EVALUATING TRADE FACILITATION ACTIONS – THE APEC EXPERIENCE

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SUMMARY

The purpose of the present study is to investigate the Asian Pacific Economic Cooperation (APEC) Trade Facilitation Action Plan II (TFAP II), launched to lower trade costs by 5% among the region economies, for the period 2007-2010. In order to check the claimed results for the TFAP II, the study uses previous literature on trade facilitation and surveys conducted by multilateral organizations to look for evidence that supports the reported outcome, list the main trade facilitation actions adopted, and discuss the key performance strategy index used, and the methodologies available to measure trade costs. The conclusion pointed out the success of the TFAP II and the importance of trade facilitation measures, such as Time Release Study, an Authorized Economic Operator, and Single Window programs as core trade facilitation measures.

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Content

The reduction in international trade costs is believed to be an important issue related to trade facilitation measures, economic development, and international trade growth. Hummels (2007) maintained that international trade growth is positively linked to the reduction in international transportation costs. Mankiw (2010) claimed that international trade is a development booster. According to Hummels, Ishi and Yi (2001), trade growth happened with an increasing vertical specialization among countries, with the result that a higher number of export and import transactions were made for every final product. Markusen and Venables (as cited by Pomfret & Sourdin 2010) affirmed that countries with higher trade costs obliterated the specialization potential gains and the development that it brings.

Over the last half century, the world has experienced a dramatic decline in tariff and non-tariff barriers to international trade. According to Sourdin and Pomfret (2012), trade liberalization, when associated with transport cost reductions due to containerization, better airplanes, and logistics, has resulted in a remarkable expansion of international trade. However, international trade is still more costly than domestic trade.

Acknowledging the economic relevance of lowering international trade costs among countries, since 2001 the Asia-Pacific Economic Cooperation (APEC), has launched two trade facilitation action plans, TFAP I and TFAP II, focused on reducing by 5% of the overall APEC[1] members international transactions costs, each. Both plans were successful, as described in Trade Facilitation through Customs Procedures: Assessment of APEC'S Progress (2011). The latter program, TFAP II, creates a list of so-called trade facilitation actions, to be implemented by APEC members; the actions and measures were divided in four sub-areas:

- TRS – Time Release Survey of goods;
- Implementation of standards based on WCO SAFE and APEC Framework;
- Simplification and Harmonization of Customs Procedures based on the revised Kyoto Convention; and
- Automation of trade procedures.

The TFAP II plan uses eight performance indicators as tools for action progress measurement. The key performance indicators (KPIs) are utilized to measure the progress of respective trade facilitation actions. However, APEC (2011) reported a limitation of the nominated KPIs to capture and measure the real impact on lowering costs, from the trade facilitation actions deployed by the region economies.

1. *APE Actual members are Australia, Brunei Darussalam, Canada, Chile, People's Republic of China, Hong Kong China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, The Philippines, Russia, Singapore, Chinese Taipei, Thailand, The United States and Viet Nam.*

This paper studies, together with their respective KPIs, the TFAP II prescribed actions related to the four customs simplification procedures areas, aiming to support the reported trade costs reduction allegation based on qualitative research over trade facilitation literature, finding evidence about a possible connection between the results captured by the KPIs, the trade facilitation actions linked to the four TFAP II sub areas, and the costs reduction reported. The purpose of the study is the collection of evidence to identify and support those trade facilitation actions through simplification of Customs procedures that truly reduced the region trade costs as reported and expected.

1. OUTLINE OF THIS RESEARCH

In the first section, this research paper begins by comparing the several definitions of trade facilitation given by international organizations with those used by researchers. The second section will examine the trade costs definition, its theory and method of measure them. The third section will focus on describing of the APEC's key perform indicators. The final section will evaluate the trade facilitation actions associated with the eight KPIs created for assessing the TFAP II. In evaluating the actions related to simplification and harmonization of customs procedures, the research will look for evidence that supports the cause-effect relationship of trade facilitation actions and the lower trade costs achievement reported in the TFAP II.

2. COMPARING SEVERAL DEFINITIONS OF TRADE FACILITATION

Trade facilitation has several definitions given by international organizations and academic researchers. There is no one single definition, as the term can be used to describe a wide variety of actions, it can also aims at different focus. For Grainger (2011), trade facilitation is highly focused on the operational aspects of international trade, differing from the traditional trade tariff approach that for long characterized the international trade debate. Trade facilitation tends to be concerned with the trade costs and its deleterious consequences on trade. The first step was comparing the several definitions of trade facilitation given by international organizations such as World Customs organization (WCO) and APEC, or by researchers such as Portugal-Perez and Wilson (2011), that added to the actual concept mosaic, the hard and soft dimensions to the concept of trade facilitation. Some definitions of trade facilitation have a wide range concept, include in their scope all the procedures related to the movement of goods across countries boarders, as well as the payment procedures from the seller to the buyer. Others definitions, however, are narrower, focused on international border procedures and strongly related to Customs performance issues, like clearance time and red tape associated procedures.

The present work studied the definition of trade facilitation, and reviewed the literature that has reported gains associated with trade facilitation measures as did Wilson, Mann and Otsuki (2004) who mentioned an increase in international trade by US$ 377 billion from 2000 to 2001, attributed to trade facilitation initiatives. In addition, Iwanow and Kirkpatrick (date, as cited by Dennis, 2010) suggest that a 10% increase over trade facilitation results in 5% exports gains. Other authors include Hummels and Djankov (e.g.

Hummels, Ishii & Yi, 2001, and Djankov et al, 2010) who are well known for their efforts on producing econometric studies linking trade facilitation actions to estimated trade gains; their findings were gathered together with results from other researchers in the present work.

The world has seen exponential growth of international trade over the recent past; in fact, the international trade has presented higher increasing rates than the ones experienced in the world economy; as a result, this fact brings an increasing transaction volume to international trade, and it has been putting extra pressure on borders agencies worldwide. Among the borders agencies, Customs has important and traditional roles on procedures related to international flow of goods. A major challenge presented by trade facilitation is to address the question on how governs agencies can provide the social desired level of control more efficiency over international trade without imposing any extra burden to the business community. As trade tariffs has been falling around the world, non-tariff barriers to international trade are now seen as a major concern, and addressed by trade facilitation policies. Most areas of trade facilitation are reported to be strongly related to the effort on reducing any extra cost imposed by inefficient bureaucracy or red tape. However, despite this definition, modern trade facilitation actions have incorporated the private sector to the effort, e.g., the WCO authorized economic operator, AEO program; according to the SAFE framework over the customs to business pillar 2, the private sector cooperation is expressly required (from the WCO SAFE Framework of Standards, p. 29):

> "Therefore, companies that demonstrate a verifiable willingness to enhance supply chain security will benefit. Minimizing risk in this way helps Customs in performing their security functions, and in facilitating legitimate trade."

