Chain Connectivity: Enhancing Participation in the Global Supply Chain

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Abstract

Supply chain connectivity is vital for the efficient flow of trade among APEC economies. This paper reviews the literature and supply chain management, describes the barriers to enhancing participation in global supply chain, analyzes the various measures of supply chain performance, and suggests steps for the Philippines to fully reap the benefits of the global value chain.

Keywords: Supply Chain Connectivity, APEC, Global Supply Chain, Transportation

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EXECUTIVE SUMMARY

Introduction

Supply chain consists of manufacturers, suppliers, shippers, warehousemen, retailers, and customers involved, directly or indirectly, in fulfilling a customer's request. Supply chain connectivity is vital for the efficient flow of trade among Asia-Pacific Economic Cooperation (APEC) economies. The ultimate objective of an integrated supply chain process is to allow firms to source the materials from any part of the world and to deliver them to customers in any part of the world. Supply chain management involves coordination and collaboration among producers, suppliers, customers, and third party service providers. Supply chain connectivity covers trade facilitation, physical infrastructures, and people-to-people exchanges and networks.

Barriers to Enhancing Participation in Global Supply Chain

Supply chain barriers are classified into four categories: 1) market access, 2) border administration, 3) telecom and transport infrastructure, and 4) business environment. Market access barriers include barriers that hinder foreign or domestic access such as quotas, local content requirements, and technical standards that make it difficult to import products into a country. Border administration barriers deal with three factors: a) efficiency of customs administration, b) efficiency of export-import procedures, and c) transparency of border administration. Telecom and transport infrastructure barriers include: a) availability and quality of transport infrastructure, b) availability and quality of transport services, and c) availability and use of information and communication technologies. Business environment barriers include those related to the regulatory environment and physical security. The effects of supply chain barriers on businesses

are higher operating and capital expenses, unpredictable and longer delays, lower trade volume, and increased risk.

Measuring Supply Chain Performance

APEC's current measurement framework is comprised of three elements: a) external indicators, 2) internal indicators, and 3) self-assessment survey. External indicators are composed of the logistics performance index (LPI), enabling trade index (ETI), trading across borders index (TAB), and liner shipping connectivity index (LSCI). In all indicators, the Philippines is ranked at the bottom among APEC economies. Internal indicators are designed to capture qualitative aspects of the progress of APEC's action plans. And a self-assessment survey is used as a third track to assess progress of the implementation of APEC's action plans.

The Role of Transport in the Development of Integrated Supply Chain

Transportation plays a crucial role in supply chain operations, moving inputs from supply sites to manufacturing facilities, redistributing inventory among different plants and distribution centers, and delivering finished goods to consumers. Transportation is a major part of the costs incurred by most supply chains. The success of a supply chain is closely linked to its use of transportation resources. Firms can utilize transportation resources so that it can centralize inventories and operate with fewer facilities. Transportation decisions have an impact on the profitability of the supply chain. Transportation has an influence on both the facility and inventory choices within the supply chain and affects the smooth functioning of trade logistics. The Philippines lags behind its APEC counterparts in terms of availability and quality of infrastructure and services.

Reaping the Benefits of the Global Value Chain

To fully reap the benefits of the global value chain, the Philippines has to promote policies aimed at supporting private sector development in manufacturing and primary input processing. It should also try to attract more foreign direct investments (FDI) and build productive capacities in local firms. Another recommendation is for the country to revive its manufacturing sector, and create supply-chain linkages between foreign and local firms. Furthermore, it should concentrate in "tasks" in the services value chain in which it has comparative advantage, strengthen its business environment, reinforce domestic capabilities to engage in international trade, support investments in R&D, foster the development of important economic competencies, and consistently enforce contracts. Lastly, it has to address its low availability and quality of infrastructure and infrastructure services, overlapping regulatory agencies, and physical security and; improve logistic services, the efficiency of customs administration, and export-import procedures.

Suggestions for APEC Supply Chain Connectivity Policies

As Chair of the APEC 2015 Meeting, the Philippines can provide substantive leadership and direction towards regional supply chain connectivity policies. The following policies are recommended:

1) Encourage regional cooperation in establishing and nurturing the policy environment for new regional infrastructure projects
2) Promote initiatives in support of APEC Principles of Trans Border Logistics Services Optimization such as the simplification and harmonization of trade and transportation procedures and practices

3) Build the capacity of local logistics providers and SMEs by facilitating their access with multinational logistics corporations
4) Address the impediments related to customs issues of the APEC Cross-Border Customs-Transit Arrangements such as varying customs documentation standards and inadequate IT infrastructure
5) Encourage member economies to have more engagements with the relevant stakeholders to identify specific problems faced by each member
6) Develop policy or best practice guidelines for each chokepoint for reference by member economies
7) Encourage the APEC Policy Support Unit (PSU) to establish the minimum of indicators to measure compliance progress
8) The Philippines should take the lead in setting a higher "de minimis" values to encourage other APEC economies to agree to exempt express and postal shipments from customs duties and taxes and from certain documentary requirements.

I. Introduction

Trade is the lifeblood of the world economy and a key driver of global integration, helping small and medium enterprises (SMEs) to grow and create jobs. Supply chain connectivity is vital for the efficient flow of trade among Asia-Pacific Economic Cooperation (APEC) economies. In principle, supply chain management is focused on getting products and services where and when they are needed. The ultimate objective of an integrated supply chain process is to allow firms to source the materials from any part of the world and to deliver them to customers in any part of the world. In short, supply chain management involves coordination and collaboration among producers, suppliers, customers, and third party service providers.

Among APEC's objectives are to enhance transparency of the regulatory environment affecting logistics and increase awareness of these issues among companies doing business in APEC economies. In addition, APEC wants to improve coordination of policies affecting the logistics sector among government agencies. Supply chain management is implemented by numerous companies in different countries with varying focuses. Some focus on customer orientation, while others focus on cost reduction, streamlining of operations and demand-supply alignment. APEC's Supply Chain Connectivity Framework targets for 2015 a 10% improvement in supply chain performance in terms of reduction of time, cost, and uncertainty of moving goods and services through the Asia-Pacific region.

II. Review of Literature

McMullan (1996) conducts a comprehensive study of the state of supply chain management (SCM) in the Asia-Pacific region. Her results show that less than 60% of the

respondents indicated having formal policies on specific SCM operations, and majority of the respondents likewise indicated that SCM is not perceived as a strategic function in their companies.

Sahay and Mohan (2003) analyze the SCM practices of 156 Indian firms and discover that Indian organizations are more focused on customer relations in contrast to U.S. firms which are more focused on cost reduction and streamlining of operations.

Falah, Zairi, and Ahmed (2003) examine the SCM practices of 107 Saudi firms and find out that Saudi companies have a low adoption rate with respect to establishing supplier database, supplier communications, and adopting inventory-reduction strategies. Joint-venture firms are reported to have a relatively high rate of adopting SCM practices.

Szwejczewski, Lemke, and Goffin (2005) examine the behavior of German manufacturing companies and find out that majority of the firms have a partnership-like relationship with suppliers and are engaged in multiple sourcing strategies. The study implies that German manufacturing companies have potential for improving performance by adopting best practices in supplier management.

Dorling, Scott, and Deakins (2006) report that the successful adoption of vendor-managed inventory relationships in New Zealand is adversely affected by the oligopolistic structure of the food retailers' market, allowing buyers' domination of suppliers and restricting the extent of partnership agreements.

Sohal and Perry (2006) identify the business-environment factors that underpin the efficiency of the supply chain in the Australian cereal products industry and they find that cereal yields are affected by globalization, industry complexity, buyer-seller power relationships, supply-chain labor requirements and industry accountability requirements.

Kotzab, Grant, and Friis (2006) employ a decision tool to identify prioritized strategies for improving SCM implementation and validate the approach among SCM managers of 100 Danish organizations.

Talavera (2007) finds that very few industries in the Philippines adopt supply chain operations that use information technology and that Philippine companies have not fully explored supply chain operations based on SCM principles.

