Asia-Pacific Economic Cooperation

Facilitating Electronic Commerce in APEC:

A Case Study of Electronic Certificate of Origin (e-CO)

APEC Policy Support Unit

October 2011

Advancing Free Trade for Asia-Pacific Prosperity

Prepared by:
Alicia Say, Jack Wu and Peter Stokes*;

Akhmad Bayhaqi
Policy Support Unit
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Tel: (65) 6891-9500 Fax: (65) 6891-9690
Email: ab@apec.org Website: www.apec.org

Produced for:
ECSG PTS (Electronic Commerce Steering Group / Paperless Trading Subgroup)
Asia-Pacific Economic Cooperation

APEC#211-SE-01.14

*Consultants. The authors would like to thank Tammy L. Hredzak, Belinda Chng, Carlos Kuriyama and Denis Hew of the APEC Policy Support Unit for their helpful comments. We are also grateful to Myung-hee Yoo, Program Director for the APEC Electronic Commerce Steering Group, for her support. The views expressed in this paper are those of the authors and do not necessarily represent those of APEC Member Economies.

TABLE OF CONTENTS

TABLE OF CONTENTS i
EXECUTIVE SUMMARY iii

1. BACKGROUND 1
2. BRIEF REVIEW OF RELEVANT LITERATURE AND SOURCES 3
3. APPROACH AND METHODOLOGY 5
   3.1. The Assessment Framework 6
   3.2. Data Collection 11
   3.3. Profiles of parties interviewed in Korea and Chinese Taipei 12
   3.4. Impact Analysis 14
   3.5. Recommendations 16
4. SUMMARY OF E-CO SURVEY RESULTS 17
   4.1. Findings from the CO Issuance Process 17
   4.2. Highlights of Process Improvements 18
   4.4 . Analysis of Impact on Trade Transaction Costs 20
5. TRADE TRANSACTION COSTS EXTRAPOLATION ANALYSIS 25
6. OTHER RECENT E-CO DEVELOPMENTS IN APEC 27
   6.1. Hong Kong, China and the UK 27
   6.2. ASEAN – CEPT Form D (now ATIGA Form D) 27
   6.3. PAA Pilot Project – Prefential e-CO from Malaysia to Japan 29
7. CONCLUSION AND RECOMMENDATIONS 31

BIBLIOGRAPHY 33
GLOSSARY 35

APPENDICES

APPENDIX 1: World Bank Trading Across Borders Methodology 37
APPENDIX 2: Trading Across Borders - Chinese Taipei 39
APPENDIX 3: Trading Across Borders - Korea 40
APPENDIX 4: Discussion of Trade Transaction Costs Applied to Certificate of Origin 41
APPENDIX 5: Detailed Description of CO Issuance and Acceptance Process 45
APPENDIX 6: Limitations on World Bank Trading Across Borders Data 51
APPENDIX 7: Nature of Export and Import Procedures (Costs and Duration) in APEC – 2010 53
APPENDIX 8 – Survey Trade Transaction Costs Tables 54
APPENDIX 9: Trade Values and Container Volumes for Intra-APEC trades (exports and imports), 2010 60
APPENDIX 10: Intra-APEC Trade Transaction CostS and Economy Contribution, 2010 61

APPENDIX 11: APEC Extrapolated Unit Trade Transaction Cost (TTC) for e-CO Shipments - US$ /TEU (2010) 62
APPENDIX 12: Intra-APEC Trade Transaction Costs Improvement with Global e-CO Adoption by All APEC Economies, 2010 63
APPENDIX 13: APEC Trade Transaction Costs Improvement with Various Adoption Levels of Global e-CO, 2010 64
APPENDIX 14: APEC Trade Transaction Costs Improvement with High and Low Sensitivites of Global e-CO Adoption, 2010 65

LISTS OF TABLES

Table 3-1 Information Collected To Assess the Direct E-CO Impact 10
Table 3-2 List of Interviewees 12
Table 3-3 Profile of Exporters and Exporting Customs Brokers 13
Table 3-4 Profile of Importers and Importing Customs Brokers 14
Table 4-1 Direct Cost Impact of Global e-CO application on Trade Transaction Costs (Survey Results) 22
Table 4-2 Direct Cost and Business Loss Impact of Global e-CO application on Trade Transaction Costs (Survey Results) 23
Table 5-1 Projected APEC Trade Transaction Costs Reduction Based on Different Scenarios 25
Table 6-1 COO Document Volume Exchange between Indonesia and Malaysia 28

LISTS OF FIGURES

Figure 3-1 Approach and Methodology 5
Figure 3-2 Approach to Assessment Framework 6
Figure 3-3 Paper CO Scenario (Korea to Chinese Taipei) 8
Figure 3-4 e-CO Scenario (Korea to Chinese Taipei) 9
Figure 6-1 The electronic exchange of CEPT Form D or ATIGA Form D 28
Figure 6-2 Recent Update of e-CO – Scheme 29

EXECUTIVE SUMMARY

The aim of the study is to assess the contribution of the actions and measures of APEC's Electronic Commerce Steering Group (ECSG) towards reducing trade transaction costs in the region through a case study of an Electronic Certificate of Origin (e-CO) project. The study assesses the results of the e-CO Pathfinder Project between Chinese Taipei and Korea in reducing trade transaction costs since implementation began in June 2010. These results are then extrapolated on the assumption that e-CO is adopted in other APEC economies, using several different assumptions and scenarios.

Based on the survey conducted in Korea and Chinese Taipei, the improvement in unit trade transaction costs per container (TEU) is shown in the tables below.

Korea – Export

US$ / TEU	**Documents preparation**	**Customs clearance and technical control**	**Ports and terminal handling**	**Inland transportation and handling**	**Totals**
Before Global e-CO	*$210*	*$175*	*$284*	*$584*	***$1,253***
After e-CO	*$27*	*$84*	*$284*	*$584*	***$979***
Improvement	*$183*	*$91*	*$0*	*$0*	***$274***
Improvement by %	87%	52%	0%	0%	**22%**

Chinese Taipei – Import

US$/TEU	**Documents preparation**	**Customs clearance and technical control**	**Ports and terminal handling**	**Inland transportation and handling**	**Totals**
Before Global e-CO	*$179*	*$371*	*$319*	*$297*	***$1,165***
After e-CO	*$92*	*$60*	*$319*	*$297*	*$768*
Improvement	*$87*	*$310*	*$0*	*$0*	*$397*
Improvement %	49%	88%	0%	0%	34%

The survey results were extrapolated to assess the potential impact assuming varying degrees of e-CO adoption in APEC economies. The projections are summarized as follows:

Scenario	Projection Description	Assumptions	Projected APEC Trade Transaction Costs Reduction %
1	APEC wide e-CO adoption.	For most economies assume 25% of shipments require CO. Exceptions are Indonesia 60%, Thailand 20%, and Chinese Taipei 10%.	6.79%
2	Only Korea and Chinese Taipei adopt the e-CO.	For Korea assume 25% of shipments require CO, and for Chinese Taipei 10%.	0.18%
3	More "e-Advanced" Economies adopt e-CO.	Assume Australia; Brunei Darussalam; Canada; Hong Kong, China; Indonesia; Japan; Malaysia; New Zealand; Philippines; Singapore; Thailand; US are at the same ratios specified in Scenario 1 above.	2.80%
4	China + e-Advanced economies.	China + economies in Scenario 3 at the ratios specified in Scenario 1 above.	5.93%
5	Sensitivity 1 - Low APEC wide e-CO adoption.	Assume e-CO is required for 5% of shipments instead of the ratios specified in Scenario 1 above.	1.30%
6	Sensitivity 2 – High APEC wide e-CO adoption.	Assume e-CO is required for 40% of shipments instead of the ratios specified in Scenario 1 above.	10.40%

The limitations and assumptions of the extrapolation are as follows:

i. As the impact of e-CO adoption in each economy will vary due to structural differences between economies, industries, products and companies, the extrapolation of survey results from the case study is intended to provide an idea of possible benefits for the rest of APEC. This is especially so due to limited data availability for all APEC members, and the industry selected in the case study has relatively stringent regulatory requirements in comparison to other industries. For example, in the case of Korea and Chinese Taipei, users would have greater incentive to adopt the e-CO if the importing customs enforces the CO as a mandatory document, instead of requiring its submission currently only for selected controlled products - and subjected to the customs practices of different ports.

ii. Reliable statistics on the ratio of exports or imports in each economy where the CO is required were unavailable at the time of writing. Hence, the study uses a mix of expert assessments, and the assumption of a fixed estimate of 25%, based on information gathered through informal interviews held with government

representatives in the APEC region. As indicated, sensitivity analysis on lower and higher ranges was also shown in scenario 5 and 6 above.

iii. As indicated in the final report "Aggregate Measurement of Trade Transaction Costs in APEC 2007-2010" (Reference 10), "*a significant uncertainty relates to the quality of the Trading across Borders data panel"*. In general, there are concerns about the reliability and representativeness of the data which is unavoidable due to the chosen survey method. The description of the limitations is provided in Appendix 6 of this report.

iv. The number of export and import shipments is estimated based on the value of exports and imports and related container statistics. Air cargo is not considered in the calculation of trade transaction costs, which is a shortcoming of both of this analysis and the Trading Across Borders data.

v. This analysis disregards the value of time in the Trading Across Borders database as well as indirect time improvements due to the e-CO. However, as the study focuses on percentage improvement and not about absolute numbers, the results should be viewed as indicative in general.

Based on the results of the study, it is recommended to focus future efforts on the following:

- Expanding the scope of the e-CO Pathfinder Project between Chinese Taipei and Korea by including other electronic B2B and B2G documents such as e-Invoice, e-Packing List, e-AWB, e-SPS etc.
- Expanding the e-CO Pathfinder Project to APEC member economies who have FTA (Free Trade Agreement) or EPA (Economic Partnership Agreement), as in most cases the CO is a mandatory document that is required to enjoy preferential tariff, hence the incentives for traders to adopt the e-CO will be strengthened.
- Expanding the e-CO Pathfinder Project to a larger number of APEC economies by focusing on economies that may adopt the e-CO more rapidly – namely the ASEAN-6, Australia, New Zealand, Japan, China, US, Canada, Hong Kong, China.
- Establishing a set of suitable KPIs for evaluation of the cross border paperless trading projects.
- It would be useful for APEC economies to consider collecting reliable statistics on the ratio of exports and imports in economies where the CO is required.

1. BACKGROUND

The goal of APEC's Second Trade Facilitation Action Plan (TFAP II) is a reduction in trade transaction costs by 5% between 2007 and 2010. The aim of this study is to assess the contribution of the actions and measures of APEC's Electronic Commerce Steering Group (ECSG) towards reducing trade transaction costs in the region by using a case study of an Electronic Certificate of Origin (e-CO) project. Specifically, the study will provide an assessment of the e-CO project in terms of reducing trade transaction costs by focusing on the Electronic Certificate of Origin (e-CO) Pathfinder Project between Chinese Taipei and Korea, and also by examining the activities related with paperless trading.

The full assessment report combines the results of two studies that were undertaken in parallel. One part of the assessment is based on an analysis of the original KPIs on Data Privacy to be conducted by the ECSG/DPS, while the other part is a case study on the Electronic Certificate of Origin (e-CO) project to provide indicative evidence of the impact of the ECSG's work in reducing trade transaction costs.

Due to limitations of data availability, the difficulties of measuring the reduction in trade transaction costs and, more specifically, the contribution of ECSG actions and measures toward the TFAP II goal of reducing trade transaction costs are well-recognized[1]. Given the limitations, the assessment was conducted based on the case study of the e-CO project between Chinese Taipei and Korea. The case study was selected as participating traders have reported concrete benefits from using the e-CO instead of hard copy CO such as time and cost savings, confidence in the online transmission of cross border documents in a secure environment, savings from lower warehouse costs, and faster customs clearance. In addition, the e-CO project between Chinese Taipei and Korea had been implemented beyond the pilot stage and had a clearly defined scope, which would enable clear measurement of improvements. However, challenges remain in determining the contribution of the project to the reduction in trade transaction costs between Chinese Taipei and Korea and the extrapolation of these results at the APEC level.

[1] For further explanation, see APEC PSU (2010).

2. BRIEF REVIEW OF RELEVANT LITERATURE AND SOURCES

A brief review of a selection of relevant literature is provided below.

1. *APEC Guidance for Electronic Commerce (APEC Secretariat 2010).*

This report provides valuable insight into the holistic developments towards cross border paperless trading and the steps economies and international organizations are taking to towards a complete paperless environment.

2. *e-CO Pathfinder Project Update and Way Forward (APEC 2011).*

This article provides a useful summary of the e-CO project between Chinese Taipei and Korea and its suggested expansion to other economies.