Trade facilitation is, in this way, no longer the only government's responsibility.

Cullinare, Yap & Lam (2006), over the governance of the Port of Singapore, cited another example of the private sector participation on trade facilitation efforts, after 1997 the administration authority was transformed from a public body to a state owned corporate company. The objective was to enhance the port business environment, in order to cope with the global port competition; the enterprise was successful in taking commercial decisions without the bureaucracy associated to public bodies, helping the Singapore port industry competitiveness. Trade facilitation was defined by Portugual-Perez and Wilson (2011, p. 2) as being a "set of policies aiming at reducing export and import costs" and it was considered to be the next way to move on reducing the trade costs in developing countries. Portugual-Perez and Wilson (2011) also brought to trade facilitation two dimensions, hard and soft. The hard dimension is related to: ports, airports, communication and transport infrastructure, and the soft dimension is related to: intangible assets like transparency, customs management and business environment. The proposed differentiation aimed to give better assess the impact of different trade facilitation measures over exports performance in a straight and direct approach; on a simpler definition, Sourdin and Pomfret (2012) considered trade facilitation as a reduction in costs to trade.

Others definitions were found ranging from a narrower perspective focused more over Customs procedures to wider definitions covering all features, or from borders specific issues to out of borders issues including all the ones related to the movement of goods over the international supply chain. Among the international organisms, the wider definitions are the ones adopted by the multilateral ones, such as United Nations (UN) and World Trade Organization (WTO). Keen (2003) on the IMF's Changing Customs - Challenges and Strategies For The Reform of Customs Administration, referred to customs improvement as just one aspect of trade facilitation. United Nations/ ESCAP (2009) defined trade facilitation as a policy that reduces costs, uncertainty and time

expended over international trade of goods, excluding out traditional instruments, like tariffs levied over the international transactions. Woo and Wilson (2000) stated that, for APEC, trading facilitation simply means business facilitation or bureaucracy, red tape, cutting, APEC's own definition of trade facilitation mentioned the simplification and rationalization of customs and other procedures that increase costs of goods to move across borders. OECD stands for that trade facilitation is related to simplifying and streamlining the process in which goods and trade happens at both national and international levels, and that it implies observation to the main core trade facilitation principles, predictability, transparency, simplification and harmonization. The WTO once defined trade facilitation as being simplification and harmonization of international trade procedures. After the world import tariffs have fallen considerably as result of the implementation of successful multilateral agreements, in particular the Uruguay Trade Round, WTO has increased its efforts in other to address trade costs that sometimes can be higher than tariffs themselves. WTO launched negotiations of trade facilitation in 2004 with the objective on clarifying and improving the GATT's articles V, VIII and X that related to freedom of transit, fees and procedures related respectively to international trade and publicity, and administration of trade regulations. Now, in the Doha trade round, the trade facilitation remains on the top agenda, according to Grainger (2011). WTO goal is to ensure through trade facilitation a smooth, predictable and free flow of trade between countries.

The WCO points the enhancing of efficiency and effectiveness of customs administrations, working on the harmonization and simplification of customs procedures, as its mission. This is its core definition of trade facilitation: "*lowering trade transaction costs and creating standard efficiencies*" (WCO, 2011, p. I/4). The WCO, after the events of the terrorist's attacks against the United States in 2001, has also realized that trade facilitation also pass through the role of Customs on delivering and providing security for the world supply chain. This can only be done without halting the international trade, due to endless and unnecessary customs inspections, by modernized Customs services. The WCO SAFE Framework of Standards addressed the security challenge imposed to Customs around the world, and it is an answer to the demand of more security in the international supply chain. WCO considers trade facilitation to be the avoidance of any non-necessary trade restrictiveness, through the use of technology, better harmonized international controls, WCO approach for trade facilitation has a Customs procedures scope. The present study adopts the definition for trade facilitation as the conjunct of actions aimed on lowering international trade costs, allowing a smoother and safer flow of goods across countries boarders.

International agencies and organizations, together with national governments efforts and policies addressing trade facilitation have suffered some criticism; Grainger (2011) said that most of the trade facilitation prescriptions, derived from the policy drivers own view, are generic ideas and recommendations, with a top-down approach and not always backed up on operations focused research.

Assessing trade facilitation is a major issue, there are many studies and surveys over the subject. Shepherd and Wilson (2009) claimed that trade facilitation impact could be bigger than tariff reforms for Asian countries, however the study is focused on infrastructure, trade facilitation hard dimension; Ponfret and Sourdin (2010) concluded that trade costs in Australia are bigger than the country's ad valorem tariffs, and that institutional impact is higher for air or manufactured cargo; they also concluded that poor infrastructure can condemn a country to slow growth. Econometrics studies usually rely on gravity model studies, based on collected data from statistical series or on surveys, like the World Bank – Doing Business, surveys made through direct questionnaires answered by members of the trade community. The study looked after the most relevant outcomes of trade

facilitation initiatives found over the literature, and the expected or measured benefices to trade and growth associated to those practices. For examples, De (2011) found, using an econometric model, that a 10% decrease in border crossing costs can boost a country's exports by 2%, and Persson (2012) stated that cumbersome borders procedures may prevent a country from diversifying its exports. Table 1 shows the most expressive results that the literature shows about the outcomes of measures considered to be classified as trade facilitation measures. The outcomes are usually as expressed in terms of a percentage of gain over the volume of trade, over the volume of exports or imports, over the reduction of trade costs or over the reducing on the time demanded to accomplish a trade transaction. It is important to be aware that many factor are interlinked, and the outcomes, often are influenced by two or more variables, the reason why the assessment of a particular trade facilitation measure is difficult.