Austria (2009) notes that the Philippines' participation in the global production network in the electronics industry has been limited to the labor-intensive low-skill assembly and testing segment of the production chain. This leads to exports that are highly import dependent for inputs with minimal value added.

Intal (2009) argues that a key factor behind the remarkable growth in intra-regional trade in East Asia has been the surge in cross-national production sharing embodied in production networks in the region that are connected to the global production networks.

Sturgeon and Lester (2003) argue that the formation of global operating suppliers in advanced economies (e.g. in automobile and electronics industries) has altered the prospects for supplier-oriented industrial upgrading in East Asia.

Ng and Yeats (1999) analyze the nature and magnitude of, and motivation for, international production sharing in East Asia. They conclude that production sharing in East Asia is considerably greater than is generally recognized, and these countries' comparative advantage in production or assembly operations conforms to factor-intensity theory.

Jones and Kierzkowski (1990) introduces the concept of "production fragmentation" in which the physical dispersion of production nodes necessitates costly service links in terms of transportation, telecommunication, and other coordination tasks. They argue that technological

advancement and lowering trade barriers lead to a significant decline in service link costs and allow the production process to be fragmented across different locations to leverage on economies of scale.

Arvis et al. (2007) find a positive association between logistics performance and important outcome indicators, such as trade openness. Hoekman and Nicita (2010) likewise find a significant positive association between logistics performance and trade intensity. Wilson et al. (2005) discover that the potential gains from improved trade facilitation (logistics being part of it) are significantly larger than those from improvements in traditional market access constraints. Shepherd (2010a) shows that poorer trade facilitation (measured by longer lead times to export and import) is associated with higher reported levels of trade-related corruption. And Shepherd (2010b) likewise assesses the effectiveness of trade facilitation programs in APEC and ASEAN. The value chain business model is unsustainable without a logistics sector that can reliably ensure on-time and low-cost delivery.

Saslavsky and Shepherd (2012) present evidence to support the hypothesis that trade in parts and components (a vital part of cross-border production chains in the Asia-Pacific region) is more sensitive to improvements in logistics performance than is trade in final goods. And that Shepherd (2013) stresses the vital role played by the transport and logistics sector in the global value chain (GVC) by connecting countries, spreading technology, and promoting best practices around the world. Delays due to poor transport and logistics performance can reduce exports and also impede export diversification.

Shepherd and Hamanaka (2013) point out that the findings of general equilibrium models show that improvements in trade facilitation (including trade logistics performance) can

substantially boost both exports and national welfare, and these effects are potentially larger than those coming from extensive tariff reductions on manufactured goods.

Briones and Israel (2014) examine the chokepoints in the supply chain of two selected commodity groups, namely: (1) crude coconut, and (2) fish and crustacean, mollusks, and other aquatic invertebrates. They recommend specific types of road investments, competition policy in domestic shipping, restructuring for crude coconut sector, and sanitary and phytosanitary (SPS) measures for the fisheries sector.

WEF (2013) finds that reducing supply chain barriers halfway to global best practice could increase world GDP by nearly 5 percent.

APEC (2013a) identifies the action plan and the participating economies for each barrier (chokepoint) in the supply chain, and APEC (2013b) provides the policy recommendations and benefits of each of the eight identified chokepoints.

APEC (2013d) highlights that APEC has made significant progress in reducing the time and uncertainty of supply chain performance, and that considerable progress has been achieved in terms of implementing the Supply Chain Connectivity Framework Action Plan (SCFAP) projects to improve supply chain performance.

APEC (2013e) provides examples of concrete efforts and progress made within APEC by many international organizations in three key areas: institutional, physical, and people-to-people connectivity; and highlights the key issues and challenges for these three aspects of connectivity as well as the current state of connectivity in the region.

III. Barriers to Enhancing Participation in Global Supply Chain

Supply chain barriers to trade can be defined[2] as the lack of infrastructure, institutions, policies and services facilitating the free flow of goods over borders. The World Economic Forum (WEF) report classifies supply chain barriers into four categories: (1) market access, (2) border administration, (3) telecom and transport infrastructure, and (4) business environment (WEF, 2013). This section will discuss these barriers and the economic consequences that they bring.

3.1. Market access barriers

Market access barriers include barriers that hinder foreign or domestic access such as quotas, local content requirements, and technical standards that make it difficult to import products into a country. Similar to tariffs, they give an advantage to domestic producers. While some of these measures are valid, they are sometimes abused and are often not standardized and thus these measures become barriers to trade.

3.2. Border administration barriers

Border administration barriers deal with three main categories: (1) efficiency of customs administration, (2) efficiency of import-export procedures, and (3) transparency of border administration. The efficiency of customs administration refers to the ease and speed at which goods can clear customs. It also refers to the quality and variety of services that customs agencies provide. If customs agencies don't have enough resources or don't adopt best practices then inefficiencies such as long wait times and additional inspections may occur. Delays may occur because of the lack of risk analysis tools or the lack of round the clock operations by customs agencies.

[2] APEC defines trade facilitation as the simplification and rationalization of customs and other administrative procedures that hinder, delay or increase the cost of moving goods across international borders (APEC, 2013e, page 2).

The efficiency of import-export procedures deals with the compliance of goods to import-export standards as well as the coordination between various border control agencies. Inefficiencies may occur if a good being imported is being regulated by multiple agencies. These agencies usually work independently from one another and have their own set of rules and regulations. They often do not coordinate well with one another which therefore results in more delays in trade.[3]

Transparency of border administration barriers deals with corruption. Products may not be able to clear customs unless payments or bribes are made to officials. Additional delays may occur if companies don't bribe officials. Their goods may be held up while goods from firms that do pay bribes clear customs faster. Corruption may be the most difficult barrier to measure since most firms would not admit to paying bribes. Firms that don't pay bribes are left at a disadvantage and some exit the market altogether. Local firms may have an advantage because of better relationships with officials or better knowledge about loopholes. This makes foreign firms more likely to exit the market in the face of pervasive corruption.

3.3. Telecom and transport infrastructure

Telecom and transport infrastructure barriers include: (1) availability and quality of transport infrastructure, (2) availability and quality of transport services, and (3) availability and use of information and communication technologies.

Having good infrastructure is vital for the quick facilitation of trade. Inadequate transportation networks cause huge delays in the movement of goods from inland areas to coastal

[3] Thus, there is a need to address "behind-the-border" barriers, such as the involvement of numerous agencies, beyond the Bureau of Customs, in the regulation of cross-border trade. For instance, each agency uses a different import-permit system. Thus, national single window system is not yet operational.

ports and vice versa. The availability and quality of transport infrastructure refers to the quality of roads and airports as well as the congestion at ports, terminals, and other transportation hubs.

There are also barriers when it comes to transport service providers. The lack of firms willing to ship goods within a country can cause considerable delays. An efficient local logistics industry is vital for the efficient shipment of goods. Another factor to be considered is the number of trips these shipping companies are doing. The lack of trips means that goods are stuck in ports for a longer period of time which leads to more delays.

Reliable information technology (IT) infrastructure is also an important factor in facilitating trade. If the IT infrastructure is unreliable, firms may have a harder time trying to track their merchandise and this might force them to rely on paper documentation. Thus countries should invest in electronic customs processing systems that are dependable.

3.4. Business environment

Business environment barriers include those that are related to the regulatory environment and physical security. If a country has an unstable or dysfunctional government, or has problems in hiring foreign workers or obtaining trade finance then additional costs and risks will be incurred. Physical safety is also an important factor when firms are considering doing business in a particular country. High rates of crime and theft can raise the cost of doing business in a particular area. .

3.5. Effects of supply chain barriers.

Supply chain barriers affect businesses in four ways: (1) higher operating and capital expenses, (2) less predictable or longer delays, (3) lower trade volume, and (4) increased risk. Each firm's experiences will differ based on the specific barrier it encounters and the actions that it takes to overcome it. For example, delays in transporting goods will affect a firm that sells fresh food more than it will affect a firm that sells preserved or processed food. Additional costs incurred

because of these barriers may convince firms that they no longer have a viable reason to be in that market which may result in a reduction in their volume of trade.