3. *Assessment and Best Practices on Paperless Trading to Facilitate Cross Border Trade in the APEC Region - Section 2: Assessment on Paperless Trading to Facilitate Cross Border Trade in the APEC Region, June 2010 (APEC Secretariat 2010b).*

This article provides a useful summary on the status of paperless trading in APEC economies.

4. *Reducing trade transaction costs in APEC economies by 5% - Progress with achieving the goals of TFAP II (APEC PSU 2009).*

This report provides a comprehensive and quantitative review of trade transaction costs within the focus on APEC's progress towards achieving the 5% cost reduction goal. This was comprehensively referenced.

5. *Reducing trade transaction costs in APEC economies by 5% – Progress with achieving the goals of TFAP II (APEC PSU 2010).*

This report is an update to *Reference 4* above and was comprehensively referenced during the study.

6. *Cross Border Exchange of ASEAN CEPT Form D: Challenges, Lessons Learned and Implications. (Noor 2010).*

This presentation provides useful background and statistics on the electronic exchange of CEPT Form D (now ATIGA Form D) on a trial basis between Indonesia, Malaysia, Philippines and Brunei Darussalam.

7. *Doing Business web site: www.doingbusiness.org* (accessed July 27, 2011).

The web site "*www.doingbusiness.org" managed by the* World Bank contains comprehensive information on all economies, and for our study in particular for the APEC economies, related to key parameters involved in "Trading Across Borders" – notably the costs and time related to document preparation, customs clearance and technical control, ports and terminal handling and inland transportation and handling.

8. *IMF Direction of Trade Statistics Database, accessed on 11 July 2011*.

This document provides the import, export and total trade volumes for each APEC economy and with other parts of the world.

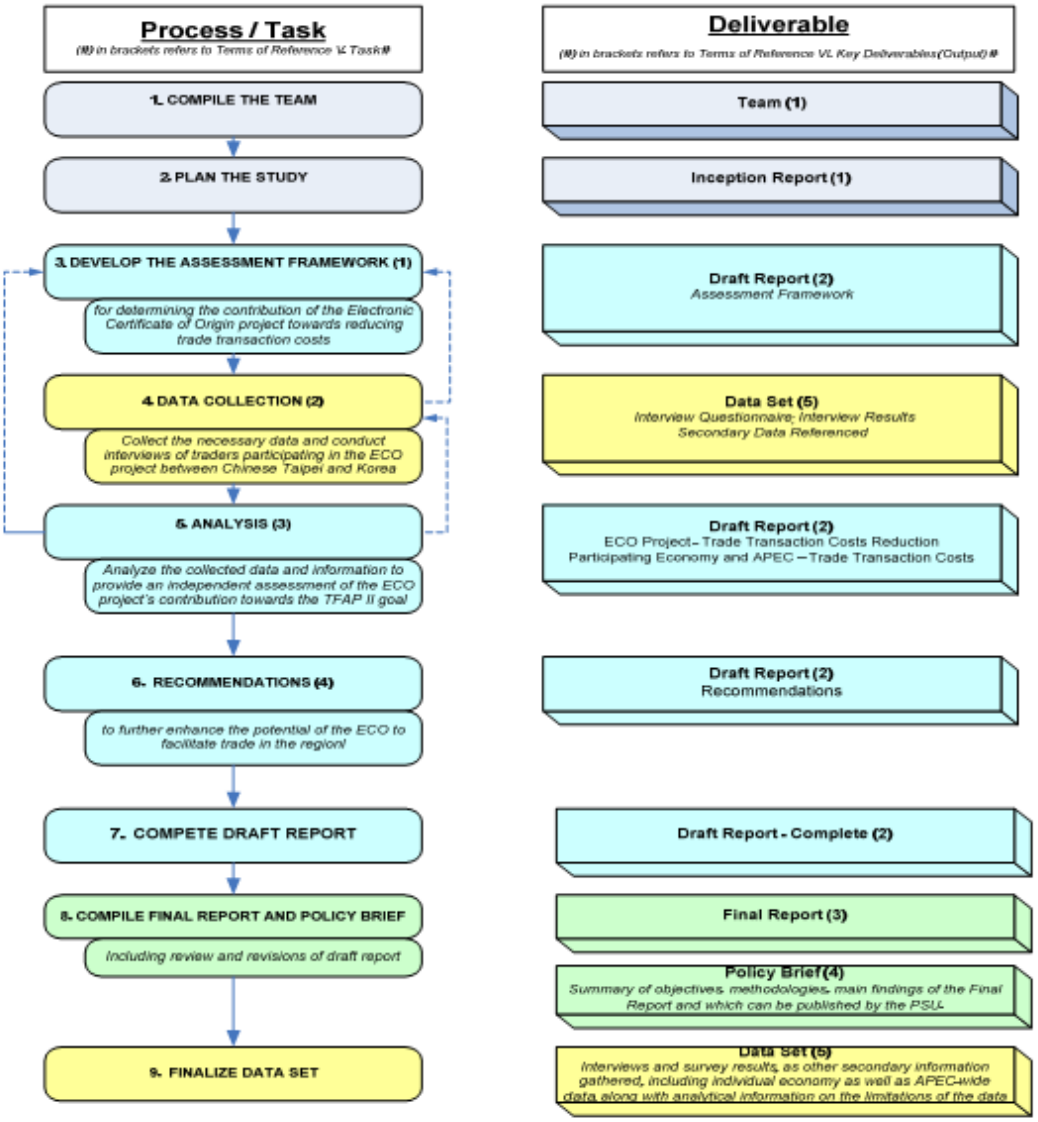
9. Aggregate Measurement of Trade Transaction Costs in APEC 2007-2010 (APEC PSU 2011).

This report provides a current view of the achievement of the TFAPII goal of 5% reduction in trade transaction costs, including a summary of the limitations of the study, notably on the data.

3. APPROACH AND METHODOLOGY

The methodology is outlined in the diagram below and described in the following sub-sections.

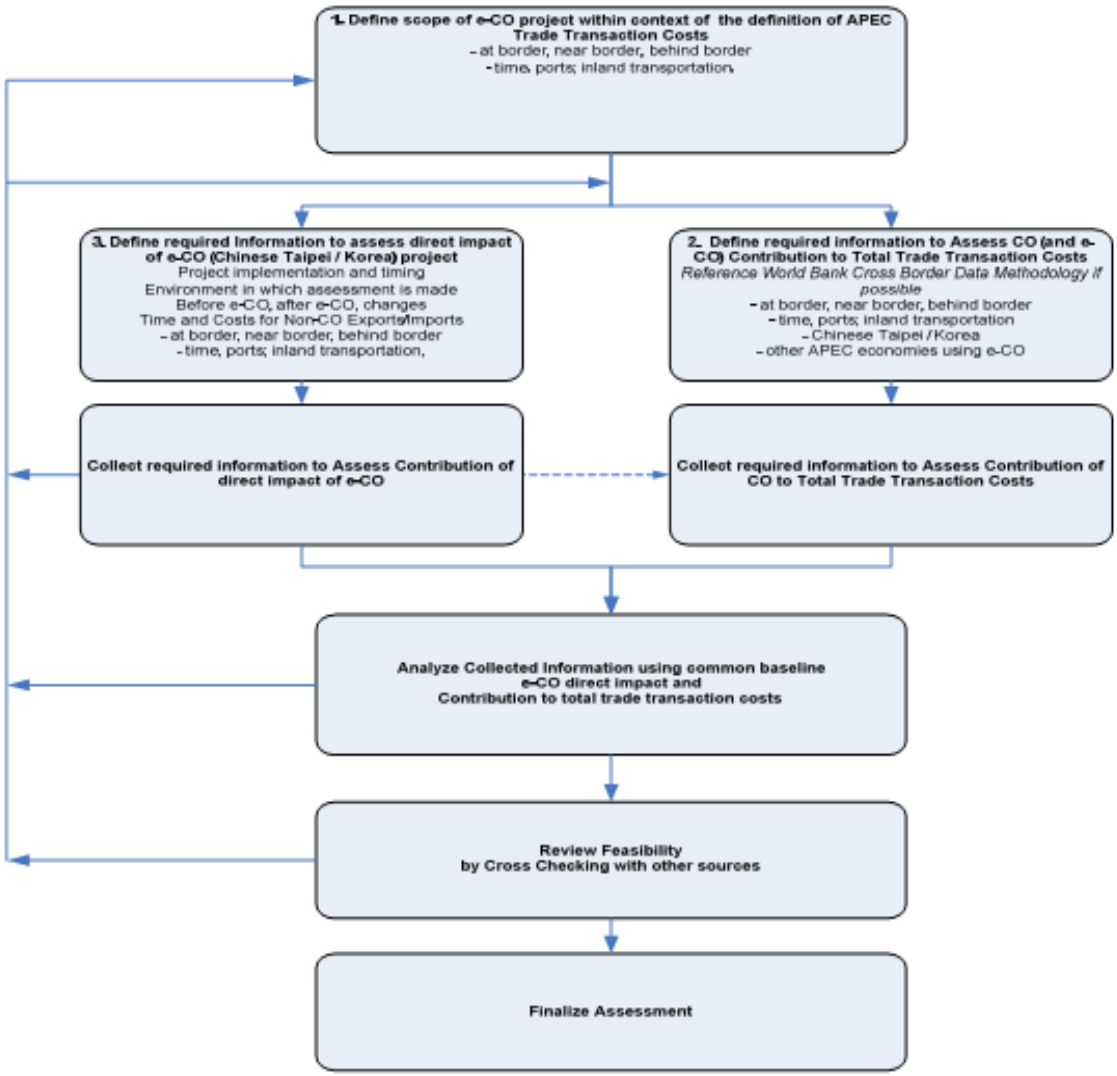
Figure 3-1 Approach and Methodology



3.1. THE ASSESSMENT FRAMEWORK

The framework used to determine the contribution of the Electronic Certificate of Origin project towards reducing trade transaction costs is outlined in the following diagram along with a brief description.

Figure 3-2 Approach to Assessment Framework



The first part of the assessment framework contextualizes the e-CO project scope within the definition of APEC Trade Transaction Costs, so as to identify the elements that impact specific components of trade transaction costs, and to ascertain how the change had occurred.

As indicated in the APEC PSU (2010) report, the APEC endorsed definition confines trade transaction costs to the costs that are directly imposed by or largely influenced by government, and aligns the measurement task with the actions that have been taken to implement the APEC Leaders' goal for the TFAP II projects. The definition:

- includes time costs;
- excludes the costs that governments impose directly on international trade associated with tariffs and non-tariff barriers (NTBs) as these fall within the trade liberalisation focus of APEC;
- explicitly includes the costs of the port and inland transportation links in the international logistics chain; and
- excludes wholesale and distribution costs as they are common to both domestic and international commerce.

For the purpose of policy analysis, the estimation of APEC trade transaction costs is broken down into the following major components:

- costs *at* the border —costs imposed due to customs procedures, mandatory technical standards, and immigration barriers in relation to the movement of merchandise and business people;
- cost *near* the border —costs associated with vessel transits and freight transfers at international shipping and aviation ports and their associated terminals; and
- cost *behind* the border —costs associated with the rest of the international logistics chain.

In calculating the APEC's Trade Transaction Costs, the method in APEC PSU (2010) used the Trading Across Borders database, which is also used in this study. Please also see Appendix 1 for an extract of the World Bank Trading Across Borders methodology.

The diagrams below outlines the paper CO issuance process used previously (Chart 3.3.) and the current electronic CO issuance process (Chart 3.4.), and the related customs processes for goods made in Korea, exported from Korea and imported into Chinese Taipei.

The stakeholders and parties involved in the CO issuance process include:

1. **Korea:**
   - KCCI (Korean Chamber of Commerce International) – responsible for issuing the certificate of origin for goods manufactured/planted/harvested in Korea for export.
   - Exporter.
   - KTNet (Korea Trade Net) – an electronic service provider, who plays a major role in facilitating the exchange of electronic documents between the trade community, Government and related agencies.

2. **Chinese Taipei:**
   - Customs – responsible for enforcing the import and export regulations of Chinese Taipei, as well as checking to ensure that imported goods satisfy the import control requirements based on origin and validate the claims for preferential tariffs.

- NTA (National Treasury Agency) – responsible for enforcing regulations for import of alcoholic products to Chinese Taipei, in particular, ensuring a certificate of origin is produced for each imported alcoholic product. NTA did not participate in the first phase of the e-CO project between Korea and Chinese Taipei.
- Importer.
- Customs Broker – acts as an agent by handling the customs procedures on behalf of the importer.
- Trade-Van - an electronic service provider who plays a major role in facilitating the exchange of electronic documents between the trade community, Government and related agencies.