Table 1

Literature collection of trade facilitation expected results

Reference	Trade Facilitation Premise	Result
Abe and Wilson as cited by Portugal Perz and Wilson (2011).	Considering the below average APEC countries, the reduction of corruption and increase of transparency to the region average.	Increase in world welfare by US$ 406 billion and intra region trade growth of 11%.
Clark, Dollar and Micco (2004).	Moving from the 25th to the 75th percentile of port efficiency.	Shipping cost reduction of 12%.
De Prabir (2011).	A 10% drop in transaction costs at borders.	Increase of a country exports by 2%.
Dennis (2010).	Extra day delay on the export country.	A 0.5% fall over the import demand by the US.
Dennis and Shepherd (2011).	Improved trade facilitation measures, overcoming export costs, market entry barriers and international transport costs.	Appear to have a strong impact on export diversification for developing countries.
Djankov, Freund and Pham (2010).	One additional day delay on cargo to be shipped.	Trade reduction of 1%.
Francois, van Meijl and van Tonjeren as cited by Pomfret and Sourdim (2010).	Implementation of the Doha Round trade facilitation measures.	Reducing trade costs by 1.5% of the value of trade.
Freund and Rocha (2011).	One day travel time saved inland, in Africa.	An increase in 7% of exports.
Helble, Shepherd and Wilson as cited by UM/ESCAP (2009).	Reducing direct export costs in Asia by 14%, reaching the OECD levels.	Increase in Asian exports by 11% to 14%.
Hummels in Time as a Trade Barrier (2001).	One day saved in travel time for manufactured good.	An average savings of 0.8 % ad valorem of the manufactured good.
Iwanov and Kirkpatric as cited by Dennis (2010).	A 10% increase in trade facilitation yields.	A 5% export increase.
OECD as cited by Grainger (2012).	1% trade related transaction costs reduction.	US$ 43 billion increase in trade worldwide.
Portugal Perz and Wilson (2011).	Improvement over physical infrastructure.	Greatest impact over exports performance.
UNCTAD 1994 and APEC 1999.	Income gain from trade facilitation measures in the medium term.	Ranging from 2% to 3% of the value of goods.
Wilson, Mann and Otsuki (2004).	APEC members who performs below average on trade facilitation proxy index achieve half of the APEC average performance.	Increase intra region trade by US$ 254 and raise region GDP by 4.3%.
Wilson, Mann and Otsuki (2005).	Applied the same methodology to a set of 77 countries.	Manufacturing trade growth of US$ 377 billion.

Note: Author's compilation.

3. TRADE COSTS

Trade happens when two individuals exchange within goods that each one values higher price than the other. The important outcome is that each trader ends better off than before the trade transaction took place in the end. For a simple example, subject A has a car that he/she values at $3,000 and wants to sell it, subject B has $5,000 in cash and values the A's car at $4,000 and would accept to pay up to that price for it. It is possible to say that, there is a good probability on B buying the A's car for a price ranging from $3,000 to $4,000. At the beginning, A and B had total $8,000; after trading, A has $3,000 in cash and B has $2,000 in cash left ($5,000-$3,000), plus a car that he/she values at $4,000. The total sum of the A and B assets after the trade is $9,000, showing an increase of $1,000 in total welfare.

Now what happens if the trade between A and B were subjected to a fee payment, for example, a car sale fee of $200? This fact would not prevent the trade from happening, but the margin left for A and B to negotiate and trade is now narrower, and the maximum gain for A and B would be reduced to $800. The limit point at which a trade could still happen is when the trade fee equals $1,000; after this point when the charged fee is more than $1,000, no space would remain for a trade to happen.

The simple example above can be thought as A and B being countries or regions, and the car sale fee as being the transactions costs that happens in the international trade scenario. High trade costs have a intuitively negative effect on trade flows. In an extreme case, it can prevent trade opportunity. Walkenhorst and Yasui (2009) stated that trade transactions costs are influenced by the type of goods traded, and by efficiency, integrity and transparency of border agencies**.** Calì and Velde (2011) concluded that regulatory quality linked to soft infrastructure, has a negative correlation to costs and time expended on international transactions. Looking after trade costs behind borders, Hoekman and Nicita (2011) estimated for those costs, deleterious effects over a country export capability.

This section examines trade costs definition, its theory and how trade costs can be measured. It is seen as a general assumption that whatever action taken under the trade facilitation label it is likely to be helpful on lowering trade costs, yet the estimation of trade costs itself is reported to be fairly difficult due to the uncertainty of what are the trade costs and to the lack of reliable data. Brooks and Stone (2010) argued that costs can be divided in two categories, direct and indirect. While direct costs such as fees are clear to traders, indirect costs are not; the risk associated to the uncertainty found in indirect costs is a major problem, specially for new comers and small medium enterprises. Hummels (2007) advocated that aggregated value of an international transaction for certain kind of goods can be inferred by the difference between the price on the importing country given by the cost-insurance-freight value, and the free-on-board value given on the exporting country. Sourdin and Pomfret (2012) supported the previous Hummel's work and claimed that the CIF-FOB ratio is a better grounded cost indicator than surveys like the Doing Business - Trading Across Borders (World Bank Publication, 2012).

Economic theory credits to the reduction over trade costs, the phenomenon that allowed international trade to grow and become the pushing force behind the economic prosperity, according to Sourdin and Pomfret (2012). They also cited the work of Samuelson and the iceberg assumption, that was the standard understanding of trade costs on late 20th century and statues that, a portion of the value of a good

melts down while it goes from the export country to the import country. Krugman showed that trade may be affected by factors such as country size and transport costs, as cited by Sourdin and Pomfret (2012). They also reported that Dutch planners developed the gravity equation, powerful tool to explain bilateral trade due to its high explanatory characteristics, the equation became popular after the 1995 and it is highly used in today's empirical trade costs studies.

Since that many factors may be considered or not as trade costs, measuring trade costs is not a simple task. In addition to the traditional costs of freight and Customs clearance, costs can be computed from the exporter producer to the retailer on the import country, computing behind the border costs on the international trade. Looking into an even broader way, due to the constant specialization and fragmentation of world production, cost over imported inputs to future exports could be included. Many studies showed that countries that present larger costs for international trade transaction are lagging behind the actual trend of manufacturing specialization and verticalization. Anderson (as cited by Hummels, Ishii & Yi, 2001) stated that tariffs and costs are an extra burden, if a good is to be produced in a sequence of countries, adding the conclusion that reductions in costs move trade favorability towards verticalization, specialization, and out sourcing.

There are a few ways to measure or to estimate trade costs. Based on the differentiation made by Sourdin and Pomfret (2012), the first method is direct data collection, produced by customs or other governmental agencies over shipping or trade costs. This method has as a down turn the fact that a very few countries actually produce this kind of direct collected data and the sources of information. Importers and exporters may not be so committed to provide the rights figures. Gravity model methodology explains bilateral trade through a relation between size and distance of traders. It is widely used to estimate trade costs. Baldwin and Taglioni (as cited by Sourdin & Pomfret, 2012) explained that, in trade equations, the gravity coefficient reflects part of trade not explained by size and distance of the traders; the method has suffered some reserve over the fact that it uses a gravity model equations and survey based variables, to indirectly measure trade costs.