IV. What APEC Has Done For Structural Reform

APEC's structural reform efforts began in August 2008 when the Structural Reform Ministerial Meeting was held in Melbourne, Australia. Ministers were given the chance to share experiences on the political challenges of structural reform, strategies to support the reform process, and optimal institutional frameworks. They also endorsed a Good Practice Guide on Regulatory Reform and started self-reviews of member economies institutional frameworks that support structural reform. Ministers also engaged in a dialogue with business and considered the importance of structural reform to the private sector.

In 2009, APEC continued to consult with the business community to identify and address behind-the-border barriers, build capacity for reform and ensure tangible benefits by using international tools and benchmarks such as the World Bank Ease of Doing Business Survey and the APEC-OECD Integrated Checklist on Regulatory Reform.

APEC's New Strategy for Structural Reform (ANSSR) was adopted by Leaders at their Yokohama meeting in 2010. It follows on from other related APEC programs, such as the Leaders' Agenda to Implement Structural Reform (LAISR). ANSSR calls on individual member economies to select structural reform priorities, and identify objectives, policies, and approaches for measuring progress over the 2011-2015 time frame. It aims to promote balanced and sustainable growth by fostering transparency, competition and better functioning markets in the Asia-Pacific. APEC defines structural reform as: "Policy change related to institutional frameworks, regulation

and design of government policy, so barriers to market-based incentives, competition, regional economic integration and improved economic performance are minimized."

In addition, this new strategy emphasizes a social dimension that includes enhancing opportunities for women and pressing for more education and SME development. Several workshops have been conducted in 2011 to implement ANSSR.

As part of ANSSR, the 2013 APEC Economic Policy Report focused on APEC's work to enhance fiscal transparency and public accountability. The report outlined the rationale and development of fiscal transparency and contained individual economy reports on their fiscal institutions and initiatives to promote fiscal transparency. APEC also published the 2013 ANSSR Mid-term Progress Report which is a mid-term progress review that is designed to share knowledge and information by showing examples of successful structural reforms, as well as identifying common challenges that have arisen during the ANSSR implementation process.

ANSSR does not have a set of reforms that it dictates to all member economies. Instead, it invites each economy to identify its own structural reform priorities. Therefore it is important for ANSSR to develop methodologies that will provide benchmarks that will assess the progress member economies have achieved in obtaining their policy goals. Based on their domestic agendas, all 21 APEC economies have submitted their own ANSSR Action Plans (APEC 2013c). The ANSSR identified five key areas that deal with structural reform which are listed below:

- Promoting more open, well-functioning, transparent, and competitive markets
- Promoting labor market opportunities, training, and education
- Promoting sustained SME development and enhanced opportunities for women and vulnerable populations
- Promoting effective and fiscally sustainable social safety net programs

- Promoting better functioning and effectively regulated financial markets.

The aim of this section is to give a brief overview of what APEC has done with regards to the five key areas that it has identified for structural reform.

4.1. Promoting more open, well-functioning, transparent, and competitive markets

In order to promote competitive markets several economies have chosen to undertake reforms in competition policy. Economies either pledged to broaden and strengthen their competition laws or introduce new ones. The development of pro-competition institutions was encouraged as well. Some economies have done reforms to their own state-owned enterprises. One of these reforms is to introduce competitive neutrality wherein both private and state-owned firms operate on a level playing field. Several economies have also addressed issues regarding the ease of doing business.

4.2. Promoting labor market opportunities, training, and education

APEC economies have put a strong emphasis on education and training in order to address this key area. Aside from basic and higher education, member economies have also put the spotlight on vocational training. A number of economies, both developed and developing, also listed measures that would serve to increase the labor force participation rate, and to better match potential employees with positions. In developed economies, the emphasis is on policies that help older workers have at least part-time work. In developing economies, by contrast, it is more important to make sure that people having a hard time getting formal employment are assisted in the process. Implementation mechanisms for labor market programs differ among economies. One mechanism is the use of tax credits to encourage hiring of particular segments of the population or to reduce overall unemployment. Several economies have also included quantitative performance metrics under this priority area in order to track the effectiveness of their policies.

4.3. Promoting sustained SME development and enhanced opportunities for women and vulnerable populations

Member economies have recognized the important role of SMEs to their development. In order to foster the growth of SMEs several economies have implemented policies that will make it easier for these enterprises to do business. These measures are aimed at lowering startup costs which take up a huge chunk of the earnings of small businesses. Another area that APEC economies have concentrated on is access to finance. Usually smaller businesses have a harder time getting access to credit as opposed to their much larger counterparts. Several measures have been adopted by member economies from creating an agency to help small businesses to creating a microfinance program to help these firms.

4.4. Promoting effective and fiscally sustainable social safety net programs

In order to provide a social safety net, some developing member economies that deal with populations living in extreme poverty have used variations on the conditional cash transfer mechanism. Such programs have been widely found to be effective and efficient internationally, and it is appropriate that they should be considered by certain APEC economies (APEC, 2013c). Other economies in the meantime have tried to implement measures that will enable people to return to work quickly and prevent dependency on unemployment benefits. Economies have also made measures to increase labor market flexibility by making it easier to hire and fire employees.

4.5. Promoting better functioning and effectively regulated financial markets

The stability of the financial system is an important goal for a number of member economies under ANSSR. As the recent global financial crisis demonstrates, there is an ongoing need for an appropriate level of regulation of the financial sector. Some economies have pointed to international standards adopted in fora outside APEC as proof of their seriousness in reforming

their financial sectors. Several economies have also emphasized the deepening of financial markets. Deep financial markets usually lead to better access to credit for SMEs. Different regulatory reforms have been adopted by member economies but they all emphasize a reliance on market-based mechanisms for the allocation of financial resources to firms.

4.6. How structural reform can continue

Member economies realize that structural reform is an ongoing process rather than a one-shot set of reforms. Economies can use the ANSSR as a springboard to including additional priority areas that can help increase competitiveness. Economies need to pay close attention to challenges that can hinder structural reform. Developing nations face human, financial, and technical barriers to reform. These economies can use the ANSSR Sub-Fund to help alleviate some of those constraints. Politics also serves as a significant barrier both in developed and developing economies. While structural reform helps economies in general, they may prove to be detrimental to certain vested interests. The benefits may be too vague and too widely dispersed while the losses can be concentrated and easily understood. This makes it hard for governments to mobilize certain segments of the population to advocate for reforms. This thus makes it politically hard to implement change. Change management wherein all stakeholders are involved in the process can tilt the balance towards reforms. Providing enhanced social safety nets can also mitigate the losses of groups as a result of reforms. Stakeholder involvement is thus vital for the sustainability of structural reform.

V. Lessons Learned (From APEC's Supply Chain Connectivity Framework and APEC's Supply Chain Initiative)

APEC constructed a measurement framework in order to measure the effects of the Supply Chain Connectivity Framework Action Plan (SCFAP) on improving supply chain performance.

They found that APEC economies have been quite successful in reducing trade times by nearly 7% (using Doing Business data on export time and Logistics Performance Index (LPI) data on import time). There is some evidence of higher costs which could be due to unexpected supply chain disruptions due to natural events such as earthquakes and floods (APEC, 2013d). They also found that 77% of SCFAP actions have been implemented between 2010 and 2012. Member economies have experienced benefits from SCFAP projects in terms of improving supply chain performance. These benefits are (1) knowledge sharing, (2) improved relationship between government and the private sector, and (3) adoption of new technologies. APEC (2013d) also discussed the difficulties in accurately measuring and attributing the impact of SCFAP projects to improvement in time, costs, and uncertainty. APEC's report also highlighted the complexity of the existing chokepoints as these chokepoints often are interlinked with one another. APEC's Supply Chain Connectivity Framework has identified eight chokepoints that need to be addressed in order to increase supply chain performance by 10% in 2015 (See Table 9).

Supply chain barriers weigh on a business in four direct ways: (1) they add to costs, both in terms of higher operating costs and increased capital expenditures, (2) they worsen the delays the business faces by making them longer or less predictable, (3) they reduce volume of trade activity, and (4) they increase risk.