Figure 3-3 Paper CO Scenario (Korea to Chinese Taipei)

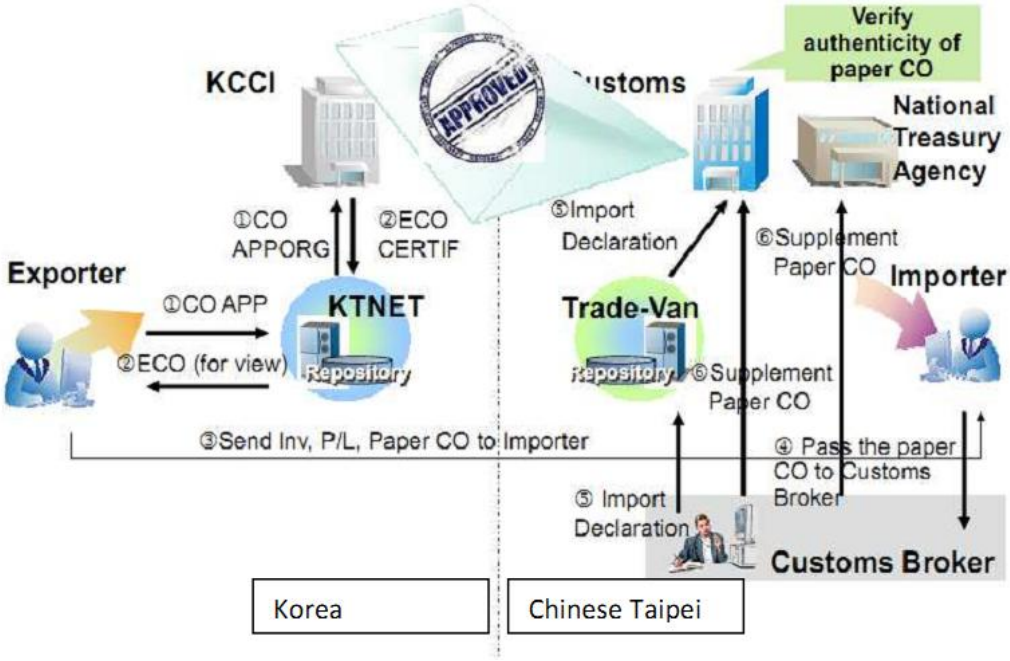
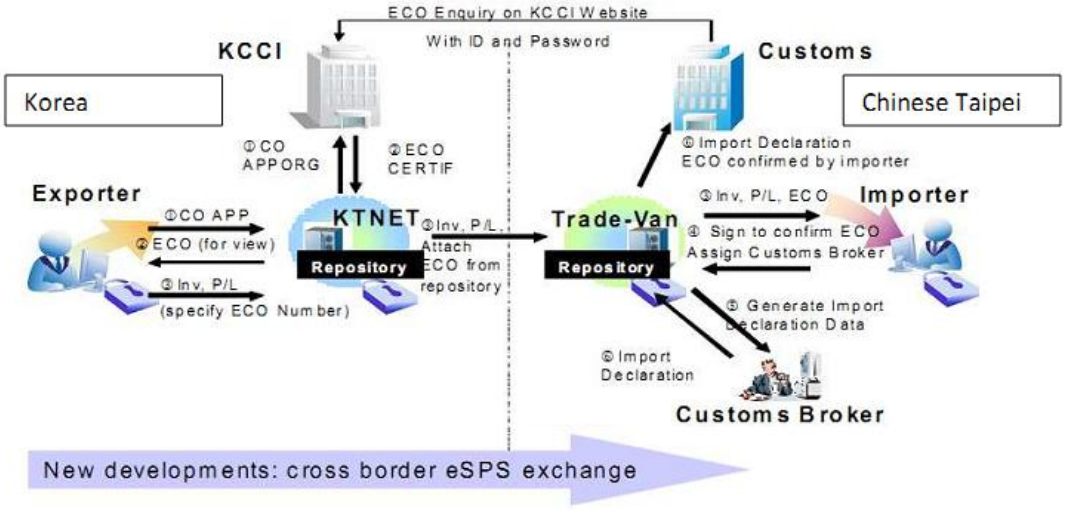


Figure 3-4 e-CO Scenario (Korea to Chinese Taipei)



Results from a preliminary analysis indicated that the electronic Certificate of Origin may have an impact on the "Time Costs" and the "Costs at the Border" components for Korea and Chinese Taipei. Since the project was launched in May 2010, 15 exporters from Korea and 20 importers from Chinese Taipei have used the e-CO service for transactions between Korea and Chinese Taipei.

Appendix 4 offers a preliminary discussion of the APEC's definition of trade transaction costs in relation to the application of the electronic Certificate of Origin.

A list of information collected to assess the direct e-CO impact on trade transaction costs is summarized in the table below:

Table 3-1 Information Collected To Assess the Direct e-CO Impact

#	Information Item	Korea			Chinese Taipei		
		Before e-CO	**After e-CO**	**Non CO-Export**	**Before e-CO**	**After e-CO**	**Non-CO Export**
1	Number of Active e-CO Exporters / Importers		x			x	
2	Volume of Certificates and related Consignments for each Exporter / Importer	x	x	x	x	x	x
3	Number and FOB Value of Containers Exported / Imported		x	x	x	x	x
4	***Processing Time***						
4.1	CO Application and Approval	x	x				
4.2	Declaration Submission and Approval			x	x	x	x
4.3	Total Export / Import Time (for those exports / imports requiring CO's)	x	x		x	x	
4.4	Inventory Holding Time in Customs Warehouse Area – before export / before clearance	x	x	x	x	x	x
4.5	Total Export / Import Time (for those exports / imports NOT requiring CO's)			x			x
5	***Administration Costs***						
5.1	CO Application and Approval	x	x				
5.2	Declaration Submission and Approval			x	x	x	x
5.3	Total Export Administration / Import Administration (for those exports / imports requiring CO's)	x	x				
5.4	Inventory Holding Time in Customs Warehouse Area – before export / before clearance	x	x	x	x	x	x
5.5	Total Export Administration / Import Administration (for those exports / imports NOT requiring CO's)	x	x	x	x	x	x
6	Reasons for Non-Participation in the e-CO		x			x	

The contribution made to total trade transaction costs by the exports and imports that required Certificates of Origin was assessed, in relation to the total trade cost components such as:

- at the border, near border, and behind border; and
- time, ports, and inland transportation.

In this regard, information was gathered through field survey, literature and statistics databases. Please see the World Bank Trading Across Borders (TAB) data for 2010[2] for Chinese Taipei and Korea in Appendices 2 and 3 respectively as well as Appendix 7 for a summary of all APEC Economies. These data allowed the results from the case study on Chinese Taipei and Korea to be extrapolated to provide an indicative sense of the potential impact of e-CO adoption in other APEC economies.

3.2. DATA COLLECTION

Interviews and surveys were conducted with participants of the e-CO project between Chinese Taipei and Korea to assess the direct e-CO impact on trade transaction costs. They included traders, service providers, the chambers of commerce and customs. A reasonable degree of accuracy at the ground level is expected, although some variances may have occurred due to variations in process efficiencies between traders and processes for different products. Traders and related parties who chose not to participate in the e-CO were also asked to provide reasons for non-participation.

Questionnaires were tailored to suit interview targets and were distributed before a 1.5 hour interview was conducted in person. A summary of the data collected can be found in Chapter 4 and Appendix 8.

The following is the parties involved in the interviews[3]:

[2] The TAB data used in this study comes from the 2011 Doing Business report which contains the data for the year 2010.

[3] The National Treasury Agency of Chinese Taipei is not included in this study as the import of alcoholic products is excluded from the e-CO project scope.

Table 3-2 List of Interviewees

	Chinese Taipei	Korea
Private Sector		
Importer/Importing Customs Broker(s)	4 (1 non e-CO)	
Exporter/Exporting Customs Broker(s)		5 (2 non e-CO)
Korean Chamber of Commerce International		1
Government		
Chinese Taipei Customs	1	
Taipei Mission office in Korea		1

- three Korean exporters or export customs brokers who had used the e-CO service (it is a common practice for an exporter to outsource the entire export customs clearance process to a customs broker, hence the customs broker acts as an agent by handling the export procedures such as the e-CO);
- two Korean exporters who had not used the e-CO service;
- three Chinese Taipei importers or import customs brokers who have used the e-CO service (it is a common practice for an importer to outsource the entire import customs clearance process to a customs broker, hence the customs broker acts as an agent by handling the import procedures such as the e-CO);
- one Chinese Taipei importer who had not used the e-CO service;
- the Korean Chamber of Commerce International (KCCI) / Korea Trade Net (KTNet);
- the Chinese Taipei Mission Office in Seoul; and
- the Chinese Taipei Customs.

The exporters and importers interviewed were selected based on the volume of contributions to the e-CO. Hence it is safe to assume that the study covered approximately 50% of the relevant organizations currently using the e-CO service. The information required to assess the contribution of exports and imports that required Certificates of Origin to total trade transaction costs was gathered from the WTO database, and from the Chinese Taipei and Korean Customs organizations.

In addition, the views of experts in customs procedures were gathered via interviews to enhance data collection for the study For instance, experts in ASEAN provided the background and details on the adoption of cross border e-CO services. Further, the experts interviewed were asked to provide a knowledgeable estimate in cases where the trade volumes and/or trade values were lacking with regard to the use of a Certificate of Origin.

3.3. PROFILES OF PARTIES INTERVIEWED IN KOREA AND CHINESE TAIPEI

The profile of the exporters and exporting customs brokers interviewed in Korea is shown in the table below. They were all involved in the export of primary products,

mainly because these products require a Certificate of Origin to prove that they were actually planted and harvested or grown in Korea, as agricultural products and sea products from some economies are prohibited to be imported to Chinese Taipei.

Table 3-3 Profile of Exporters and Exporting Customs Brokers

Company's Initial	**MS**	**GN**	**LP**	**YC**	**NH**
Industry	Exporter	Exporter	Forwarder	Exporter	Exporter
Major products exported to Chinese Taipei	Pear, apple, honeydew, cabbage, lettuce	Pear, apple, honeydew, cabbage, lettuce	Pear, apple, honeydew, cabbage, onion	Pear	Pear, apple, cabbage
Location	Andong	Andong	Daegu	Pyeongtaek	Seoul
e-CO service	Yes	Yes	Yes	No	No
e-CO adoption time	2010/June	2010/June	2010/June	*	*
COs/year	150	150	100	10-15	350
CO/To Taipei	100	100	70	10-15	300
e-CO/To Taipei	30-50	30-50	50	0	0
Interview Date	2011/07/09	2011/07/09	2011/07/12	2011/07/11	2011/07/13

Source: Field survey by the authors.

In addition, the following authorities and other institutions involved in the Certificate of Origin issuance process in Korea were also interviewed on July 13, 2011:

- Korean Chamber of Commerce and Industry (KCCI);
- Taipei Mission Office in Seoul; and
- KTNet (Korea Trade Net).

Their respective roles will be explained in the next section.

The profile of the importers and importing customs brokers interviewed in Chinese Taipei is shown in the table below:

Table 3-4 Profile of Importers and Importing Customs Brokers

Company's Initial	**KG**	**DN**	**SH**	**GH**
Industry	Importer	Importer	Customs Broker	Customs Broker
Major products imported from Korea	Pears and apples	Pear, apple, honeydew	Aquatic products, vegetable, and fruit.	Pear
Location	Taipei	Kaoshiung	Kaoshiung	Kaoshiung
e-CO service	Yes	Yes	Yes	Yes
e-CO adoption time	2010/June	2010/June	2010/June	2010/July
COs/year	90	270	2000s	300-400
COs/from Korea	90	270	200-300	200-300
e-CO/from Korea	10	30-40	200-300	20
Interview Date	2011/07/07	2011/07/07	2011/07/07	2011/07/07

Source: Field survey by the authors.

For the calculation of cost reduction after the adoption of global e-CO, taking pear exported from Korea to Chinese Taipei as an example, the exporter's FOB value per container for pear is US$30,000.

In addition, the following authorities and other institutions involved in the Certificate of Origin issuance process in Chinese Taipei were also interviewed on July 7, 2011:

- Chinese Taipei Customs – Kaoshiung Office; and
- Trade-Van

Their roles will be further explained in Chapter 4.

3.4. IMPACT ANALYSIS

The analysis in Chapter 4 and 5 covers the impact of the e-CO on trade transaction costs for the specific traders surveyed and the extrapolation of those results for wider adoption in APEC.