The CIF-FOB Gap is sometimes referred as transportation costs, cited by Hummels (2007). It is a broader measure of trade costs than the simple adding of freight and customs clearance costs. It may capture the costs of poor infrastructure, transportation market failure, e.g. shipping line monopoly. It has as a down turn the facts that, a very few countries produce the required data, e.g. US, Australia, New Zealand, Chile and Brazil, as pointed by Sourdin and Pomfret (2012). And it does not consider the cost of time to complete a trade transaction. Even so, they considered the method to be the best one available, especially when compared to surveys, e.g. World Bank Doing Business that showed a negative result correlation to the CIF-FOB method. Hummels and Lugovskyy (2006) found, for the matched partner CIF-FOB ratio, a low result on the convergence to direct collected data, and concluded that the method should be used only as a control variable; matched partner CIF-FOB ratio data used on the study was based on International Monetary Fund - IMF statistics data over CIF and FOB world traders. In this way, Hummel (2007) clarified that the main objective of the IMF is to collect statistics for payment balance purposes, not to estimate trade costs. Surveys are the last method to address the measurement of trade costs; one of the most referenced surveys available is the World Bank's Doing Business, *Trading across borders.* It is a survey held within front line operators such as freight forwarders, shipping lines, customs brokers, port officials and banks, asked about the costs and variables regarding international trade operations in almost all countries of the world, as detailed explanations found at http://www.doingbusiness.org/methodology/trading-across-borders.

The survey measures the time and cost, excluded tariffs and bribes, associated with exporting and importing a standardized cargo in a 20 feet container, moved by ocean. The survey methodology bring some assumptions, like, e.g. the cargo value is US$ 20,000.00 and the trader is located in the country's major economic area, those assumptions faces some criticism because of theirs excessive simplification, although, the World Bank's survey was used in assessing results for the APEC TFAP II, as mentioned in APEC (2011).

4. KEY PERFORMANCE INDICATORS - KPI

APEC's key perform indicators, according to APEC (2011), played an important rule on the TFAP II. Perform indicators, as cited by the WCO's Comlumbus Programme, are key elements of a strategic plan, allowing to address the question: "How do you know what are you achieving?" (WCO, 2009, p. 2-v). The APEC's KPIs related to: TRS – time release survey of goods; implementation of standards based on WCO SAFE and APEC Frameworks, simplification and harmonization of Customs procedures based on the Revised Kyoto Convention (RKC), and automation of trade procedures; all were analyzed over theirs rule as a management tools for the TFAP II plan. Administrative theory relies deeply on the importance of measuring outcomes and performance. Managing by performance is a technique spreading over government agencies and anecdotal evidence suggest that, the assertion: "you can't manage what you don't measure, you can't measure what you don't define, you can't define what you don't understand and there will be no success without managing"[1] is a common mantra heard in many workplaces. Simple and reliable indexes of performance are linked to management success, the APEC's Key Perform Indicators are performance index by definition, the indexes study were useful to clarify the scope of each trade facilitation action related to the four TFAP II sub areas.

The final phase evaluated the trade facilitation actions associated to simplification and harmonization of customs procedures, the research looked for evidence that helped support the conclusion of the region lowering trade costs achievement, reported as the final result for the TFAP II. APEC utilized for assessment of the plan progress, eight different KPIs, the trade facilitation actions were divided among them, and assessed by each one of the following KPIs:

1. Import clearance time;
2. Export clearance time;
3. Number of Authorized Economic Operators – AEO;
4. Percentage of trade covered by AEOs;
5. Number of documents required by Customs for import operations;
6. Number of documents required by Customs for export operations;
7. Percentage of import lodged and processed electronically and
8. Percentage of export declarations lodged and processed electronically.

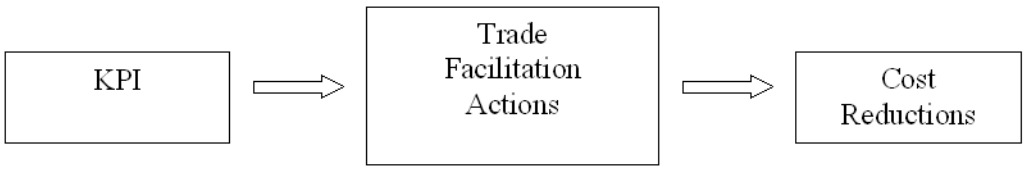
2. *This statement, together with: "In God we trust, all the others must bring data" are attributed, by anecdotal evidence, to William Edwards Deming. The famous American statistician was known as the guru of Japanese management methods, according to Waters (1998). He was famous for the Deming Cycle/PDCA and author of books like, Quality, Productivity and Competitive Position (1982) and Out of the crisis (1986), both dealing with the challenges imposed to American companies facing, management problems and the Japanese companies competition.*

All the KPIs are subjected to evaluation due to theirs effectiveness or how did they perform; theirs efficiency or how much did they cost to implement; and about theirs simplicity or how easy are they to be understood. According to APEC (2011), a revision conducted in 2009 pointed out the necessity of a revision for the KPIs that had been used, based on effectiveness, efficiency, and simplicity criteria.

The present eight KPIs were introduced as APEC considered then to be more effective and simpler to measure transaction reduction costs. Figure. 1 shows the sequential logic with KPI use: the indicators assess the trade facilitation actions implementation, cost reductions is consequence of concrete trade facilitation actions, while the KPIs are management tools.

Graphic 1

Based on APEC (2011)



For measuring costs, APEC do considers time and port costs, however excludes costs related to tariff and NTB, e.g. quotas, and expenses common to domestic and international trade, e.g. distribution costs. The estimates were based on mid-2011 prices.

4.1 Import clearance time and export clearance time KPIs

The two KPIs related to measure import clearance time and export clearance time were a signal over the progress of implementing a time release survey (TRS), by the APEC members. While the KPIs were designed to measure the progress on reducing the time taken to the release of import and export goods, the logical approach is that a TRS plan implementation is a proved measure to help reaching each member, the final objective of release time reduction. A TRS plan is linked to objective trade facilitation measures taken or to be taken, as a consequence of a well implemented TRS plan, progress in reducing release time is expected, resulting at the end, as time can be translated in costs, in lower transaction costs, according to studies previous cited in Table 1.