Based on APEC's (2013d) findings, several recommendations have been proposed. First, economies should re-double their efforts to reduce the time, costs, and uncertainty of supply chain performance through existing as well as future actions within the eight chokepoints. Second, efforts should be targeted at maintaining the existing key long-term measures that have been initiated earlier and to expand them by utilizing the strong progress in ICT development. Third, improving the regulatory environment which supports the development of an efficient logistics

and transportation sector is a must. Fourth, designing appropriate capacity building initiatives that directly address the existing gap in a systematic and sustainable manner should be encouraged. Fifth, further support should be provided to SMEs to ensure that there would be mutual collaboration between industry players within the logistics and transportation sector. Sixth, improvements have to be made on the design and implementation of SCFAP. Lastly, a further assessment of the external indicators should be undertaken in 2014.

VI. Measuring Supply Chain Performance

In 2010, APEC's Committee on Trade and Investment (CTI) through SCFAP, set a target of a 10% improvement in supply chain performance in terms of time, costs, and uncertainty by 2015. In order to implement SCFAP, APEC's Policy Support Unit (PSU) worked with member economies to build a performance measurement framework in order to provide economies with information on the extent to which agreed set of specific actions to tackle each chokepoint (enshrined in SCFAP) are contributing to improving supply chain performance. The current SCFAP measurement framework comprises three elements (APEC 2013d):

1. External Indicators: monitor the effects of SCFAP actions on measurable supply chain processes and outcomes.
2. Internal Indicators: monitor the degree to which SCFAP actions are in fact being implemented.
3. Self-Assessment Survey: describes the actions taken by economies and sub-fora, and provides views on potential impact and recommendations in improving the remaining actions.

6.1. Measuring External Indicators

The goal is to produce indicators that will provide useful information on the financial and time burdens which importers and exporters have to bear. The World Bank's Logistics Performance Index (LPI) and Doing Business Indicators (e.g., Trading Across Borders Indicators), and World Economic Forum's Enabling Trade Index (ETI) measure the time and cost aspects of the supply chain, while the uncertainty aspect is proxied by indicators of supply chain reliability (e.g., the percentage of shipments that meet a firm's internal quality criteria).

LPI is a perception index based on a survey of 1,000 logistics and trade-facilitation professionals around the globe. It is used to measure logistics efficiency across countries. Respondents evaluate eight markets on six core dimensions on a scale from 1 (worst) to 5 (best). The six core dimensions are: (1) efficiency of the clearance process, (2) quality of trade and transport infrastructure; (3) ease of arranging competitively priced shipments, (4) competence and quality of logistics services, (5) ability to track and trace consignments, and (6) timeliness of shipments in reaching their destination (www.worldbank.org; APEC, 2013d; Shepherd and Hamanaka, 2013).

ETI is a composite index that measures the extent to which individual economies have developed institutions, policies, and services facilitating the free flow of goods over borders and to destination. It is composed of four sub-indexes and nine pillars. The four sub-indexes are: (a) market access, (b) border administration, (c) transport and communications infrastructure, and (d) transparency of border administration. The nine pillars are: (1) domestic and foreign market access, (2) efficiency of customs administration, (3) efficiency of import-export procedures, (4) transparency of border administration, (5) availability and quality of transport infrastructure, (6)

availability and quality of transport services, (7) availability and use of ICTs, (8) regulatory environment, and (9) physical security (www.weforum.org; APEC 2013d).

To derive regional-level indicators, data for individual economies are aggregated using three approaches: (1) simple average, (2) GDP-weighted average, and (3) median. Trade-weighted average is not desirable as it will overstate performance because economies with significant supply chain difficulties receive small weights (APEC, 2013d). Table 1 shows the LPI indicators for APEC economies for 2010 and 2012. Singapore is consistently on top, and Russian Federation and Papua New Guinea are the bottom two. Using Malaysia's LPI as the median value, the Philippines is consistently below the median both for 2010 and 2012. However, Philippines' LPI is improving between 2010 and 2012. If Singapore's LPI score represents the world's technological frontier, then considerable work lies ahead for the public and private sectors in the APEC region in order to improve the region's logistics performance.

Table 1. LPI Indicators of APEC Economies

Country	2010	2012
Singapore	4.22	4.15
Japan	4.19	4.11
United States	4.15	4.14
Canada	4.03	4.99
Hongkong, SAR	4.00	4.12
Australia	3.78	3.83
Korea, Rep.	3.62	3.74
China	3.54	3.61
New Zealand	3.54	3.42
Malaysia	3.50	3.43
Thailand	3.16	3.08
Mexico	2.95	3.03
Chile	2.86	3.18
Peru	2.66	2.73
Philippines	2.57	2.80
Vietnam	2.56	2.68
Indonesia	2.54	2.54

Russian Federation	2.38	2.45
Papua New Guinea	1.91	2.20

Note: No data for Brunei Darussalam and China-Taipei.
Source: www.worldbank.org

Table 2. ETI Indicators of APEC Economies

Country	2010	2012
Singapore	6.06	6.14
Hongkong, SAR	5.70	5.67
New Zealand	5.33	5.34
Canada	5.29	5.22
Australia	5.13	5.08
Chile	5.06	5.12
United States	5.03	4.90
Japan	4.80	5.08
Korea, Rep.	4.72	4.65
China-Taipei	4.72	4.81
Malaysia	4.71	4.90
China	4.72	4.22
Thailand	4.13	4.21
Peru	4.04	4.31
Mexico	4.04	4.08
Indonesia	3.97	4.19
Vietnam	3.96	4.02
Philippines	3.72	3.96
Russian Federation	3.37	3.41

Note: No data for Brunei Darussalam and Papua New Guinea.
Source: www.weforum.org

Table 2 shows the ETI scores for 2010 and 2012. Again Singapore is on top, and the Russian Federation is at the cellar for both years. Using the ETI score for China-Taipei as the median score, the Philippines is at the bottom of the APEC economies, just slightly above the Russian Federation. However, the Philippines improves its ETI score in 2012 to a level attained by Vietnam in 2010.

The Philippines' LPI score improved by 8.95% between 2010 and 2012; and its ETI score improved by 6.45% for the same period. Improvement of LPI has been more rapid than that for the ETI. Since the two indices measure different dimensions of performance, they complement

each other in giving a picture that points to an uptrend direction. Nevertheless, being way below the APEC median score in both LPI and ETI, then the Philippines faces a major challenge to raise its supply chain capability up to the level attained by an "average" APEC economy.

6.2. Alternative Logistics Indicators

Panennungi (2012) attempts to study the link between transport cost (or logistics cost) and export performance. In measuring this link, he constructs a logistics cost index (both domestic and international). Using data from the 2010 World Bank Development Indicators, he constructs his Domestic Logistics Index (DLI) and International Logistics Index (ILI) for all APEC economies using the following indicators and their respective weights (see Table 3 below):

Table 3. Variables Comprising Domestic and International Logistics Indices

A. Domestic Logistics Index (DLI)	
Variable	Weight
• Percent of total roads paved	45%
• Percent of road sector energy consumption	30%
to total energy consumption	
• Quality of port infrastructure	10%
• Goods transported through railways (million ton per km)	5%
• Telephone lines per 100 people	5%
• Internet users per 100 people	5%
B. International Logistics Index (ILI)	
Variable	Weight
• Liner shipping connectivity index	30%
• Container port traffic (20 foot equivalent units)	30%
• Quality of port infrastructure	20%
• Burden of customs procedure	10%
• Telephone lines per 100 people	5%
• Internet users per 100 people	5%

Source: Panennungi (2012), Table 1, page 164.

Table 4 shows the resulting DLI and ILI scores for APEC member economies. Note that the highest DLI belongs to the U.S. and the lowest goes to the Philippines; for the ILI, China gets

the highest possible score, while the Philippines gets the lowest rating. Consequently, the Philippines' DLI and ILI scores are not only lower than the global average, they are also lower than the APEC average. DLI measures the domestic logistics support to produce local goods for consumption and for export and to meet demand for foreign goods; while ILI represents the international logistics support to have the capacity to move goods between and among countries. The increasing logistics performance improves a country's economic capacity and thereby increases the competitiveness of its exports. Both DLI and ILI have a positive relationship with export performance (Panennungi, 2012).