The methodology used for the extrapolation was as follows:

a. The *theoretical total trade transaction costs for 2010* (TTC-Base$_{2010}$) was estimated by summing up the export and import trade transaction costs for each economy for intra-APEC trades only. Export trade transaction costs were derived by multiplying

the Trading Across Borders export costs per container for each economy by the estimated number of export container shipments. A similar calculation was done for the import costs. Please see:

- Appendix 9 for the Number of Container Shipments for each APEC economy in 2010 (for intra-APEC trades) and for the Export, Import and Total Trade Values for 2010 for each APEC economy.
- Appendix 10 shows the calculation of the Trade Transaction Cost for each APEC economy and the total ($TTC\text{-}Base_{2010}$).

b. The *theoretical reduced trade transaction unit cost for 2010 for* ***exports*** was estimated by applying the percentage improvement in each category of export trade transaction unit costs determined by the survey results for the Korean exporters to the Trading Across Borders data for the same categories (document preparation, customs clearance and technical control, ports and terminal handling, inland transportation and handling); and further amortized for the estimated ratio of export shipments requiring a CO. This was applied to each economy. Note that e-CO adoption does not impact the categories of ports and terminal handling or inland transportation and handling. Please see Appendix 11 for this detailed calculation for the improved Unit Trade Transaction Costs and Appendix 12 for the total improved APEC Trade Transaction Costs

c. Similarly, the *theoretical reduced trade transaction unit cost for 2010 for* ***imports*** was estimated by applying the percentage improvement in each category of import trade transaction unit costs determined by the survey results for the Chinese Taipei importers to the Trading Across Borders data for the same categories (document preparation, customs clearance and technical control, ports and terminal handling, inland transportation and handling); and further amortized for the estimated ratio of import shipments requiring a CO. This was applied to each economy. Please also see Appendix 11 for this detailed calculation for the improved Unit Trade Transaction Cost and Appendix 12 for the total improved APEC Trade Transaction Costs

d. The *projected reduced theoretical total trade transaction costs for 2010 aft****er e-CO*** *adoption* was estimated using the calculation method in (a) above but using the *reduced trade transaction unit cost for 2010 for exports and imports* from (b) and (c) above respectively.

e. The percentage improvement was then calculated by comparing the *theoretical total trade transaction costs for 2010* to the *projected reduced theoretical total trade transaction cost for 2010 after e-CO adoption.* Please also see Appendix 13 for this detailed calculation

Based on different assumptions of the "ratio of exports or imports where CO is required" and levels of adoption of global e-CO, the various impacts and sensitivities was summarized in the table above at the beginning of this section.

Please note that this survey was done to assess the impact of the e-CO on the Trade

Transaction Costs, using the same cost base, with a specific focus on the impact of Global e-CO alone. The Global e-CO was introduced in June 2010, and the survey respondents were asked to assess the cost differences due to the e-CO, hence the study has used 2010 as the cost base for both the before and after assessment. This is well within the levels of accuracy of the survey and the extrapolation. By comparison, the objective of ITS Global Report (2011) was to assess the reduction of the Trade Transaction Costs over 2006 – 2010, and hence used the year of 2006 as the cost base.

The limitations and assumptions of this extrapolation analysis are as follows:

i. The impact of e-CO adoption in each economy will vary due structural differences between economies, industries, products and companies. Therefore, taking the survey results between two economies in a specific industry with more stringent regulatory requirements than most and then apply the results to other APEC Economies may not be fully accurate. In general, the approach taken is to use the percentage improvement obtained from the survey and apply that to other independently derived numbers to give a relatively consistent indication of the potential improvement.

ii. Reliable statistics on the ratio of exports or imports in each economy where CO is required are currently unavailable. Instead the study relies on the assessment of experts in some economies, and where such assessments have not been forthcoming, 25% is set as an estimate. As indicated, a sensitivity analysis on lower and higher ranges was also shown.

iii. As indicated in the final report "Measurement of Trade Transaction Costs Reduction in APEC 2007-2010 (Direct Estimation)" (Reference 10), "a significant uncertainty relates to the quality of the Trading across Borders data panel provided by the World Bank Group". There are a number of concerns mentioned in Section 5.A.ii of the report, which are included in Appendix 6.

iv. The number of export shipments and import shipments is estimated based on the value of exports and imports. Air cargo is not considered in the trade transaction costs, which is a shortcoming of both this analysis and the Trading across Borders data.

v. This analysis disregards the value of time in the Trading Across Borders database as well as for the indirect time improvements due to the e-CO. However, as the focus of this study is on percentage improvement and not on absolute numbers, the results should be viewed as indicative in general.

3.5. RECOMMENDATIONS

From the results of the surveys and the extrapolation analysis, recommendations are put forth to enhance the potential of the e-CO scheme on trade facilitation in the region.

4. SUMMARY OF E-CO SURVEY RESULTS

This section outlines:

- the process for the issuance of certificates of origin for export from Korea to Chinese Taipei for both the previous paper-based method and the completely electronic-based method;
- the highlights of the quantitative differences between the two processes; and
- the analysis of the impact of trade transaction cost reductions based on the survey results.

4.1. FINDINGS FROM THE CO ISSUANCE PROCESS

Certificate of Origins (COs) are required by the Chinese Taipei Customs for selected products exported from Korea to Chinese Taipei. This to provide assurance to the Chinese Taipei authorities that the products were originally grown in Korea, as products from some economies are prohibited for import into Chinese Taipei.

In general, primary products such as pears, apples, honey dew and cabbages are among the products requiring a CO, although this requirement is not based on the FTA arrangement between Chinese Taipei and Korea, and hence is not mandated by regulation. Instead, the requirement of CO for these primary products is based on individual customs practice in different ports. For instance, a CO is required for imports through the Kaoshiung Port but it is not required by the Keelung Port in Chinese Taipei.

Since 2006 to the present, the application process of COs for exports from Korea has been completed electronically. However, the CO application process for imports has remained paper-based as outlined below:

i. A Korean exporter uses the KCCI online e-CO Service to complete the application form and signs it digitally.
ii. KCCI, the CO authorizer, reviews and approves the e-CO application, and sends an approval message to the export applicant in a process that takes about ten minutes.
iii. The Exporter prints a paper copy of the CO with a "digital stamp", and takes it to the Chinese Taipei Mission Office in Seoul for authentication. This step is done to avoid rejection of the CO by the Chinese Taipei Customs on the basis of authenticity. This may take 2-3 days or 1 day in expedited cases.
iv. Thereafter, the exporter sends the authenticated CO to the importer or the importer's customs broker by mail or by express delivery. The importer will pass the CO and other relevant documents to the customs broker as required.
v. In the meantime, the goods are shipped to Chinese Taipei from Korea, which usually takes about 3 days.
vi. Meanwhile, the importer or importing customs broker would have applied (electronically) for any required import permits/certificates, submitted the

customs import declaration electronically, and presented the paper CO to Customs while quoting the relevant electronic import declaration.

vii. Customs would check and clear the goods for import.

viii. The importing Customs Broker or Importer would arrange to pick up the goods from the terminal or holding area and deliver them to the importer's warehouse or a specific location.

In mid-2010 the Global e-CO service was jointly introduced by Trade-Van in Chinese Taipei and KTNet in Korea. This allows e-CO that had been approved by KCCI to be sent electronically from the Exporter to the Importer directly. The newly added processes are underlined in the steps outlined below.

i. Korean exporter uses the KTNet, online e-CO Service to complete the e-CO application form over the internet, and digitally signs it.

ii. KCCI, as the CO authorizer, reviews and approves the e-CO application by signing it digitally, and uses the KTNet online e-CO Service to send the confirmation to the Exporter. This process takes about ten minutes.

iii. The Exporter sends the e-CO to the Importer, using the KTNet online e-CO service, which connects with the Trade-Van online e-CO service. With the digital signature which provides assurance to the Chinese Taipei Customs on the origin, authenticity and integrity of the e-CO, it is no longer necessary to take the CO to the Chinese Taipei Mission Office for authentication.

iv. Thereafter, the goods are shipped to Chinese Taipei from Korea, which takes about 3 days.

v. The importer receives email notification that the e-CO had been sent by the exporter, and uses the Trade-Van e-CO service to digitally sign the e-CO and forwards it electronically to the Customs and the Customs Broker.

vi. Meanwhile, the importer or customs broker would have applied (electronically) for any required import permits and certificates, and submits the customs import declaration electronically, quoting the relevant electronic e-CO reference.

vii. Customs would check and clear the goods for import.

viii. The Customs Broker or Importer would arrange to pick up the goods from the terminal or holding area and deliver them to the importer's warehouse or a specific location.

For a comprehensive description of the findings and the CO processes, please refer to Appendix 5.

4.2. HIGHLIGHTS OF PROCESS IMPROVEMENTS

The following are key improvements of the Global e-CO service in comparison to the previous e-CO process:

For the Korean Exporter:

- Time and cost savings from avoiding the step of having the CO authenticated at the Chinese Taipei Mission in Korea; and
- Avoids the cost and delay of sending the paper CO by mail or express mail to the importer or the customs broker of the importer.

Based on the survey results, the savings for the exporter amounts to:

- a time administrative savings of 4 hours 20 minutes (equivalent to US$74 at US$ 17 per hour[4]);
- a direct expenses saving of US$143.50; and
- a reduction in processing time by two days on the export side of the process.

The total benefit from the above improvements amounts to US$ 217 per shipment and 2 days reduction in time spent on processing (in CO authentication time).[5]

For the Importer/Importing Customs Broker:

- Time and cost savings from avoiding the need to send the CO to the Customs Broker and deliver the CO in person to Customs.

Based on the survey results, the savings for the importer amounts to:

- a time administrative savings of 7 hours 15 minutes (equivalent to US$ 58 at US$ 8 per hour[6]);
- a direct expenses saving of US$ 147;
- a reduction in processing time by three days on the import side of the process, and time saved from avoiding the need to send the paper CO to Chinese Taipei.

The total benefit from the above improvements amounts to US$ 205 per shipment and 3 days time saving (due to shorter import clearance time).[7]

Additionally, in the previous process, in situations where an error on the CO is detected in Chinese Taipei, the CO has to be reissued, which meant a further delay of 8 days, (comprising of 6 days to re-issue the CO and 2 days for the CO to reach Chinese Taipei by mail[8]). As the good would be held during this period, the importer would forego the

[4] Note: The average monthly wage in Korea is US$ 3,000 for administration staff; which is equals to US$ 3,000/22 working days/8 working hours = US$ 17 per hour.
[5] For more details please refer to Appendix 8 (Table Appendix 8-1 and Table Appendix 8-2) and Appendix 5 (Table 3).
[6] Note: The manpower wage per hour in Chinese Taipei is lower than the one in Korea. In fact, Korea's average wage rate is doubled of Chinese Taipei's average wage. Assumption on the manpower wage is US$8/hour.
[7] For more details please refer to Appendix 8 (Table Appendix 8-3 and Table Appendix 8-4) and Appendix 5 (Table 3).
[8] Please refer to Table 3 Appendix 5.

opportunity to sell the goods at the optimal price, and may incur interest charges for the additional working capital needed to offset the delay of the sale.

These losses, amounting to US$3,553 per shipment, are partially offset by the exporter. From one of the interviews with the importers, the importer claimed that the probability of CO errors is about 5 for every 70 COs or 7%. Once an error is identified, the original CO has to be returned to Korea for reissuance. As errors are estimated to happen 7% of the time, the pro-rated cost is US$ 249 per shipment, with US$ 57 to the exporter and US$ 192 to the importer. CO errors and of the monetary losses would be avoided with the new Global e-CO process.[9]

The overall savings from the implementation of the new Global e-CO process is US$ 274 for the Exporter and US$ 397 for the importer.[10]

4.4 ANALYSIS OF IMPACT ON TRADE TRANSACTION COSTS

The average costs for shipments requiring COs were classified according to the World Bank's Trading Across Borders categories. This classification is consistent with the following APEC definition for Trade Transaction Costs:

- document preparation,
- customs clearance and technical control,
- ports and terminal handling, and
- inland transportation and handling.

The following table shows the related figures for the Korea Exports and Chinese Taipei Imports.

The average of ***direct costs and savings*** gathered from the survey results includes the following components:

- before the introduction of the global e-CO,
- after the introduction of the global e-CO,
- the net improvement,
- improvement (%),
- the Doing Business Trading Across Borders costs for year 2010 (published in 2011),
- the project improved (reduced) costs to the Doing Business Trading Across Borders costs for 2010, based on the % improvement achieved with the global e-CO introduction, and
- the net savings on costs and % of the savings to the Doing Business Trading Across Borders costs for 2010.

Similarly the average of ***direct costs and savings plus the savings on business loss avoidance*** gathered from the survey results includes the following components:

[9] For details of the calculation, please see Table Appendix 8-5.
[10] The detailed calculation for this is included in Table Appendix 8-6.