The TFAP II mentions the term time release survey, while the WCO (2011) made reference to a time release study. No significant difference was identified between the two concepts, APEC (2011) mentioned the WCO TRS process as the basic methodology to be used by its members. WCO efforts over providing a framework to a TRS program started by 2001, according to Matsuda (2012), by the release of the original TRS Guide, while Zang (2009) mentioned the beginning efforts of WCO, over the matter, starting back in 1994, based on initiatives conducted by Japan and United States. So, based on the WCO methodology, the APE TRS core objective were:

- Provide each country with a evaluation tool for trade facilitation own actions;
- Improvement of actions taken; and
- Identifying bottlenecks.

The TRS is a useful tool to measure customs perform and trade facilitation efforts, carried out by customs as well by other governmental agencies, if included in the program scope. TRS is considered important to assess the progress and the improvements that have been made, and was based on the understanding that, if a reform or improvement on anything is desirable; first, you need to measure it. The WCO method advocates that the time to be measured is the interval of time taken between the arrival of goods and their release. This facilitates the observation of bottlenecks caused by other agencies and operators and not only Customs. After years of effort on trade facilitation measures through Customs worldwide, with remarkable gains over Customs process efficiency observed, according to Avis, Mustra and others (as cited by Mustra, 2011), the clearance time is not to be considered as a responsibility of Customs alone. Just the opposite, they reported that the major bottlenecks are not caused by Customs, as Customs appears to held responsibility for only a third of total clearance time. In the same way, Zhang (2009) argued that usually, Customs happens to be found as the most efficient border agency, when a TRS is conducted, nevertheless, the possibility of improvement and increasing cooperation with other borders agencies is an important opportunity not to be missed. United Nations/ESCAP (2009) argued that special attention should be given to allow documents and cargo to be checked by all border agencies at a single point and time . The main objective pointed by WCO (2011), in conducting a TRS, is to find bottlenecks in procedures at borders and evaluate theirs reasons, as well as identify who is the responsible for the delays, Customs, other agencies or even private operators.

APEC (2011) affirmed that, by the beginning of the TFAP II, only six members had a TRS program on going. But, by the end of 2009, twelve members had successfully implemented a TRS program, notwithstanding showing a great range of approach adopted by country to country. WCO (2011) reported that countries with successful TRS implementation, such Japan and Australia, have experienced a reduction over good release times. At APEC (2011), the estimations made by ITS Global are consistent to the WCO report, indicating a reducing of clearance time for Australia figuring 14.3 % for imports and impressive 75% for exports, over the 2007 to 2009 period. The Japanese experience over the systematic use of TRS is also remarkable, with a framework that include other agencies and private sector, Japanese Customs has leaded a process that reports over the period from 1991 to 2009 and AEO cargo not include, a reduction from 168.2 hours to 62.4 hours for sea cargo time release, just to mention one example. APEC Policy Support Unit (PSU), (as cited by APEC, 2011) estimated that the reduction in trade costs for the APEC region for the 2006-2010 period, was 8.1%, due to customs clearance and technical control time saving measures. APEC used the Hummels conclusions to calculate the impact on trade costs made by the time saving improvements, Hummels (2001) estimated an *ad valorem* tax of 0.8% equivalent for every day saved on the transit of the goods traded. The two KPIs related to the TRS implementation were designed to push the members forward, in a direction to implement and benefit from a systematic TRS program.

4.2 Number of AEOs and percentage of trade covered by AEOs KPIs

The two KPIs are related to the WCO SAFE Framework, following the principles of, advance electronic information, risk management, Custom to Custom partnership through mutual recognition inspections, and Custom to business partnerships, AEO. The WCO framework aims at the promotion of predictability and uniformity to international trade, providing security to the international supply chain and facilitating the movement of goods on lawful operations. The AEO program is a fundamental stone for the WCO SAFE Framework, WCO (2007), presented it on the program's pillar, customs-business.

APEC reported that, currently, seven[3] of its members have an AEO program, in order to measure the progress regarding the implementation of AEO programs, by its members, APEC has made use of two KPIs:

- Number of Authorized Economic Operators – AEO; and
- Percentage of trade covered by AEOs.

The process of AEO implementation among APEC members is still on going. APEC reported difficulties on estimating the AEO impact on the trade costs at the region. However pointed out that, as mentioned in APEC (2011), the consistency of the TRS done by Japan over the past, combined with Igarashi's work, (as cited in Matsuda, 2012) allowed the organization to estimate for the year of 2009, a 1.9% save on trade transaction costs for Japan, what represents the value of US$ 2.7 billion. Japan reports a 60% faster cargo release time for its AEO cargo than for general cargo. One caveat, this figure passes through the assumption that the Japanese AEOs kept the same share over international trade, 55.8%, observed in 2008.

APEC (2011) reported an increase of the number of AEOs by 26%, for the period of the TFPA II; the number came from 8,322 operators intra region by the year 2007, to 10,502 in 2009. The rationale of the KPIs is to provide a simple and direct measure of the progress over the implementation of AEO programs and the reach of each program, measured by the percentage of trade covered by AEOs.

4.3 Number of documents required by customs for import/export operations KPIs

For the sub area, simplification and harmonization of customs procedures, the two KPIs used were:

- The number of documents required by customs for import operations; and
- The number of documents required by customs for export operations.

These plan efforts are related to the standards and recommendations of the Revised Kyoto Convention, RKC, about simplification and harmonization of customs procedures, as showed in (APEC 2011). The sub area overall objective is efficiency improvement, so, the two KPIs are directly related to the cost of time and labor to fulfill bureaucratic demands, measured by the number of documents demanded by Customs, in order to permit an export or import operation take place. Note that at the World Bank survey, Doing Business, the number of documents required to complete an international trade transaction is computed as costs, on the Trading Across Borders Data; although, the World Bank survey considers not only the documents required by customs, adding to the list, documents demanded by other agencies.

APEC considered the number of required document a good measurement about the compliance of the RKC standards by its members. The gathered results showed a trend of diminishing number of documents required to proceed an import or export operation in the region. Based on the World Bank survey, APEC estimated that the costs associated to prepare documents felt 8.7% among members for the period between 2006 and 2010. The reduction of costs associated to preparing and issuing documents logically reflects in a reduction of the overall trade costs in the region.