Table 4. DLI and ILI Scores for APEC Economies: 2010

Country	DLI	ILI
Canada	3.078	2.798
Chile	2.483	2.310
China	2.559	5.000
Hongkong, SAR	4.152	4.462
Indonesia	2.212	1.569
Japan	3.650	3.038
Korea, Rep.	3.660	3.421
Malaysia	3.953	3.273
Mexico	3.125	1.751
New Zealand	4.086	2.503
Peru	2.592	1.496
Philippines	1.704	1.029
Russian Federation	3.147	1.512
Singapore	4.224	4.280
Thailand	3.953	2.197
United States	4.229	3.686
Vietnam	2.524	1.642
Global Average	3.282	2.306
APEC Average	3.255	2.704

Note: The range of the index is from 1 to 5. No data for Australia, Brunei Darussalam, China-Taipei, and Papua New Guinea.
Source: Panennungi (2012), Table 2, pages 164-165.

6.3.International Supply Chain Connectivity Indicators

UNESCAP (2013) constructs an International Supply Chain Connectivity Index (ISCCI) which reflects the overall facilitation performance of a country along the international supply chain. ISCCI is a composite index of the World Bank Doing Business Report's. Trading Across Border (TAB) indicators such as a) import indicator: the number of documents, time, and cost involved in import; b) export indicator: number of documents, time, and cost involved in export; and c) UNCTAD's Liner Shipping Connectivity Index (LSCI). LSCI is considered a measure of connectivity to maritime shipping as well as a measure of trade facilitation (e.g. accessibility to global trade). TAB's import indicator, TAB's export indicator, and UNCATD's LSCI are given equal weight to arrive at an overall index which is ISCCI for a particular country.

Table 5 shows that the APEC member economies of Singapore, Hongkong, Korea, China, and Malaysia are the world's top 5 best connected economies to international supply chains. The Philippines ranks 59th out of 180 economies, and ranks 2nd to the last among APEC economies. The Philippines has to reduce its international trade costs and facilitate the integration of its domestic firms to the global production networks.

Table 5. International Supply Chain Connectivity Index of APEC Economies: 2012

Country	ISCCI Ranking
Singapore	1
Hongkong, SAR	2
Korea, Rep	3
China	4
Malaysia	5
United States	8
Japan	17
Thailand	33
Vietnam	37

Indonesia	46
New Zealand	48
Australia	49
Philippines	59
Russian Federation	118

Note: 180 economies are ranked. There are no data for Brunei Darussalam, Canada, Chile, China-Taipei, Papua New Guinea, Peru, and Mexico.
Source: UNESCAP (2013), Table 42, Page 50.

6.4.Supply Chain Reliability Indicators

There is no direct indicator of uncertainty. However, an indirect measure is made by using a proxy indicator for supply chain reliability such as the percentage of shipments that meet firm quality criteria. An increase in the reliability indicator can be interpreted symmetrically as a reduction in the level of supply chain uncertainty (APEC, 2013d).

Talavera (2010) proposes two supply chain reliability indicators for Philippine manufacturing: (1) order to delivery time (ODT) which is defined as the time that elapses from the receipt of the customer's order to the delivery of the goods, and (2) order fulfillment performance (OFP) which is defined as the percentage of orders that meet customer's specifications. In APEC assessment of SCFAP, the percentage of shipments that meet firm quality criteria is sourced from the LPI survey (APEC, 2013d).

6.5.Internal Indicators

Internal indicators are designed to capture the qualitative aspects of the Action Plans' progress and the internal indicators assessment is focused on: (a) how many projects and programs have been conducted based on SCFAP's timeline, (b) what sort of improvements or changes the completed projects have been able to initiate or create at the ground level, and how the improvements are related to the overall SCFAP goals (APEC, 2013d). Table 6 shows that 77% of actions have been completed to improve supply chain performance. It likewise implies that there is room for improvement for member economies to add more actions within SCFAP in order to

achieve the overall goal of 10% improvement in supply chain performance in terms of time, cost, and uncertainty by 2015.

Table 6. Progress of Implementation of the Eight Chokepoints

Chokepoint	Element Implemented	Total Element	Percentage of Implementation
1	9	12	75
2	6	10	60
3	7	8	88
4	5	9	56
5	17	22	77
6	25	27	93
7	7	9	78
8	3	6	50
Total	**79**	**103**	**77**

Source: APEC (2013d), Table 7, page 20.

6.6. Self-Assessment Survey

A self-assessment survey is used as the third track to assess the progress of SCFAP implementation. This approach is designed: (a) to collect information and views from APEC member economies on the potential impact of Supply Chain Initiative (SCI) actions on policy change and improvement in supply chain performance, (b) to serve the purpose of gathering policy recommendations in improving the remaining actions, (c) to gauge the desirability of adding new actions under the SCFAP, (d) to improve awareness and understanding of new technologies, and (e) to highlight the difficulties in accurately measuring and attributing the impact of SCFAP projects to improvement in time, costs, uncertainty (APEC, 2013d).

VII. The Role of Transport in the Development of Integrated Supply Chain

Transportation plays a crucial role in supply chain operations, moving inputs from supply sites to manufacturing facilities, redistributing inventory among different plants and distribution centers, and delivering finished goods to consumers. Benefits that accrue from world-class operations at the points of supply and production will never be realized without excellent transportation planning and infrastructure. Having goods ready for delivery is not enough if it cannot be cost effectively delivered when and where they are needed.

Transportation refers to the movement of goods from one location to another as it makes its way up the supply chain. Transportation is a major part of the costs incurred by most supply chains. The role of transportation is even more significant because of the rise of global supply chains as well as e-commerce both of which increase the distance that goods have to travel. International trade is becoming a bigger part of the world's economic activity. The success of a supply chain is closely linked to its use of transportation resources. Firms can utilize transportation resources so that it can centralize inventories and operate with fewer facilities. Transportation serves as a link between different stages of the global supply chain. It allows goods to flow from suppliers to plants and ultimately to consumers. It allows firms to sell their goods all over the world. Therefore, transportation decisions have an impact on the profitability of the supply chain. It also has an influence on both facility and inventory choices within the supply chain (Chopra and Meindl, 2012). Furthermore, transportation infrastructure is one of the factors that affect the smooth functioning of trade logistics (Shepherd and Hamanaka, 2013).

World-class infrastructure is vital for a large metropolis like Metro Manila to compete in the global marketplace. One of the major problems plaguing this metropolis is traffic congestion. This is due to a lack of mass transit systems as well as a road network stretched beyond capacity.

The resulting gridlock results in lower productivity and delays in the transport of goods. JICA estimated that traffic congestion causes losses amounting to PHP 2.4 billion a day because of lost work hours and business opportunities as well as the cost of fuel consumed by the vehicles.[4] Table 7 shows that the Philippines lags behind its ASEAN neighbors in terms of quality of infrastructure. Several recommendations have been made in order to improve Metro Manila's infrastructure. These include improved airport and port facilities, additional mass transit and commuter rail lines, a modernized bus, jeepney, and traffic systems, development of intermodal terminals, and the construction of new roads and expressways. Inadequate funding for infrastructure contributed to the Philippines weakened competitiveness in world trade. A major challenge for the Philippines is to improve connectivity by improving the efficiency of land, water, and air transportation. Table 8 shows that among the ASEAN 5, the Philippines lags behind in road infrastructure.

Table 7. Ranking of Selected ASEAN Countries in Terms of Quality of Infrastructure

Country	Quality of Overall Infrastructure	Quality of Roads	Quality of Port Infrastructure	Quality of Air Transport Infrastructure
Singapore	2	3	2	1
Malaysia	29	27	21	24
Brunei Darussalam	43	30	57	61
Thailand	49	39	56	33
Cambodia	72	66	69	75
Indonesia	92	90	104	89
Philippines	98	87	120	112
Vietnam	119	120	113	94

Note: 144 countries were ranked; Lao PDR and Myanmar were not included.
Source: Navarro and Llanto (2014), Table 1, page 8.