- before the introduction of the global e-CO,
- after the introduction of the global e-CO,
- the net improvement,
- improvement %,
- the Doing Business Trading Across Borders costs for year 2010 (published in 2011),
- the project improved (reduced) costs to the Doing Business Trading Across Borders costs for 2010, based on the % improvement achieved with the Global e-CO introduction, and
- the net savings on costs and % of the savings to the Doing Business Trading Across Borders costs for 2010.

Table 4-1 Direct Cost Impact of Global e-CO application on Trade Transaction Costs (Survey Results)

	Korea – Export					Chinese Taipei - Import				
	Documents pre-paration	**Customs clearance and technical control**	**Ports & terminal han-dling**	**Inland transportation and handling**	**Totals**	**Documents pre-paration**	**Customs clearance and technical control**	**Ports &and terminal han-dling**	**Inland transportation and handling**	**Totals**
Survey Results Average - Direct Savings										
Before Global e-CO	*$210*	*$118*	*$284*	*$584*	***$1,197***	*$195*	*$179*	*$311*	*$297*	***$981***
After e-CO	*$27*	*$84*	*$284*	*$584*	***$979***	*$92*	*$60*	*$311*	*$297*	***$760***
Improvement	*$183*	*$34*	*$0*	*$0*	*$217*	*$103*	*$118*	*$0*	*$0*	*$221*
Improvement %	87%	29%	0%	0%	18%	53%	66%	0%	0%	23%
Doing Business - Trading Across Borders (2011)	$60	$30	$200	$500	**$790**	$240	$80	$180	$200	**$700**
Projected Improvement with Global e-CO	$8	$21	$200	$500	**$729**	$113	$27	$180	$200	**$520**
Savings	$52	$9	$0	$0	$61	$127	$53	$0	$0	$180
Saving %	87%	29%	0%	0%	8%	53%	66%	0%	0%	26%

Source: Authors' calculation.

Table 4-2 Direct Cost and Business Loss Impact of Global e-CO application on Trade Transaction Costs (Survey Results)

	Korea – Export					Chinese Taipei - Import				
	Documents preparation	**Customs clearance and technical control**	**Ports and terminal handling**	**Inland transportation and handling**	**Totals**	**Documents preparation**	**Customs clearance and technical control**	**Ports and terminal handling**	**Inland transportation and handling**	**Totals**
Survey Results Average - Direct Savings+Business Loss Avoidance										
Before Global e-CO	*$210*	*$175*	*$284*	*$584*	***$1,253***	*$179*	*$371*	*$319*	*$297*	***$1,165***
After e-CO	*$27*	*$84*	*$284*	*$584*	***$979***	*$92*	*$60*	*$319*	*$297*	*$768*
Improvement	*$183*	*$91*	*$0*	*$0*	***$274***	*$87*	*$310*	*$0*	*$0*	*$397*
Improvement %	87%	52%	0%	0%	**22%**	49%	88%	0%	0%	34%
Doing Business - Trading Across Borders (2011)	*$60*	*$30*	*$200*	*$500*	***$790***	$240	$80	$180	$200	$700
Projected Improvement with Global e-CO	$8	$14	$200	$500	**$722**	$123	$13	$180	$200	$516
Savings	$52	$16	$0	$0	$68	$117	$67	$0	$0	$184
Saving %	87%	52%	0%	0%	9%	49%	84%	0%	0%	26%

Source: Authors' calculation.

In the context of the CO process and benefits, as outlined in section 4.2 and 4.3 above, the introduction of the Global e-CO is not expected to affect the costs related to Ports and Terminal Handling nor those related to Inland Transportation and Handling.

The survey of trade transaction costs before the introduction of the Global e-CO and the Doing Business Trading Across Borders (TAB) costs are expected to vary for a number of reasons:

- The Korean TAB analysis appears not to include a shipment where the Certificate of Origin is required.
- The survey results are based on specific primary products whose costs are likely to be different from non-perishable products. While the type of products included in the TAB analysis is not specified, based on the TAB methodology description (Appendix 1), it may be inferred that more generic products were included.
- The survey results do not include letters of credit handling.

Given these differences, the process of applying the Global e-CO improvement percentage to the TAB costs to get a projection for an improved TAB trade transaction costs may not be fully appropriate. However, it is clear in general that whenever a CO is required there would be significant reduction in trade transaction costs, and applying the improvement percentage to the TAB costs is a useful yardstick for measuring the possible levels of improvement.

5. TRADE TRANSACTION COSTS EXTRAPOLATION ANALYSIS

The table below shows the possible impact on Trade Transaction Costs (TTC) if APEC economies adopt the e-CO. Due to the lack of statistical data on the number of shipments requiring COs, assumptions were made based on interviews with customs brokers, customs officials and service providers.

Table 5-1 Projected APEC Trade Transaction Costs Reduction Based on Different Scenarios

Scenario	Projection Description	Assumptions	Projected APEC Trade Transaction Costs Reduction %
1	APEC wide e-CO adoption.	For most economies assume 25% of shipments require CO. Exceptions are Indonesia 60%, Thailand 20%, and Chinese Taipei 10%.	6.79%
2	Only Korea and Chinese Taipei adopt the e-CO.	For Korea assume 25% of shipments require CO, and for Chinese Taipei 10%.	0.18%
3	More "e-Advanced" Economies adopt e-CO (Developed Economies with ASEAN-6).	In addition to CT and ROK (as in Scenario 2), assume Australia; Brunei Darussalam; Canada; Hong Kong, China; Indonesia; Japan; Malaysia; New Zealand; Philippines; Singapore; Thailand; United States require CO at the ratio of 25%.	2.80%
4	China + e-Advanced economies.	China at 25% ratio + Economies in Scenario 3 at the ratios specified.	5.93%
5	Sensitivity 1 - Low APEC wide e-CO adoption.	Assume e-CO is required for 5% of shipments for each APEC Economies.	1.30%
6	Sensitivity 2 – High APEC wide e-CO adoption.	Assume e-CO is required for 40% of shipments for each APEC Economies.	10.40%

Scenario 1 is the most likely scenario for APEC in the near future. Under this scenario, it is assumed that, for most economies, 25% of shipments require a CO, except for Indonesia, Thailand and Chinese Taipei. APEC-wide e-CO adoption would result in a

reduction of TTC by 6.79%. Assuming a higher ratio of shipments require a CO, the TTC reduction would be even greater, as in the case for Indonesia.[11]

If only Korea and Chinese Taipei adopted the e-CO, the benefit in terms of costs reduction would be limited. Under Scenario 2, trade transaction costs in Korea fell by 2% and by 2.9% in Chinese Taipei as a result of the e-CO adoption – resulting in a reduction of 0.18% for overall APEC economies. The lower figure for Korea is due to the relatively low ratio of document preparation for customs clearance and technical control in the Trading Across Borders data.[12]

Under Scenario 3[13], it is assumed that in addition to Korea and Chinese Taipei, more e-advanced economies (developed economies together with ASEAN-6) also require and adopt the e-CO. As a result, the savings in TTC increased from 0.18% (Scenario 2) to 2.8% (Scenario 3). Should China also adopt the e-CO, the savings of TTC would double to 5.93% (Scenario 4).

Scenario 5 and 6[14] project the reduction in TTC assuming an APEC wide e-CO adoption of 5% and 40% of the number of shipments require a CO. While a low ratio of shipments require a CO result in a savings of 1.3%, high ratio implies a potential savings of 10.4%.

From the above projection results, it is clear that the wider the e-CO adoption and the higher the rate of adoption would result in a significant reduction in TTC.

[11] Please refer to Appendix 12 for details.
[12] Please refer to Appendix 13 for details.
[13] Please refer to Appendix 13 for details.
[14] Please refer to Appendix 14 for details.

6. OTHER RECENT E-CO DEVELOPMENTS IN APEC

A brief review of other recent e-CO developments within APEC was conducted and described as follows.

6.1. HONG KONG, CHINA AND THE UK

In Hong Kong and China, the B2G service provider, Tradelink, works jointly with an e-CO service where the UK Customs accepts an electronic CO for a specific importer. Volumes and impact have not been analyzed.

6.2. ASEAN – CEPT FORM D (NOW ATIGA FORM D)

The entry into force of the ASEAN Trade in Goods Agreement (ATIGA) on 17 May 2010 is an interesting development. ATIGA was signed in Hua Hin, Thailand, on 26 February 2009 during the 14th ASEAN Summit Meeting. The new and strengthened provisions in ATIGA are expected to enhance intra-ASEAN trade facilitation. The ATIGA is an improvement over the AFTA-CEPT Scheme, which was implemented in 1993.

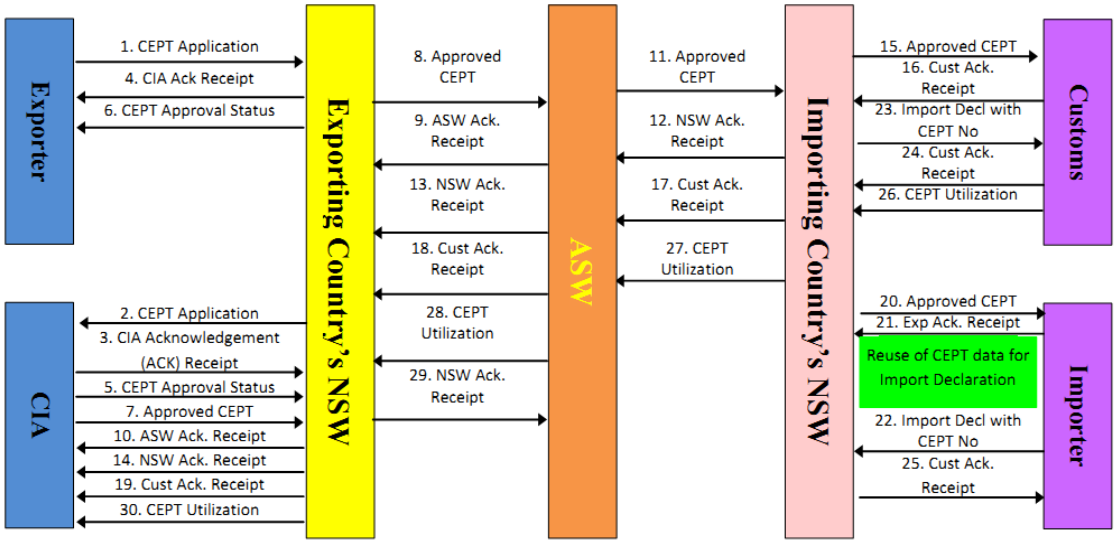
The objectives of ATIGA are to[15]:

- be at par with key principles of the Trade in Goods (TIG) Agreements with Dialogue Partners;
- set out disciplines in implementing the commitments and obligations in ASEAN such as the elimination and reduction of import duties, removal of Non-Tariff Barriers (NTBs) and enhanced transparency in concessions;
- ensure consistency of the provisions that are currently in various agreements, documents, decisions of the AFTA Council/ ASEAN Economic Ministers (AEM); and
- provide a legal framework to realise the free flow of goods in the region towards establishing a single market and production base by 2015.

The electronic exchange of CEPT Form D or ATIGA Form D amongst Indonesia, Malaysia, Philippines and Brunei Darussalam, with the business flow outlined in the diagram below, is a good reference for this study (see Noor 2010).

[15] MITI Weekly Bulletin, 15 June 2010.

Figure 6-1 The electronic exchange of CEPT Form D or ATIGA Form D



Source: Noor (2010).

A key driver for the electronic CEPT Form D is the control of fraudulent origin certificates which make up an estimated 20% of overall submissions. The volumes of COs exchanged electronically between Indonesia and Malaysia between September 2009 and May 2010 are provided in the table below. However, paper forms are still required as this is a pilot project. In cases where the importing customs authority would like more clarity on a specific CO, they may verify the information available on the electronic system.

Table 6-1 COO Document Volume Exchange between Indonesia and Malaysia

MONTH	COO DOCUMENT		COO RESPONSES	
	Indonesia - Malaysia	Malaysia - Indonesia	Malaysia - Indonesia	Indonesia - Malaysia
September 2009	753	220	218	220
October 2009	1.513	294	663	294
November 2009	1.623	288	1.252	288
December 2009	1.720	417	1.460	417
January 2010	2.080	500	1.784	500
February 2010	1.765	336	1.467	336
March 2010	2.323	491	1.905	491
April 2010	1.912	474	1.610	474
May 2010	710	267	581	267

Source: Noor (2010).