4.4 Percentage of import/export lodged and processed electronically KPIs

The last pair of KPIs is related to the percentage of import and export declarations lodged and processed electronically. Only two APEC's

3. *APEC (2011) reports as having a AEO program, Japan, China, Korea, New Zealand, Singapore, Chinese Taipei, and United States.*

members showed decrease on the percentage, due to the actual high percentage level reached by most of the members, close to 100%. APEC's new goal is the development of single window systems, in order to move forward over efficiency gains. APEC (2011) reported a number of thirteen members[4] with an operational single window system.

5. TRADE FACILITATION ACTIONS ASSOCIATED TO THE TPFA II

5.1 TRS

The first two KPIs, measuring import and export clearance time, are related to the implementation by the APEC members of a TRS program. The first set of trade facilitation actions taken by the TFAP II was compounded of the time release study, TRS, based on implementing actions such as: Measuring release times, identifying bottlenecks in Customs, getting the right data, developing strategies to address the customs and borders bottlenecks, and to develop a method to measure release time on a non stop basis. The success of the initiative was reported in APEC (2011), it estimated a 8.1% reduction over costs due to better customs procedures and technical control. It was also reported a time reduction for international transactions of 6.2% for the period, the average number of days taken to complete an export and an import fell from 17 to 15 in both operations.

APEC (2011) informed that, although the observed reduction in trade costs due to Customs improvement, what was directly linked to government's orientation actions over the area; time costs verified in Ports and Terminals increased in real terms by 4.3% over the period. However, the increase in costs was off set by the gains over Customs efficiency. APEC (2011) stated as a reasonable assumption the idea that the TRS actions and measures were responsible for most of the positive changes observed in Customs procedures and technical controls in the region.

The two KPIs linked to the sub area were based upon the time taken to clear a cargo. APEC used data from the World Bank Trading Across Borders survey for its assessment. APEC (2011) reported that in 2006, only six economies of the region had conducted a TRS, but this number doubled in 2009. Matsuda (2012) pointed out two APEC members, Japan and Australia that have taken TRS implementation, reporting that both countries have taken advantage of the TRS by been able to identify and address problems related to the release of goods. TRS is considered as a tool for the assessment of trade facilitation measures, according to Matsuda (2012), the WCO TRS guide version 2 brought new aspects, highlighting the use of TRS in the context of: Coordinated border management, customs to customs, and customs to business partnership. The author also indicated that the tool could be utilized to seven finalities:

- To promote structural reform;
- To promote simplification and harmonization of process;
- To identify the efficiency of a specific program, e.g. AEO program;
- For automation procedures;
- For better allocation of resources;
- For improvement over transparency; and
- For identifying capacity building needs, described or related to a methodology to conduct a TRS.

4. *APEC (2011) reports as adopting some form of a single window system, US, Japan, Korea, Australia, Brunei Darussalam, Canada, Chile, China, Indonesia, Malaysia, Philippines, Singapore, and Thailand.*

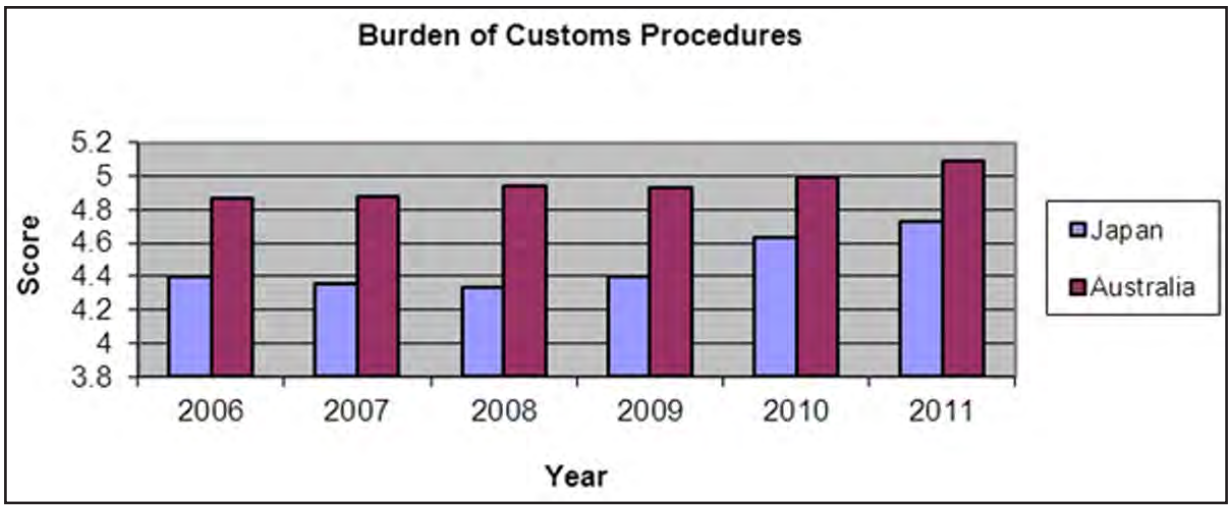
World Bank (2005) mentioned the importance of clear performance indicators availability, the report considered that a time-release indicator can help stakeholders, government and private operators, clearly identify who holds responsibility on delaying the process of cargo release. According to Matsuda (2012), the World Bank was considered the TRS as a component of a trade facilitation plan. An TRS must has as its scope the study of time, taken from the arrival of goods to their release, this involves Customs, other government agencies (OGA), such as the ones dealing with sanitation, license control, technical standards, animal, and plant quarantine, among several others. Customs brokers and other private agents can also be included in the study scope, according to Matsuda (2012). In reality, the number of stakeholders involved in the complex gear mechanism, necessary to move a good from one country to another one, can be surprisingly high. All the ones that pose an action over the release of the cargo procedures on the border can be included in the TRS scope.

Zang (2009) recommended that the TRS program must naturally be led by Customs, the project should have a working group. In this way, some countries had adopting the figure of a steering committee, where the policy makers and private operators can establish an effective communication channel and show strong commitment to trade facilitation implementation. World Bank (2005) mentioned the establishing of a Regional Steering Committee (RSC) as a required measure for the countries that had borrowed money for trade and transport facilitation projects. In addition United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) recommendation number 4, 2001, recommended the adoption of a national trade facilitation body as an important step to move forward in trade facilitation measures. The leading of Customs over the process is justified as, the World Bank (2005) have identified eleven steps taken from the cargo arrival to its release; Customs had direct participation on seven of them.