[4] Japan International Cooperation Agency, "Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas (Region III and IV-A), Manila, November 2013.

Table 8. Road Quality and Density Indicators

Country	Total Road Network (Thousand km)	Paved Roads as % of Total Road Network	Population per km of road	Population per km of paved road
Indonesia	437.8	59.1	521	882
Malaysia	122.7	79.9	220	275
Philippines	200.8	22.2	426	1,913
Singapore	3.3	100.0	1,455	1,455
Thailand	98.1	99.9	683	684

Source: Arangkada Philippines 2010, Table 37, page 138.

Shepherd (2011) finds a strong and positive relationship between transport prices and logistics performance. He reasons that end users of logistics services are prepared to pay a premium for good and reliable service, because technology improvements that increase service level might also increase costs. But countries with very high transport costs (above the world average) need to make significant improvements because they face comparative disadvantage in world trade vis-à-vis countries with low levels of transport costs.

Results of the OECD/WTO survey showed that the private sector listed the following factors as national supply-side constraints in entering, establishing, or moving up the global value chains (GVCs: (a) restrictive practices governing access to airport, rail, road, or maritime infrastructure, (b) market power of existing companies, and (c) transport service monopolies (Shepherd, 2013).

Citing various sources, APEC (2013e) stresses the impact of physical connectivity: (a) 7% to 10% of an economy's overall productivity is associated with infrastructure, (b) every dollar of investment in physical infrastructure returns 1.11 dollars in increased economic activity and (c) infrastructure investment creates a return of 5% to 25% globally. And adequate investment in infrastructure could result in an accumulated reduction in trade costs from 11.5% to 25.3% of trade value in 2020 (APEC, 2013d).

Definitely, transport remains a serious constraint in the Philippines. There is a need to secure funding not only to invest in basic infrastructure like ports, airports, roads, and rail lines, but also to insure that funds are available for continuous maintenance. Both LPI and ETI stress the importance and availability of quality transport infrastructure and services. Transport sector regulation is also important in promoting trade and exploiting the GVC. Navarro and Llanto (2014) argue that institutional weaknesses also constrain infrastructure investments, in addition to limited financial resources. In addition, the Philippine Development Plan, 2011-2016 concludes that "inadequate project preparation, poor project quality-at-entry, and poor project execution cause delays and changes in project scope and raises costs in the course of implementation" (page 122). The following are among the institutional actions proposed by the JICA study (refer to footnote #3): (a) clear backlogs of un-implemented or (committed) projects, (b) ramp up delivery capacity of transport agencies, (c) improve capacity development for planning and project preparation, (d) clear policy framework for privatization of rail lines, (e) strengthen development control and guidance to private sector development, and (f) outsource project studies to support current institutional weakness.

VIII. The Global Value Chain: Challenges for the Philippines

The rise of value chains[5] can be traced back to the advent of the steam engine in the 19th century. Prior to this development, the costs of shipping goods from one country to another proved

[5] Value chain is defined as the full range of activities required to bring a product or service from conception through different phases of production, delivery to final consumers, and final disposal after use (Kapinsky and Morris (2001).

to be a major barrier to trade. This resulted in people consuming goods that came from relatively nearby locations. Steam power ushered in the first age of globalization in the late 19th century wherein trade rose dramatically between nations. Value chains involve a model of "trade in tasks" where countries specialize in creating value within a larger global supply chain. Information technology has enabled firms to unbundle their production processes wherein they locate certain tasks to locations that can do them most efficiently. Gains from trade has thus arisen as developing nations gain access to advanced technology and business knowhow by participating in areas of the value chain here they have a competitive advantage.

An example of a value chain is the production of the iPod by Apple. It is designed in California, while different inputs are sourced throughout Asia. The memory comes from South Korea, the display from Japan, the central processing unit is made in America, and the video processors are made in Singapore and Taiwan. Final assembly is done in China and the final product is shipped to America for distribution (Goodman and Miller, 2013).

The proliferation of free trade agreements in Asia in recent years is partly due to the importance of value chains. The World Economic Forum (2013) has estimated that reducing global value chain barriers can increase global GDP by 5 percent. This is in contrast to the 0.7 percent increase in global GDP that is estimated if tariffs worldwide were reduced to zero (WEF, 2013).

For the Philippines to fully reap the benefits of the global value chain certain steps have to be done. The country has to promote policies aimed at supporting private-sector development in manufacturing and primary input processing. The country should also try to attract more foreign direct investment (FDI) and build productive capacities in local firms. Institutional reforms should be done in order to attract foreign investment. Benefits that can be derived from FDI include the

stimulation of local entrepreneurship through backward linkages, labor markets, and human capital as well as technology and knowledge spillovers. FDI also facilitates skill creation in export-oriented industries that have strict efficiency and quality standards. Another recommendation is for the country to encourage its manufacturing sector. The creation of supply-chain linkages between foreign and local firms in formal manufacturing fosters the emergence of local manufacturing firms capable of subcontracting tasks and subsequently competing with foreign firms. Services activities can likewise be separated into "tasks" and the country can specialize in "tasks" along the value chain in which it has comparative advantage.

Developing economies like the Philippines can enter the global value chain by opening their markets to trade and FDI, improving their business environment, and strengthening domestic capabilities to engage in international trade. To strengthen the benefits from participating in the global value chain the Philippines should strengthen the business environment, support investment in R&D and design, and foster the development of important economic competencies. Lastly, it is important for the country to consistently enforce contracts (OECD, 2013). Countries with sound legal systems tend to export more in more complex industries. Countries with well-functioning contractual institutions are better equipped in handling tasks that involve complex processes.

Oikawa (2008) explains that the Philippines lags behind its neighbors in transnational corporation (TNC) led industrialization because of two factors. First, it attracts fewer foreign direct investment (FDI) than its neighbors. Second, it does not enjoy sufficient externalities from FDI inflows. These inflows thus do not guarantee positive spillovers to the host country. Oikawa (2008) did a case study of the Cavite Export Processing Zone. He found that an enclave structure was developed in this zone with few locally-owned suppliers emerging. Weak local entrepreneurship thus contributed to poor linkage formation between the transnational

corporations operating in the zone and the local firms that are situated in the surrounding communities. Therefore, for the Philippines to truly reap the benefits of the global value chain, strong linkages must be formed between the TNCs setting up shop in the country and local firms. Local firms that serve as suppliers to the TNCs can benefit from the transfer of knowledge and technology that can make their businesses more competitive in the global market.

Austria (2009), also finds that the Philippines hardly progressed beyond the lowest level of the production chain (i.e., assembly and testing) in the electronics industry global production network due to the weaknesses and inadequacies of its support structures such as poor infrastructures and logistics.

APEC economies have identified eight chokepoints that need to be addressed in order to increase supply chain performance by 10%. Supply chain performance is measured in terms of reduction of time, cost, and uncertainty of moving goods and services across the member economies of APEC. The eight chokepoints identified under SCFAP are:

1. Lack of transparency/awareness of full scope of regulatory issues affecting logistics; Lack of awareness and coordination among government agencies on policies affecting logistics sector; Absence of single contact point or champion agency on logistics matters.
2. Inefficient or inadequate transport infrastructure; Lack of cross border physical linkages (e.g. roads, bridges).
3. Lack of capacity of local/regional logistics sub-providers.
4. Inefficient clearance of goods at the border; Lack of coordination among border agencies, especially relating to clearance of regulated goods “at the border”.
5. Burdensome procedures for customs documentation and other procedures (including for preferential trade).

6. Underdeveloped multi-modal transport capabilities; inefficient air, land, and multimodal connectivity.
7. Variations in cross-border standards and regulations for movements of goods, services and business travelers.
8. Lack of regional cross-border customs-transit arrangements.

Several policy recommendations have been made in order to alleviate these chokepoints. Some of the policy recommendations are listed in Table 9 below. Note that this is not a complete list but is just used for illustrative purposes only.