6.3. PAA PILOT PROJECT – PREFENTIAL E-CO FROM MALAYSIA TO JAPAN

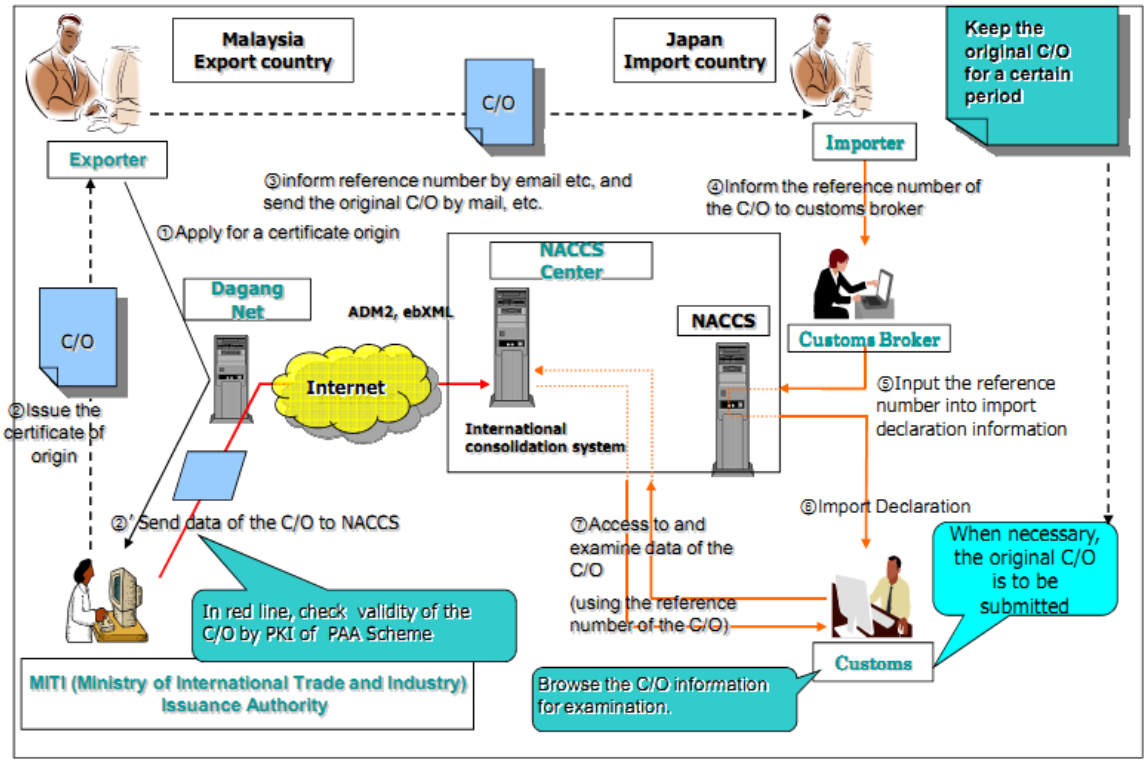
Pan Asian E-Commerce Alliance (PAA) is the first regional alliance established to develop commercial and IT infrastructure to facilitate trade across economies. Its current members consist of the leading customs and trade service providers of the most active Asian economies, namely China; Japan; Korea; Chinese Taipei; Hong Kong, China; Malaysia; Singapore; Thailand; Macau; Philippines and Indonesia.

The alliance aims to promote and provide secure, reliable and value-added IT infrastructure and facilities to enhance seamless trade globally. Combined membership of the parties has exceeded 260,000 organisations, representing almost all active trading enterprises in the Asian market.

Besides the e-CO case study of Korea and Chinese Taipei which leveraged on the existing PAA IT and legal infrastructure, a second e-CO exchange pilot project for has been developed between Japan and Malaysia.

The following diagram shows the e-CO flow from Malaysia to Japan. The flow is designed for the preferential COs issued by MITI Malaysia which leverages on the secure network established between the customs service providers DagangNet of Malaysia and NACCS of Japan and PAA members. The pilot test began in December 2010.

Figure 6-2 Recent Update of e-CO – Scheme



As shown in this chart, an exporter in Malaysia could apply for an e-CO via the web solution provided by DagangNet, the Customs Service Provider in Malaysia which had been integrated with the Ministry of International Trade and Industry (MITI). Upon approval of the application, MITI will issue the e-CO with a set of instructions to provide information to the exporter on the next steps; thereafter, the e-CO would be delivered to NACCS – the Customs Service Provider of Japan – under the PAA PKI (Public Key Infrastructure) framework. This process is similar to the case of Korea – Chinese Taipei e-CO.

As this is a pilot project, the Malaysian exporter would still be required to send the original paper CO to the Japanese importer. Thereafter, the Japanese importer would inform the importing customs broker to enter the CO reference number in the import declaration. Upon receiving the import declaration together with the CO reference number, the Japanese Customs would enter into the NACCS system to access the e-CO system.

7. CONCLUSION AND RECOMMENDATIONS

This study suggests that significant tangible benefits in terms of costs reductions have been experienced for both importers and exporters from the application of electronic CO between Chinese Taipei and Korea.

The savings for an exporter includes the following components:

- a time administrative savings of 4 hours 20 minutes (equivalent to US$74 at US$ 17 per hour);
- a direct expenses saving of US$143.50; and
- a reduction in processing time by two days on the export side of the process.

While the savings for an importer includes the following:

- a time administrative savings of 7 hours 15 minutes (equivalent to US$ 58 at US$ 8 per hour);
- a direct expenses saving of US$ 147;
- a reduction in processing time by three days on the import side of the process, and time saved from avoiding the need to send the paper CO to Chinese Taipei.

The survey results were also extrapolated to assess the potential impact assuming varying degrees of e-CO adoption in APEC economies. Based on the extrapolation, the reduction in trade transaction costs could range from 0.18% (assuming only Korea and Chinese Taipei have adopted e-CO) to 10.40% (assuming a high rate of APEC wide e-CO adoption). Under, Scenario 1, which is the most likely scenario for APEC in the near future, an APEC-wide e-CO adoption would result in a reduction of TTC by 6.79%.

Comments and recommendations for future development of the e-CO were collated from the interviews held with experts and representatives from the public and private sectors.

Moving forward, the following measures are recommended:

- Expanding the scope of the e-CO Pathfinder Project between Chinese Taipei and Korea by including other electronic B2B and B2G documents such as e-Invoice, e-Packing List, e-AWB, e-SPS etc. More outreach activities could also take place as the non-participating traders expressed in the interviews that they did not know about the Global e-CO service. Most of the traders also expressed interest in participating after the Global e-CO service was explained to them.
- Expanding the e-CO Pathfinder Project to APEC member economies who have FTA or EPA, as in most cases the CO is a mandatory document that is required to enjoy preferential tariff, hence the incentives for traders to adopt the e-CO will be strengthened. Based on the projections results in Chapter 5, higher rate and wider e-CO adoption will increase the benefits for APEC Economies.

- Expanding the e-CO Pathfinder Project to a larger number of APEC economies by focusing on economies that may adopt the e-CO more rapidly – namely the ASEAN-6, Australia, New Zealand, Japan, China, US, Canada, Hong Kong, China. Chapter 6 has highlighted several economies that have conducted e-CO initiatives with their trading partners. With initial work and infrastructure already in place, expanding the scope wider will only involve minimal additional costs.
- Establishing a set of applicable KPIs for evaluation of the cross border paperless trading projects.
- Lastly, it would be useful for APEC economies to consider collecting reliable statistics on the ratio of exports and imports in economies where the CO is required.

BIBLIOGRAPHY

1. APEC (2011). e-CO Pathfinder Project Update and Way Forward, 15th Paperless Trading Subgroup Meeting, 2011/SOM1/ECSG/PTS/011, Washington, D.C., United States, 4 March 2011.

2. APEC Policy Support Unit (2011). Aggregate Measurement of Trade Transaction Costs in APEC 2007-2010, prepared by ITS Global.

3. APEC Policy Support Unit (2010). Reducing trade transaction costs in APEC economies by 5% – Progress with achieving the goals of TFAP II: Interim Assessment of TFAP II (2006-08) & Proposed Approach for the Final Assessment (2006-10), APEC Policy Support Unit, August 2010.

4. APEC Policy Support Unit (2009). Reducing trade transaction costs in APEC economies by 5% - Progress with achieving the goals of TFAP II. Report Component 1: Measuring reductions in trade transaction costs in APEC. Prepared by ITS Global in association with the Centre for Customs and Excise Studies at the University of Canberra and the Australian APEC Study Centre at RMIT University, July 17, 2009.

5. APEC Secretariat (2010). APEC Guidance for Electronic Commerce (Stage 3): Lessons Learnt of Implementation of APEC Strategies and Actions toward a Cross-Border Paperless Trading Environment (Final Report), CTI 53/2009T, Moscow, December 2010.

6. APEC Secretariat (2010b). Assessment and Best Practices on Paperless Trading to Facilitate Cross Border Trade in the APEC Region, CTI 01/2009T, APEC Electronic and Commerce Steering Group and APEC Committee on Trade and Investment, June 2010.

7. Noor, Musawiq N. (2010). Cross Border Exchange of ASEAN CEPT Form D: Challenges, Lessons Learned and Implications, Presentation to UNESCAP Trade Facilitation Forum. 13 October 2010.

GLOSSARY

- **AFTA -** ASEAN Free Trade Area.
- **ATIGA** - ASEAN Trade in Goods Agreement.
- **CEPT** - Common Effective Preferential Tariff (among ASEAN) Form D - used within the ASEAN Free Trade Area (AFTA) for preferential tariffs, and are usually issued by Governments agencies directly.
- **CO –** Certificate of Origin: a Certificate of Origin (CO) is a document attesting that goods in a particular export shipment are wholly obtained or produced or manufactured or processed in a particular economy (economy of origin).
- **e-CO –** Electronic Certificate of Origin: electronic delivery of Certificates of Origin.
- **e-Invoice** – electronic commercial invoice.
- **e-Packing List** – electronic packing list.
- **e-AWB** – electronic air way bill.
- **e-SPS** – electronic sanitary and phytosanitary.
- **FOB value** - Under the Incoterm standard published by the International Chamber of Commerce, FOB stands for "Free On Board", and is always used in conjunction with a port of loading. FOB means that the seller pays for transportation of the goods to the port of shipment, plus loading costs. The buyer pays cost of marine freight transport, insurance, unloading, and transportation from the arrival port to the final destination.
- **Market Share** – the take-up percentage of usage of the e-CO service versus the total usage of the CO.

APPENDIX 1: WORLD BANK TRADING ACROSS BORDERS METHODOLOGY

Doing Business compiles procedural requirements for exporting and importing a standardized cargo of goods by ocean transport. Documents associated with every official procedure are counted—from the contractual agreement between the 2 parties to the delivery of goods—along with the time and cost necessary for completion. For exporting goods, procedures range from packing the goods at the warehouse to their departure from the port of exit. For importing goods, procedures range from the vessel's arrival at the port of entry to the cargo's delivery at the warehouse. The time and cost for ocean transport are not included. Payment is made by letter of credit, and the time, cost and documents required for the issuance or advising of a letter of credit are taken into account. The ranking on the ease of trading across borders is the simple average of the percentile rankings on its component indicators.

Local freight forwarders, shipping lines, customs brokers, port officials and banks provide information on required documents and cost as well as the time to complete each procedure. To make the data comparable across economies, several assumptions about the business and the traded goods are used.

Documents

All documents required per shipment to export and import the goods are recorded. It is assumed that the contract has already been agreed upon and signed by both parties. Documents required for clearance by government ministries, customs authorities, port and container terminal authorities, health and technical control agencies and banks are taken into account. Since payment is by letter of credit, all documents required by banks for the issuance or securing of a letter of credit are also taken into account. Documents that are renewed annually and that do not require renewal per shipment (for example, an annual tax clearance certificate) are not included.

Time

The time for exporting and importing is recorded in calendar days. The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost and is available to all trading companies, the fastest legal procedure is chosen. Fast-track procedures applying to firms located in an export processing zone are not taken into account because they are not available to all trading companies. Ocean transport time is not included. It is assumed that neither the exporter nor the importer wastes time and that each commits to completing each remaining procedure without delay. Procedures that can be completed in parallel are measured as simultaneous. The waiting time between procedures—for example, during unloading of the cargo—is included in the measure.

Cost

Cost measures the fees levied on a 20- foot container in U.S. dollars. All the fees associated with completing the procedures to export or import the goods are included. These include costs for documents, administrative fees for customs clearance and technical control, customs broker fees, terminal handling charges and inland transport. The cost does not include customs tariffs and duties or costs related to ocean transport. Only official costs are recorded.