As an alternative to confirm the results reported by the World Bank Doing Business survey, by the use of another proxy, Figure 2 shows a positive trend over the issue burden of customs procedures reported by the Global Competitiveness Report from the World Economic Forum (2011). Thus, reinforcing the APEC (2011) conclusions and the practical results that might be obtained by the systematic use of the TRS, as a tool for enhancing custom efficiency. World Economic Forum (2011, p. 646) addressed the question: “How would you rate the level of efficiency of customs procedures (related to the entry and exit of merchandise) in your country? [1 = extremely inefficient; 7 = extremely efficient]”, to approximately 15000 executives worldwide, representing business of all the surveyed countries.

Graphic 2

Japan and Australia scores on global competitiveness report from the World Economic Forum



Note. 1-Based on data retrieved from http://www3.weforum.org/docs/WEF_GlobalCompetivenessReport_2010-2011.pdf
2- A score 7 stands for extremely efficient and 1 to extremely inefficient.

Table 2 shows the region progress as its economies show an increasing average score in the World Economic Forum Survey. A positive trend can be observed; the economies average grade increased 4.86% during the TPAF II Program.

For the region economies that have adopted a TRS, the Logistic Performance Index survey, conducted by the World Bank, showed practically unchanged values for the years 2007 and 2010 for the region economies, however, the economies cited as benchmarks by Matsuda (2012) presented some progress. APEC (2011) mentioned that no all the TRS conducted by its members were equal and some economies have just started a TRS program. Graphic 3 shows the results for the efficiency of customs clearance process, a component of the logistic index. The scores range

from 1, low, to 5, high. The results reinforce the possibility of achieving goods results by conducting the TRS approach done by Japan, Australia and New Zealand.

Table 2

Efficiency of customs clearance

Country	2007	2010
Australia	3.58	3.68
Brunei Darussalam	N/A	N/A
China	2.99	3.16
Hong Kong SAR, China	3.84	3.83
Indonesia	2.73	2.43
Japan	3.79	3.79
Korea, Rep.	3.22	3.33
Malaysia	3.36	3.11
New Zealand	3.57	3.64
Peru	2.68	2.50
Philippines	2.64	2.65
Russian Federation	1.94	2.15
Singapore	3.90	4.02
Thailand	3.03	3.02
Vietnam	2.89	2.68
Total	44.16	44.01

Note: Data retrieved from http://go.worldbank.org/88X6PU5GV0

Table 3

Burden of customs procedures –2006 – 2010.

Country	2006	2007	2008	2009	2010
Australia	4.87	4.88	4.94	4.93	4.99
Brunei Darussalam	N/A	N/A	4.48	4.62	4.46
Canada	4.75	4.88	4.84	4.72	4.92
Chile	5.15	5.46	5.63	5.82	5.69
People's Republic of China	3.95	4.21	4.46	4.57	4.53
Hong Kong China	6.36	6.07	5.94	6.15	6.47
Indonesia	3.53	3.01	5.26	3.70	3.86
Japan	4.40	4.36	4.34	4.40	4.63
Republic of korea	4.82	5.89	5.03	4.55	4.53
Malaysia	4.79	4.97	4.78	4.77	4.81
Mexico	3.44	3.60	3.60	3.66	3.87
New Zealand	5.48	5.50	5.62	5.88	5.83
Papua New Guinea	N/A	N/A	N/A	N/A	N/A
Peru	3.57	3.49	3.29	3.81	4.47
The Philippines	2.90	3.06	2.93	2.98	3.00
Russia	2.81	2.87	2.69	2.73	2.93
Singapore	6.37	6.43	6.45	6.39	6.30
Chinese Taipei	5.16	5.13	5.18	5.03	5.12
Thailand	4.07	4.32	4.08	4.06	4.14
The united States	4.63	4.30	4.47	4.58	4.48
Vietnam	2.82	3.17	3.34	3.60	3.55
Total	83.87	85.6	89.35	90.95	92.58
Average	4.81	4.51	4.47	4.55	4.63

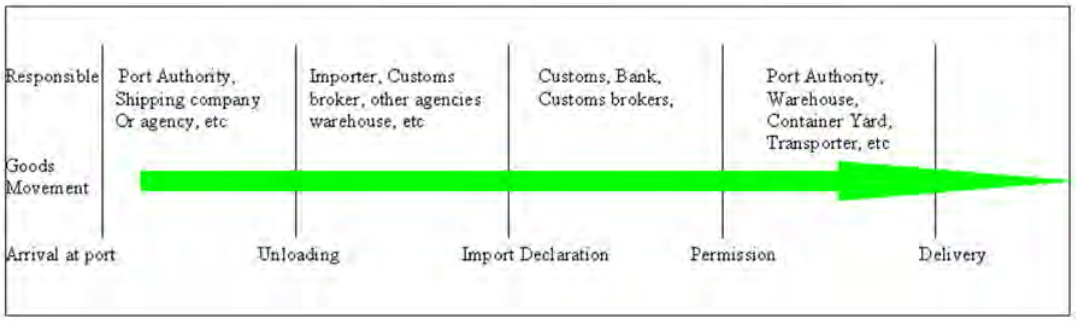
Note: Retrieved from data obtained in http://www.weforum.org/issues/global-competitiveness/index.html

TRS can be considered a powerful tool to be used by any country in order to continuously improve over effectiveness on cargo release. However, it cannot be considered as a solution by itself, the progress is dependable over the practical trade facilitation measures taken to address the problems and bottlenecks that a well implemented TRS can identify. Wilson (2009) estimated that a trade increase by 6.3% might happen if there was a 10% reduction in border time. As cited by Zhang (2009), the importance of a TRS lies also on its capability to well point to the stakeholders, government authorities, private sector and donor community, the progress achieved and the need for further actions over border procedures. The Japanese experience over conducting a solid sequence of TRS can be seen as a benchmark, the TRS conducted in 2009 took seven consecutive days, selecting about 5000 samples of sea and air cargo, covering all the Japanese Customs regional branches.

Japanese TRS has the scope frame as shown in Graphic 3:

Graphic 3

Japanese TRS scope



Note: Based on WCO (2011)

The list of trade facilitation measures used to address problems highlighted by the TRS cycle, done by Japanese Customs, includes: Clearance computerization, parallel documentation examination with other governmental agencies, single window system adoption, 24 hours operation, AEO program introduction, among others, as reported by WCO (2011).

New Zealand is reported by WCO (2011) as having conducted a TRS in 2009 over export operations. The conclusion is that the study provided information on what could be adopted as a trade facilitation measure to help New Zealand exports, in the particular case, the improvement could come by guiding the exporters to store goods to be exported, closer to the exit port. Korea also is reported as a successful example; Korean Customs designed an independent web based TRS system, what allows the study over a complete universe of transactions, instead of a study conducted over a samples. WCO reported for the Korean experience, a reduction of time from arrival to release of goods coming from 14.8 days in 1998 to 2.3 days in 2010, allowing savings of US$ 2.7 Billions a year in logistics costs.