Table 9. List of Chokepoints and Selected Policy Recommendations as Identified by APEC

Chokepoint	*Policy Recommendation*
1 (Transparency)	• Measures that encourage coordination of policies, business certainty, engagement of stakeholders, reduction of corruption, and publication and dissemination of information.
2 (Infrastructure)	• Maintain a single government coordinator, an infrastructure development plan at the central government level, or a domestic coordination process to advance cross-border or regional transport infrastructure development. • Maintain a process to coordinate with regional economies on cross-border or regional transport infrastructure development issues.
3 (Logistics Capacity	• Measures that promote trade facilitation, knowledge improvement, stakeholder engagement and competitiveness enhancement
4 (Clearance)	• Maintain program designed to reduce bureaucratic redundancy and increase institutional coherence when clearing goods at the border. • Maintain human resources programs designed to nurture professional logistics management for clearing goods at the border as a human capital asset, both with respect to private sector and government representatives.
5 (Documentation)	• Maintain an electronic system for clearing goods at the border that can adapt to future technologies regarding online/electronic forms. • Maintain an open and transparent dispute settlement mechanism with published timelines and procedures for arbitrating disputes between importers and Customs agencies.
6	• Maintain programs that support investments in trade and transport-related

(Connectivity)	infrastructure, and include forward-looking metrics or criteria that take into account demographic, trade or demand projections when developing cross-border transport infrastructure. • Maintain programs designed to both set aside funds for infrastructure maintenance and promote policies that take the total life cycle cost of an infrastructure asset into account at the time it is constructed.
7 (Regulations and Standards)	• Maintain programs and adequate resources and streamline processes to facilitate the deployment, protection and expeditious repair of submarine telecommunications cables. • Encourage the establishment of a trusted online environment.
8 (Transit)	• Maintain procedures to identify goods in transit and verify satisfaction of transit requirements. • Do not apply customs charges, formalities, or inspections other than those necessary for specific law enforcement purposes with respect to that transit operation, until the goods arrive at the point of exit from an economy's territory.

Source: APEC (2013b)

Table 10 shows a brief list of actions that the Philippines has done in order to overcome the chokepoints listed under SCFAP. These actions come in the forms of meetings, seminars, training programs, plans, and publications that would help the country improve its supply chain framework.

Table 10. List of Actions Undertaken by the Philippines to Solve SCFAP Chokepoints

Chokepoint	*Actions Undertaken*
1	• Initiative to Advance the Action Plan for Chokepoint 1 of the APEC Supply Chain Connectivity Framework. • APEC Guidelines for Advance Rulings • Symposium on Supply Chain Connectivity • Compendium of Best Practices of National Logistics Associations • Improving the Understanding of Logistics Services
2	• Study and seminar on energy, transport, and environmental benefits of transit-oriented development
5	• Self-Certification of Origin Building Program • Explore the possibility of adopting electronic certificates related to customs procedures
6	• Provide training in management of security, safety, and emerging technology in intermodal transportation and supply chain systems

Source: APEC (2013)

The EDC-NCC Task Force on Cabotage[6] identifies the factors responsible for the high cost of domestic shipping: (1) prohibition of the carriage of foreign cargo by foreign vessels within Philippine ports, (b) high cost of cargo handling fees, (c) taxes on fuel, profits, and purchases, (d) lack of economies of scale, and (e) high cost of terminal handling charges.

Llanto, et al. (2007) describe the various inefficiencies that saddle the Philippine port sector such as: (1) the absence of effective intraport and interport competition among the country's ports, (b) port administration is highly centralized with PPA as the central authority, (c) some semblance of competition emerges when concessions were awarded to private companies to operate Manila International Container Terminal, South Harbor, and North Harbor, but direct competition among them needs to be enhanced by PPA, and (d) port cargo handling services are not competitive; the six cargo handlers at the North Harbor are allowed to operate only in specific piers dedicated to specific shipping lines.

Balisacan (1990) documents that handling costs in Philippine ports can easily exceed the net sea freight, particularly for short distances like the Cebu-Dumaguete route whose handling costs exceed the net sea freight by about 40%. However, he concludes that high domestic transport cost is not simply due to shipping cost but due to other factors like poor farm-to-market roads, insufficient storage facilities, and poor communication and power infrastructure in the rural areas.

Table 11 presents comparative indicators on the number of documents needed, time, and cost to import and export in selected APEC countries. The Philippines shows improvement in all indicators (except number of documents to import) from 2005 to 2012. In 2012, the Philippines' cost to export is at par with Thailand, but still below those of China, Malaysia, Hongkong, and

[6] "Policy Brief on Cabotage," EDC-NCC Task Force on Cabotage, January 2014.

Singapore. Likewise, in 2012 its cost to import is below those of Thailand and South Korea, but still above those of China, Malaysia, Hongkong, Singapore, and Vietnam.

Ishido (2012) explains that three major areas (transportation, business logistics, and trade facilitation) have to be dealt with in order to optimize the flow of goods throughout the logistics chain. He recommends that (1) more and better investments in infrastructure has an internal rate of return (IRR) between 25% and 50% and has a "medium" to "high" potential if implemented; (2) policies aimed at improving the efficiency of logistics service providers has an IRR higher than 50% and has a "high" potential if implemented; and (3) policies to improve trade facilitation has an IRR higher than 50% and has a "very high" potential if implemented. APEC (2013d) reports that World Bank's "Trading Across Borders" indicators showed a reduction in total trade transaction costs across APEC region over the 2007-2010 period resulting in total savings of US$58.7 billion.

Finally, in a focused group discussion with stakeholders in the Philippine supply-chain sector on January 29, 2014, a question was asked if a further improvement by 10% from 2015 baseline to 2018 is doable, and they positively affirmed it.

The domestic logistic cost has a negative impact on exports. This factor is measured as a Domestic Logistics Index (DLI) or "behind the border cost" which is not included in international trade negotiations. The Manila truck ban adversely affects the domestic logistic cost. Hoekman (2013) states that domestic policies that increase trade costs may hurt the efficiency of supply chains or impose costs on firms in other countries. The port of Manila gets 98% of foreign container traffic in Luzon while both the Batangas port and the Subic port are extremely underutilized because shipping freight charges are much lower when cargo owners ship from Manila port due to economies of scale. The government can devise policies to make the Batangas

and Subic ports more attractive to shippers. Habito (2013) argues that the Manila truck ban may serve as a policy intervention to make Batangas port and Subic port attractive to shippers. However, there are two contrasting effects of the Manila truck ban. It penalizes the truckers and logistics firms but it benefits students, teachers, employees, and commuters. It is suggested that a summit of all stakeholders be convened to arrive at a long-term solution.

Table 11. Trading Across Borders Indicators

Country	Documents to export (number)		Time to export (days)		Cost to export (US$ per container)		Documents to import (number)		Time to import (days)		Cost to import (US$ per container)	
	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012
Phils	**8**	**7**	**17**	**15**	**800**	**585**	**8**	**8**	**18**	**14**	**800**	**660**
PR China	6	8	18	21	390	580	11	5	24	24	430	615
Malaysia	7	5	18	11	432	435	7	6	14	8	385	420
HKong	6	4	13	5	525	575	8	4	17	5	525	565
Indonesia	7	4	25	17	546	644	9	7	30	23	675	660
S Korea	5	3	12	7	780	665	8	3	12	7	1040	695
Singapore	4	4	5	5	416	456	4	4	3	4	367	439
Thailand	9	5	24	14	848	585	12	5	22	13	1042	750
Vietnam	6	6	24	21	669	610	8	8	23	21	881	600

Source: Aldaba (2013), Table 24, page 39.

Austria (2009) made some recommendations in order to make the country more able to benefit from the global value chain. First, the country has to move away from the assembly and testing segment of the production chain because it is labor intensive and the country cannot compete with the likes of China which has lower labor costs. Therefore the Philippines has to undergo industrial upgrading and technological learning in order to specialize in high-value production. Instead of competing with the low labor cost countries China, we should find niches to complement these countries. Second, the government should invest in developing local supplier industries because this is the only way that TNCs can increase the local content of goods produced by TNCs in the country. Lastly, the country must invest in good infrastructure and logistics that

can lower production costs and enable a more efficient management of the supply chain. This includes lowering communication and power costs as well as adequate port systems that can cut travel times. The country thus should open up to private sector investment in infrastructure. In order to attract private investors, the regulatory and legal environment must be reformed in order to ensure the stability of long term investment agreements which then leads to a more credible policy environment which increases the confidence of foreign investors in the country.