APPENDIX 2: TRADING ACROSS BORDERS - CHINESE TAIPEI

Trading Across Borders

DB 2011 RANK	17	DB 2010 RANK	15	CHANGE IN RANK	- 2

Indicator	Chinese Taipei	East Asia & Pacific	OECD
Documents to export (number)	5	6.4	4.4
Time to export (days)	12	22.7	10.9
Cost to export (US$ per container)	645	889.8	1,058.7
Documents to import (number)	6	6.9	4.9
Time to import (days)	12	24.1	11.4
Cost to import (US$ per container)	700	934.7	1,106.3

Nature of Export Procedures	Duration (days)	US$ Cost	Nature of Import Procedures	Duration (days)	US$ Cost
Documents preparation	7	185	Documents preparation	7	240
Customs clearance and technical control	1	80	Customs clearance and technical control	1	80
Ports and terminal handling	2	180	Ports and terminal handling	2	180
Inland transportation and handling	2	200	Inland transportation and handling	2	200
Totals	12	645	Totals	12	700

Export documents	Import documents
Bill of lading	Bill of lading
Certificate of origin	Certificate of origin
Commercial invoice	Commercial invoice
Customs export declaration	Customs import declaration
Terminal handling receipts	Packing list
	Terminal handling receipts

APPENDIX 3: TRADING ACROSS BORDERS - KOREA

Trading Across Borders

DB 2011 RANK	8	DB 2010 RANK	8	CHANGE IN RANK	0

Indicator	Korea, Rep.	OECD	OECD
Documents to export (number)	3	…	4.4
Time to export (days)	8	…	10.9
Cost to export (US$ per container)	790	…	1,058.7
Documents to import (number)	3	…	4.9
Time to import (days)	7	…	11.4
Cost to import (US$ per container)	790	…	1,106.3

Nature of Export Procedures	Duration (days)	US$ Cost	Nature of Import Procedures	Duration (days)	US$ Cost
Documents preparation	2	60	Documents preparation	2	60
Customs clearance and technical control	1	30	Customs clearance and technical control	1	30
Ports and terminal handling	3	200	Ports and terminal handling	2	200
Inland transportation and handling	2	500	Inland transportation and handling	2	500
Totals	8	790	Totals	7	790

Export documents	Import documents
Packing list	Bill of lading
Bill of lading	Customs import declaration
Customs export declaration	Terminal handling receipts

APPENDIX 4: DISCUSSION OF TRADE TRANSACTION COSTS APPLIED TO CERTIFICATE OF ORIGIN

1. Definition of trade transaction cost

APEC defines trade transaction costs as those costs that are directly imposed by or largely influenced by the government in the process of trade. These transaction costs are confined to include only time costs as well as costs of transportation links in the international logistic chain. Direct trade costs associated with tariffs and non-tariff barriers, and wholesale and distribution costs are excluded from APEC's defined trade transaction costs. In order to be capable of estimating the numbers, APEC further breaks down total trade transaction costs into three components: costs at the border, costs near the border, and costs behind the border. These three types of costs are defined as follows:

A. Costs at the border: These costs are associated with customs procedures, mandatory technical standards, and immigration barriers in relation to the movement of merchandise and business people.

B. Costs near the border: These costs are associated with vessel transits and freight transfers at the international shipping and aviation ports and their associated terminals.

C. Costs behind the border: These costs are associated with the rest of the international logistic chain.

2. Total transaction costs for the trade with the CO requirement

Required process of using CO in the trade

Certificate of origin (CO) is an officially issued document verifying an export product's origin of country. The CO is required only for import of certain types of products from specific economies. If the CO is required as part of customs procedure, exporters of these products would have to apply for the CO from their country's authorized issuing agencies or customs office. After the CO is issued, they then send the issued CO and other necessary documents such as invoice to the importers of these products. Upon receiving these documents, importers hand them over to the customs brokers. Customs brokers are required to submit the CO to the importing customs office in order to clear import declaration. If the importing customs office doubts the authenticity of the CO, it will then be returned to the embassy office of the origin country for verification. If the CO is deemed to be authentic, the CO will be sent back to the customs office at the importing country to complete the customs procedure.

Total transaction costs for trade that uses CO

Use of CO in the customs procedure requires going through the following processes: application for CO, delivery of the CO from the exporting country to the customs office

of importing country, and verification of the CO. These processes involve explicit costs and time. These costs are defined as trade transaction costs directly associated with the CO.

If a trade transaction does not require the use of the CO, the total trade transaction costs will only includes costs of the entire customs procedure (without CO), costs near the border, and costs behind the border. However, if the trade transaction requires the use of the CO, the total trade transaction costs are equal to total trade transaction costs without CO requirement plus transaction costs directly associated with CO. Table 1 summarizes the difference in transaction costs between trading without CO and with CO.

Table 1. Total trade transaction cost with the requirement of CO

Cost (Explicit and Time costs)	**Without CO**	**With CO**
Costs at the border		
Costs of the customs procedure without CO	Yes	Yes
Costs directly associated with CO	No	Yes
Costs near the border	Yes	Yes
Costs behind the border	Yes	Yes

3. Trade transaction costs directly associated with CO

Components

Trade transaction costs directly associated with CO can be classified into two categories: explicit costs and time costs. These costs are borne by traders and the government. CO related explicit costs borne by traders include application fees, delivery costs of CO from exporter to the importer and the customs office at the importing economy, and miscellaneous costs for usage of paper and warehouse. In addition, traders also bear time costs for application, delivery and verification of the CO, and time cost in the event of any delays in customs procedure. CO related costs borne by the government include administrative costs arising from issuing the CO at the exporting economy and verifying the CO at the importing economy.

Paper CO and e-CO

CO has been traditionally issued in hardcopy, which contributes to a lot of paper costs. The newly issued electronic CO (e-CO) reduces paper costs in the customs procedure. Further, the e-CO eliminates the costs associated with delivery and verification of the CO. Therefore, trade transaction costs are expected to be reduced with the use of e-CO instead of paper CO. Table 2 summarizes the areas where cost savings can be expected.

Table 2. Trade transaction costs directly associated with CO

Cost	Paper CO	e-CO
Traders' Explicit costs		
CO application fee	Yes	Yes
Delivery cost of CO from exporter to importer	Yes	Yes (less)
Delivery cost of CO from importer to customs broker	Yes	No
Delivery cost of CO from customs broker to importing customs office	Yes	No
Other explicit costs		
Paper costs	Yes	No
Warehouse costs	Yes	No
Traders' Time costs		
Time cost of applying CO	Yes	Yes
Time cost of Delivering CO	Yes	No
Time cost of waiting CO verification	Yes	No
Time cost of delayed customs procedure due to CO	Yes (longer)	Yes (shorter)
Government's explicit costs		
Administrative costs of issuing CO	Yes	Yes
Administrative costs of verifying CO	Yes	No
Government's time costs		
Time cost of issuing CO	Yes	Yes
Time cost of verifying CO	Yes	No

4. Measuring Time costs

Explicit transaction costs can be measured directly based on the level of outlay. For instance, application fees and mailing costs are explicit. However, time costs are difficult to measure. The study may learn how much time is required for each step of the customs procedure. However, the value of time cost may not be clearly ascertained as it is mainly based on 'opportunity costs'.

In economics, the value of time cost is measured mainly based on the opportunity cost. The opportunity costs of time are the foregone benefits of alternative use of time. How much is the opportunity cost of having to spend one more day in the customs procedure? The opportunity costs are the foregone benefits from that single day for both government and traders.

From the view point of the traders, their forgone benefits would include depreciating quality of agricultural and fishing merchandises, loss of interest incomes from trading revenues, and so on. If the merchandises have to be kept in the warehouse of the customs due to a delay in import clearance, they have the potential risk to be damaged. Exporters are also affected due to a delay in the collection of trade revenues which leads to a potential loss of interest incomes generated from these revenues. In addition, importers may also have to postpone the sale of merchandise in the retail markets and lose any potential interest incomes.

In terms of opportunity costs to the government, a one day delay would have a negative impact on the economy's ease of doing business and trade efficiency, which may diminish the economy's competitiveness on a broader scale.

APPENDIX 5: DETAILED DESCRIPTION OF CO ISSUANCE AND ACCEPTANCE PROCESS

1. Associated Official and Semi-Official Institutes

The CO application process in Korea has evolved in three stages: paper Certificate of Origin (prior to 2006), domestic electronic Certificate of Origin (from 2006 to present), and global electronic Certificate of Origin with Chinese Taipei (starting from 2010).

Before 2006, the Korean Chamber of Commerce and Industry (KCCI)[16] only accepted paper application. Since 2006, KCCI offered online CO application services for traders. Although the application was already online, the Korean exporters still had to print the paper CO and mail it to the importers in Chinese Taipei. Therefore, the CO sent from Korea to Chinese Taipei was still in paper form at that time.

In order to implement the paperless CO system, in 2010, KTNET[17] together with the KCCI began to provide the global Certificate of Origin (e-CO) service. The online e-CO application system operated by KTNET allows traders to apply for the CO online, send the CO to Chinese Taipei electronically, and also to KCCI for its approval. After the approval is received electronically, the traders may select the Chinese Taipei recipient/importer to whom they would like to deliver the CO. So after 2010, traders who use KTNET's service no longer need to print out any paper CO.

Two corresponding institutes in Chinese Taipei participated in this global e-CO service. They are Trade-Van[18] and Customs Authority. Since mid-2010, KTNET has cooperated closely with its counterparts in Chinese Taipei, Trade-Van, in providing the global e-CO service for the trade between Korea and Chinese Taipei. Trade-Van provides the online services for delivering the e-CO to certain customs offices[19] on behalf of importers or import brokers. The entire procedure of the global e-CO services provided by KTNET and Trade-Van involves the following six steps:

First step: the Korean exporter applies for the export permit from the Korean government.
Second Step: the Korean exporter applies for the electronic CO by using the online application system of KTNET. The application awaits approval by KCCI.
Third Step: the Korean exporter receives an automated CO approval message from KTNET once the CO is approved.

---

[16] KCCI is Korea's largest private economic organization with 71 regional chambers and more than 120,000 members.
[17] KTNET was established in 1991 in order to promote trade business automation including eTrade, eLogistics, and eCustoms.
[18] Trade Van was formed in 1996 to ensure more effective utilizations of information exchange network in Chinese Taipei.
[19] Chinese Taipei Customs has several different offices across the island. The major ones are Kaoshiung Customs office in the south and Keelung Customs office in the north. Right now, Korean products do not need the CO if the products are imported to Chinese Taipei through Keelung port. However, the Kaoshiung customs office does need to check the CO.

Fourth Step: the Korean exporter indicates the Chinese Taipei importer's name and send out the e-CO via KTNET-Trade-Van online transmission system.
Fifth Step: the Chinese Taipei importer receives an automated CO receipt message from Trade-Van.
Sixth Step: the Chinese Taipei importer (or import broker on behalf of importer) confirms the contents of the CO online and send the e-CO electronically to the Chinese Taipei customs authority via the Trade-Van online system. At the same time, the e-CO will be sent to the designated customs broker to key in the CO number on the Import Declaration and complete the import clearance process.

2. Processing time and fee at Institutes

The CO requirement for the trade between Korea and Chinese Taipei raises transaction costs for traders on both sides. Traders incur manpower costs, fee costs, and implicit time costs relating to the administrative process and various charges imposed at the official and semi-official institutes in dealing with the CO issues. Therefore, interviews were conducted with KCCI, KTNET, and Taipei Mission Office in Korea, and Chinese Taipei Customs and Trade-Van in Chinese Taipei to clarify procedures relating to the CO requirements.

On July 7th of 2011, interviews were first conducted with the director from Kaoshiung customs office in charge of the CO verification. During the interview, Alicia Say from Trade-Van provided details of the cooperative mechanism between Trade-Van and Customs. Accompanied by two representatives from KTNET on July 13th, a 1.5 hour interview was conducted with three officials at KCCI, including the deputy director. The final interviewee was the director of economic affairs at Taipei Mission Office in Seoul.

From the interviews, the CO processing time and charges imposed were found to vary depending on the different evolutionary stages of Certificate of Origin. The summary of the details based on three evolutionary stages is provided as follows:

Paper Certificate of Origin (Paper CO): Prior to 2006

The application process and the certificate of origin were issued by the Korea Chamber of Commerce and Industry (KCCI) in paper format before 2006. The applicant had to submit required documents such as export permit, LC, and customs declaration to the KCCI. It would usually took about 10 minutes or more for KCCI to approve a non-preferential[20] paper CO. However, it took about three days for KCCI to approve a preferential paper CO.

The charged fee for a non-preferential CO is 5,000 Korean Won, while the charged fee for a preferential CO is only 500 Korean Won based on the government regulation. If an applicant has paid an annual membership fee to KCCI, there would be no extra charges per CO application.

[20] The CO for the countries with no free trade agreements.

The KCCI membership fee is based on the scale of individual companies. If a company's annual sale revenue is higher than 34 million Korean Won, then its membership fee is 1/10,000 of annual sale revenues. On the other hand, if a company's annual sale revenue were lower than 34 million Korean Won, its membership fee is a lump sum amount of 500,000 Korean Won. In reality, however, membership fees vary across the local offices of KCCI. The Seoul office of KCCI charges the lowest membership fees.