5.2 AEO program as a Ttade facilitation action

The TFPA II had two KPIs linked to the adoption of AEO program by the regional economies. AEO program is predicted on the WCO SAFE Framework of Standards. The aim is allowing

private business that show a high compliance to Customs requirements and a serious commitment to provide security to theirs operations, enjoy a faster and simpler procedures to the release of goods, consisting in lower level of physical inspections, expedite release of cargo, and lower fees or charges. WCO (2007) mentioned that a faster clearance with less intervention on the cargo by Customs is the clear advantage of the program.

AEO program is based on a partnership between Customs and the private sector, (den Butter et al., 2011) explained that the AEO program faces the problem arisen due asymmetric information, when one of the parties has more or better information than the other, in reality, each firm knows itself better than the government does. The consequence of asymmetric information may be the happening of adverse selection, e.g. at the end, only bad companies join the program, as issued AEO certificates loses it values in the perspective of good companies and society, the good companies have no incentive to join or to stay in the program. Since joining the AEO program is optional and not cost free for private operators, government should provide to the AEO certificate a kind of quality standard, a signaling, a positive signal of quality and reputation to be shown to others, helping reducing the information asymmetry that naturally happens in the market. The investment on the certificate, or the signaling effort, and the risk of losing the reached status are decisive to keep the private partner aware of his duties. The program must be designed on a way that the cost of cheating or committing fraud is higher than the eventual gains, stimulating the parties, government or Customs and private companies to cooperate with each other, the better way to increase social welfare. According to Abonyi and Slyke (2010), the partnership between government and private sector is crucial to ensure gains and to manage risks in the new globalization era; private business needs governments to promote efficiency gains, enhancing the competition capacity of each country.

APEC (2011) clarified that the SAFE Framework primary objective is related to the security of the international trade, helping protect the national security of its members. The secondary objective is to facilitate trade of low risk private operators. APEC relates difficulties to isolate the outcome of the SAFE Framework measures on transaction costs, as the reduction in time to process an operation is closed linked to each AEO program design. However, using data provided by Japan, estimates that the Japanese AEO program reduced the country transaction costs by 2% in 2009.

5.3 RKC related measures

The trade facilitation actions aiming the reduction of documents necessary to complete an import or export operation and the electronic lodgment of declarations to Customs are related to the RKC. Engman (2009) mentioned the Singapore experience in which the single window IT system, TradeNet, is claimed to be responsible for savings of 20-35% on paper work costs, Singapore government credits to trade facilitation, savings of more than 1% GDP each year. APEC (2011) pointed out the already high level of paperless procedures in the region, the move forward is the implementation of single window systems. Grainger (2011) affirmed that a UN and OECD study showed that typically 200 data items are necessary to conduct one trade transaction, from 60% to 70% of data is informed at least twice and 15% is informed up to thirty times. World Bank (2012) informed that the Republic of Korea Customs has a well successful experience on single window, reporting overall economics gains equal to $ 3.47 billions for the year 2010, due to trade facilitation actions. The same was reported for Singapore, its single window system, TRADENET, started in 1989, combining more than 35 government agencies was responsible for efficiency gains, with a return of $ 1 for every cent expend by Custom on the system. APEC (2011) reported that the Republic of Korea reduced from 8 to 3 the number of required documents to proceed an

import operation, between 2006 and 2009. The numbers were also reduced for export operations from 5 to 3 in the same period. Wilson (2009, p. 57) estimated, based on the World Bank Doing Business Survey, that: "A 10% reduction in the number of signatures required by the importer may increase trade by 9.9%, while a 10% reduction in the number of documents required by importer may generate an 11.1% increase in trade."

Data from the World Bank Doing Business Survey indicated that the average number of documents required to conduct an international trade transaction in the region fell from to 6.18 documents in 2006, to 5.65 documents in 2011. The efforts of the economies resulted in a reduction of 8.7% in the number of required documents, saving costs in labor and time expended on the fulfillment of administrative and regulatory requirements.

6. RECOMMENDATIONS

According to the results found on the assessment of the TFAP II, the main tool for trade facilitation, TRS, is suggested to be a road map to follow in addressing trade facilitation programs and trade cost reduction. Although a TRS is not a trade facilitation measure by itself, its utilization can provide stakeholders information and security on how to act, and where to expend resources aiming trade costs reductions. As trade facilitation measures cited in the TFAP II plan, the AEO and a single window system proved to be economically profitable for the economies that have implemented them, other economies could replicate the successful experience of APEC members. Another important recommendation is the establishment of a policy of real coordination among Customs and other governmental agencies, backed up by high level political decision. Economies that aim on reducing theirs trade costs are advised to implement a continuous TRS program in addition to others well proven trade facilitation measures, such as AEO, single window program and trade facilitation committees. The TFAP II frame, with the definition of a clear cost reduction goal; associated with the use of performance indexes, the KPIs, to assess the measures implementation progress, showed to be highly recommendable as a way to push forward a plan for trade costs reduction.

7. CONCLUSIONS

APEC (2011) mentioned the difficulties on measuring the TFAP II results, due to lack of data and experience on how to link to each measure taken, its outcome. However the final assessment brought by APEC showed that the 5% reduction was obtained. The direct assessment of the results was not possible; however, the positive trend, observed in surveys, combined with theory on trade facilitation, corroborates the consistency of the results presented by APEC. The literature does not have specific studies on how each trade facilitation action alone influences trade costs, however it provides theoretical expectative for the always positive overall economic impact of time and cost saving measures. Most of the econometric studies reviewed are based on surveys to assess the impact of trade facilitation, not different from what APEC did to assess the TFAP II. The actions to save time on clearance and the reduction of bureaucratic procedures normally result in more efficiency and competitiveness for the local economy. The difficulties faced by APEC to measure trade costs among a group of 21 economies may not

be faced by a single economy, that can better estimates its own costs by more accurate methodologies, such as the CIF-FOB gap or even direct costs measurements.

The enhancement of the KPI methodology to push forward the trade facilitation plan showed correct, the simplicity and understandability of each KPI were important to guide the region economies to proper launch trade facilitation measures. The conjunct of taken trade facilitation measures permitted the cost reduction goal achievement. This study suggests also that more research is needed in other to isolate the effect of any single trade facilitation measure on overall trade costs.

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