Intal (2009) emphasizes the need for political stability to improve the investment climate in the country. According to him the country needs substantial levels of investment so that it can move away from its dependence on semiconductor and garment exports which are vulnerable to competition from countries with lower labor costs.

Table 12 compares export and import data for the Philippines, ASEAN, and the world for the years 2010 and 2011. Looking at the data, the Philippines has a relatively small share of ASEAN trade compared to its neighbors. The Philippines ranked sixth in trade volume (exports plus imports) in 2010 and 2011 behind Singapore, Thailand, Malaysia, Indonesia, and Vietnam in that particular order. This means that there is still room for improvement when it comes to attracting TNCs to set up operations in this country and making the country a more active part of the global value chain.

Table 12. Total Exports and Imports of the Philippines, ASEAN, and the World (in billion $US)

	Total Exports		**Total Imports**	
	2010	2011	2010	2011
Philippines	51.5	48.0	54.9	60.1
ASEAN	1,070.9	1,242.3	974.8	1,146.3
World	15,129.8	18,070.2	15,251.5	18,204.8

Sources: IMF International Financial Statistics, www.asean.org

Table 13 shows Philippine exports and imports to some of its top trading partners. As can be seen below trade with the ASEAN countries makes up the biggest chunk of trade volume in 2010 and 2011. Improved supply chain performance may result in increased trade and integration with our ASEAN neighbors in such industries as electronics and automobile parts. If we include other APEC member countries such as China, Japan, Korea, Australia, New Zealand, and the US we can see that APEC nations form the biggest trading partner for the Philippines. Improving our competitiveness through APEC's programs like the SCFAP and ANSSR would mean increased investment and trade with other APEC economies. Moving higher up on the value chain and playing to our strengths would enable the Philippines to serve as a complement to the capabilities of our neighbors.

Table 13. Total Philippine Exports and Imports to Selected Countries/Regions (in thousand $US)

	Total Exports		**Total Imports**	
	2010	2011	2010	2011
ASEAN	11,986,081	15,492,371	8,693,733	14,337,204
China	5,724,467	4,627,559	6,237,326	6,085,075
Japan	7,841,291	6,744,364	8,886,140	6,516,380
Korea	2,228,180	3,832,938	2,237,228	4,419,530
India	410,280	541,425	388,301	666,954
USA	7,559,105	5,886,656	7,101,909	6,536,264
Europe	6,602,042	4,592,830	5,885,161	6,142,399
Australia	349,626	839,043	393,890	1,071,056
New Zealand	32,701	408,818	44,858	524,229

Sources: National Statistical Coordination Board, National Statistics Office of the Philippines

IX. Public-Private Supply Chain Partnerships

Costs associated with global trade such as transportation, communications, infrastructure, trade barriers and border policies are much higher in low income countries due to policies on

product regulations such as product safety and health regulations, licensing requirements, and assessment procedures. Reducing trade costs and improving connectivity are preconditions for expanding investments in supply-chain activities such as trade facilitation and improving transport-related and logistics infrastructure and infrastructure services (Hoekman, 2013).

A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer's request, and supply chain connectivity makes it easier for businesses to perform their activities efficiently and globally. Three aspects of connectivity are being identifies:

1) Institutional connectivity addresses the "behind-the-border" issues such as customs modernization, the single-window initiative , and transport and logistics facilitation
2) Physical connectivity refers to the need for better port, airport, road and railway infrastructures that facilitate regional and global trade and travel
3) People-to-people connectivity refers to the exchanges and networks across the globe which promote deeper integration between people such as educational linkages, promotion of tourism, and increased mobility of professionals.

APEC Supply Chain Connectivity Framework Action Plan (SCFAP) identifies eight "chokepoints" (see Table 9) which require public and private sector actions to help loosen the constraint on traders and insure that supply chains operate more quickly, efficiently, and reliably. One such supply-chain barrier is the lack of awareness and coordination among government agencies on policies affecting logistics sector. The institutional structure to address this problem is to establish a "supply-chain council" composed of businesses, regulators, and trade officials to identify redundancies in the regulation and overlapping requirements from different agencies that do not coordinate and communicate with each other. The council can develop a plan to address

the most detrimental policies or establish a “policy performance baseline” to monitor the effects of changes in the policies (APEC 2013b; APEC 2013d; Hoekman, 2013).

The Bureau of Customs (BOC) implemented the electronic-to-mobile system (E2M) covering the entry and release of shipments through electronic means. However, the system bogged down many times when there is a power failure and when the payment system of the Philippine Clearing House and authorized agent banks is offline. So BOC resorts to manual relase of import shipments when the E2M system bogs downs. Therefore, BOC proposes to change the E2M system with a new one called Philippine Integrated Customs System (IPCS). Accessibility to spare-parts need for machines operating in the country should be addressed and facilitated by BOC’s import release system and the single window system once they are made operational.

X. Conclusions and Recommendations

The Philippines has a lot to gain if it becomes a more active player in the global value chain. However, several factors hinder the country’s attempts to maximize the benefits of the global value chain. These include supply chain factors such as low availability and quality of infrastructure and infrastructure services, poor logistics services, inefficiency of customs administration, inefficiency of import-export procedures, regulatory environment, and physical security. Not to mention the other structural problems like poor quality and high cost of energy, inadequate technological capabilities, and lack of supplier industries.

One way to move up the value chain is for the country to engage in upgrading its industries. This can be done by investing in science and technology in all levels of education. Higher

education curricula should be reevaluated so that the skills being taught are aligned with the needs of the industry.

The Philippines has a lot to gain from the global value chain. It has both the natural and human resources that can help propel growth and improve its standard of living. Several reforms have to be made if we want to be able to maximize the benefits of global trade. These reforms are aimed at making goods travel faster both into and out of the country and to make it easier for firms both foreign and domestic to do business in the country. With the right policies, the Philippines will be well positioned in moving up the global value chain.

As Chair of the APEC 2015 Meeting, the Philippines can provide substantive leadership and direction towards supply chain connectivity policies. The study recommends the following:

(1) There is a need to encourage regional cooperation in establishing and nurturing the policy environment for new regional infrastructure projects.

(2) Build the capacity of local logistics providers and SMEs by facilitating their easier access and link with multinational logistics corporations.

(3) Promote initiatives in support of APEC Principles of Transborder Logistics Services Optimization such as the simplification and harmonization of trade and transportation procedures and practices; improving the awareness and understanding of new technologies; and optimizing trans-border logistics. The latter includes Authorized Economic Operator (AEO), Single Window (SW), Time Release Survey (TRS), Secure and Smart Container (SSC), Electronic Certificate of Origin (eCO), Supply Chain Visibility (SCV), Intelligent Transportation System (ITS), and Global Navigation Satellite System (GNSS).

(4) Address the impediments related to customs issues of the APEC Cross-Border Customs-Transit Arrangements such as varying customs documentation standards, lack of adequate

IT infrastructure and inter-operable data-sharing system, multiple financial guarantees, arbitrary administrative fees, and delays at customs offices.

(5) Undertake Philippine case studies to verify the time duration, costs, and number of documentation affecting export and import.

(6) Encourage member economies to have more engagements with the relevant stakeholders to identify specific problems faced by each member and priority areas/menu of actions with respect to various chokepoints, and design targeted capacity building activities with measurable goals.

(7) Develop policy guidelines or best practice guidelines for each chokepoint for reference by member economies.

(8) Facilitate the enhancement of physical infrastructure for member economies through the identification and allocation of funds for key projects (e.g. APEC to coordinate with ADB to prioritize the projects).

(9) Encourage the APEC Policy Support Unit (PSU) to establish the minimum of indicators to measure compliance progress.

(10) The Philippines should take the lead in setting a higher de minimis values (e.g. above US$100) to encourage other APEC economies to agree to exempt express and postal shipments from customs duties or taxes, and from certain documentation requirements for shipments valued at higher than US$100 to be pioneered by the Philippines.

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