Domestic electronic Certificate of Origin (Printed Paper CO from online service): From 2006 Up to Now

The electronic Certificate of Origin was implemented by KCCI in 2006. Since then, the Korean applicants of the CO have been able to apply for the electronic COs from any location with internet access. In order to attract more users, the online application service provided by KCCI is currently free of charge.

However, in order to use the domestic electronic CO service, the applicant requires a digital signature for the online application which involves a registration fee of 55,000 Korean Won annually. With the online application system, applicants no longer need to visit the KCCI offices to apply for the CO. From the KCCI's perspective, there is little difference in the processing time required to approve a paper CO or a domestic e-CO. It still needs about 5~10 minutes to complete the approval process for a non-preferential e-CO; while it will take a longer time to approve for a preferential e-CO.

For instance, one day is needed to approve an e-CO for NAFTA and a maximum of three days (based on regulation) to approve for an e-CO for FTA. The approved electronic CO will include an official digital stamp. Previously, Korean exporters were required to print out the Certificate of Origin with the official digital stamp on a specific type of paper. However, with technical improvements, exporters may now print them on A4 paper.

The charged fee for a non-preferential CO was raised up from 5,000 to 7,000 Korean Won, while the charged fee for a preferential CO (NAFTA) was increased from 500 to 1,500 Korean Won in 2010. However, in some cases, Certificate of Origin used for exporting products to a few economies such as India, Singapore, and ASEAN is free of charge based on government regulation.

Although the CO is applied and approved online, the Korean exporters still have to print them out in the paper forms and mail the printed COs to the importers in Chinese Taipei. Therefore, from the importer's perspective, the COs are still paper COs.

As mentioned, the paper COs are verified by the Taipei Mission Office in Korea. Therefore, exporters or their brokers are required to visit Taipei Mission Office to apply for an authentication stamp on the paper COs. This process takes about 1 day for urgent cases and 2~3 days for the regular cases.

Most Korean exporters would seek the urgent authentication services from the Taipei Mission Office because the shipping time of products between the Korean port and the

Chinese Taipei port takes just three days. The Taipei Mission Office charges 28,000 Korean Won (US$25) per CO for the urgent service and 18,000 Korean Won (US$16) per CO for the regular service.

Global Electronic Certificate of Origin (Paperless CO): Starting From May of 2010

Chinese Taipei proposed to implement a globally paperless Certificate of Origin system with Korea in 2010. Korea was chosen as one of the pioneer participants in this paperless CO project because Korea has a well established and advanced e-infrastructure.

The global e-CO service for the trade between Korea and Chinese Taipei was launched in the middle of 2010. The Korean exporters may apply for an account on KTNET and then apply the e-CO through the KTNET online system. Once the global e-CO is approved by KCCI[21], the exporter would immediately receive an online message with an option to send the e-CO to the importer. Once the importer in Chinese Taipei receives the global e-CO online, the exporter will receive a confirmation receipt. The e-CO will then be signed by the importer and sent to the customs and the importer's customs broker via the Trade-Van online system. The e-CO transmission time from Korea to Chinese Taipei only takes a few seconds.

At the moment, both KTNET and Trade-Van do not charge any fees for usage of their services. However, it is understood that KTNET will eventually charge a certain usage fee of about US$3.5 to US$7 per CO. KTNET and Trade-Van will share the revenue.

[21] During the period of domestic e-CO service, KCCI updated weekly data of CO approval for KTNET every day. However, after the global e-CO service with Chinese Taipei was launched, the KCCI updated every data of CO approval immediately for KTNET.

Table 1. Required CO Processing Time at related Agencies

	Paper CO	**Domestic e-CO (Printed CO)**	**Global e-CO (Paperless)**
KTNET & Trade-Van			
Transmission time	N.A.	N.A.	15 seconds
KCCI			
Issuance(non-preferential)	10 minutes +	5~10 minutes	5~10 minutes
Issuance (preferential)	3 days	1 day for NAFTA and 3 days for FTA	1 day for NAFTA and 3 days for FTA
Taipei Mission Office			
Authentication	1 day (urgent)	1 day (urgent)	0
Authentication	2days (normal)	2days (normal)	0
Customs Office			
Verification time	4 hours	4 hours	3 hours
Verification time (if being suspicious)	10 days	10 days	3 hours

Note 1: Issuance time covers from CO application to final CO issuance.
Note 2: Transmission time of e-CO covers time from KTNET to Customs.
Note 3: If the customs office doubts the authenticity of the CO, the CO will be sent back to Taipei Mission Office. The Taipei Mission Office will visit the exporter to verify the original production place of the export product.

Table 2. Required CO Processing Fees at related Agencies

	Paper CO	**Domestic e-CO (Printed CO)**	**Global e-CO (Paperless)**
KTNET & Trade-Van			
Service fees	N.A.	N.A.	US$0 (now) US$7(eventually)
KCCI			
Issuance (member)	Free of charge	Free of charge	Free of charge
Issuance (non-member)	5,000 Won per CO (non-preferential) 500 Won per CO (preferential)	7,000 Won per CO (non-preferential) 1,500 Won per CO (NAFTA) Free (India, Singapore, ASEAN)	7,000 Won per CO
Taipei Mission Office			
Authentication (urgent)	28,000 Won	28,000 Won	0
Authentication (normal)	18,000 Won	18,000 Won	0
Customs Office			
Verification	zero	zero	Zero

Note 1: Membership fees are based on company scale

3. Associated Trade Processing Time involving CO

Besides the "Required CO Processing Time at related Agencies" shown in Table 1 above, there are several time cost related to a CO process. Table 3 below shows all the trade processing time involving CO for the exporters and importers. If there is a delay of CO processing, it is likely to also cause a delay on customs related procedures. According to

the interviews, we find that most of customs procedures can be completed on time if the CO can also arrived on time. If there is any error on the CO that it has to be returned back to Korea for reissuance, this will definitely delays the completion of customs procedures. As such, it will cause potential losses for both exporters and importers. These potential losses can be considered as the implicit costs of CO processing time. As shown in Table 3, if there is no CO returning, it normally takes about 6 days and 2 hours to complete the entire procedures associated with CO without the application of global eCO. On the other hand, it will only take about 1 day and 2 hours to complete the procedures associated with CO with the use of global eCO service.

Table 3. Trade Processing Time involving CO

#	Time	Before global eCO	After global eCO
1	Export Permit Applying Time	1 hour	1 hour
2	CO Processing Time at KCCI (application, approval and issuance of CO)	1 hour	1 hour
3	Printing CO Time	10 seconds	0
4	CO Authenticating Time	2 days (normal case)	0
5	CO Online Transmission Time to Chinese Taipei	N.A.	10 seconds
6	Mailing & Receiving CO	2 day	N.A.
7	Custom Declaration Submission with CO	1 day	0.5 day
8	Processing Time at Custom (clearance with CO)	1 day	0.5 day
9	TOTAL Time (Normal case with no CO returned)	~6 days 2 h	~1 day 2 h
10	Total Time (CO returned due to error) =Normal Time + Returning CO Time + Normal CO processing Time (for reissuance)	14 days 4 h (6 days 2 h + 2 days mailing time + 6 days 2 h necessary to repeat the normal CO process)	~1 day 2 h

In addition, before the adoption of global eCO service, if the CO is returned by Chinese Taipei Customs due to error, then it will take another 8 days for reissuance of CO (comprising of 6 days processing time and 2 days mailing time). This will cause some delays and result in business loss and interest loss for both exporters and importers.

.

APPENDIX 6: LIMITATIONS ON WORLD BANK TRADING ACROSS BORDERS DATA

Extracted from "Measurement of Trade Transaction Costs Reduction in APEC 2007-2010 (Direct Estimation)" (Reference 10) Section 5 A (ii)

ii The limitations in the data

A significant limitations relates to the quality of the Trading across Borders data panel provided by the World Bank Group to the PSU for the Assessment.

The World Bank collects the Trading across Borders data through an annual survey of selected experts from each economy. Their responses are based on the official procedures that would be involved in a hypothetical trade transaction. The transaction is the same for both import and export.

The survey methodology used by the World Bank has a number of acknowledged limitations:

- The hypothetical trade transaction is based on a container of dry cargo of widely traded, non-perishable merchandise that does not involve special phytosanitary or environmental safety standards. It may therefore not be representative of an economy's merchandise trade.

- It is based on a business that is located in the economy's largest city. This may not be representative of the experience in other locations.

- It is based on the experience of a limited liability company — or its legal equivalent — of a specified size. This may not be representative of the experience of other types of business, for example, sole proprietorships or partnerships.

- The issues the survey addresses may not represent the full set of issues that a business will encounter in importing or exporting merchandise.

- The measures of time taken in completing each of the four logistical stages involve an element of judgment by the expert respondents.

- It assumes that an importer or exporter has full information on what is required and does not waste time when completing the relevant procedures. In practice, they may take longer if the business lacks information or is unable to follow up promptly.

A number of APEC economies have expressed concerns about the reliability and representativeness of the Trading across Borders database, as well as the opacity of the process by which the Group annually revises the historical data in the light of the latest information.

Notwithstanding these concerns, the Trading across Borders database provides what is easily the most comprehensive and most comparable set of indicators on the transaction costs in international trade. A practical replacement is simply not in sight at this stage.

APPENDIX 7: NATURE OF EXPORT AND IMPORT PROCEDURES (COSTS AND DURATION) IN APEC – 2010*

Economies	Total (unit) Costs (USD) for Export +Import	Total (unit) Costs for Export Procedures	Total (unit) Costs for Export Procedures	Total Duration (days) for Export +Import	Total Duration (days) for Export	Total Duration (days) for Import
Australia	$2,179	$1,060	$1,119	17	9	8
Brunei Darussalam	$1,338	$630	$708	45	25	20
Canada	$3,270	$1,610	$1,660	18	7	11
Chile	$1,540	$745	$795	42	21	21
China	$1,045	$500	$545	45	21	24
Hong Kong, China	$1,225	$625	$600	11	6	5
Indonesia	$1,364	$704	$660	47	20	27
Japan	$2,070	$1,010	$1,060	21	10	11
Korea	$1,580	$790	$790	15	8	7
Malaysia	$900	$450	$450	32	18	14
Mexico	$3,300	$1,420	$1,880	24	12	12
New Zealand	$1,680	$855	$825	19	10	9
Papua New Guinea	$1,386	$664	$722	55	26	29
Peru	$1,740	$860	$880	29	12	17
Philippines	$1,405	$675	$730	29	15	14
The Russian Federation	$3,700	$1,850	$1,850	72	36	36
Singapore	$895	$456	$439	9	5	4
Chinese Taipei	$1,345	$645	$700	24	12	12
Thailand	$1,420	$625	$795	27	14	13
United States	$2,365	$1,050	$1,315	11	6	5
Viet Nam	$1,200	$555	$645	43	22	21

Source: World Bank, 2011 Doing Business Report, Trading Across Borders Data.

* For a single container.

APPENDIX 8 – SURVEY TRADE TRANSACTION COSTS TABLES

Table Appendix 8-1. Manpower Costs for Exporters Based on Survey

Manpower	**Units**	**Before global e-CO**	**After global e-CO**	**Category**
Preparing Export Document (minutes)	Minutes	20	20	1
Applying Export Permit	Minutes	20	20	1
Applying SPS Certificate	Minutes	20	20	1
Quarantine Inspection	Minutes	40	40	2
Visiting KCCI	Minutes	0	0	1
Queuing at KCCI	Minutes	0	0	1
Applying CO Online and Printing CO (operated by KCCI)	Minutes	10	0	1
Applying Global e-CO Online (operated by KTNET)	Minutes	0	10	1
Visiting Taipei Mission	Minutes	120	0	1
Queuing at Taipei Mission	Minutes	20	0	1
Communication	Minutes	120	0	2
Inland Transportation		120	120	4
Terminal Handling	Minutes	120	120	3
Total Manpower	***Minutes***	***610***	***350***	
Total Manpower Costs	***US$***	***$173.30***	***$99.43***	
Note: The average monthly wage in Korea is US$3000 for administration staff. It is US$ 3000/22 working days/8 working hours = US$17 per hour.		*0.28*	*Per Minute Charge*	

Exporter Mapower Costs Trading Across Borders Classification		**Before global e-CO**	**After global e-CO**	**Difference**
1. Documents preparation		$59.66	$19.89	$39.77
2. Customs clearance and technical control		$45.45	$11.36	$34.09
3. Ports and terminal handling		$34.09	$34.09	$0.00
4. Inland transportation and handling		$34.09	$34.09	$0.00
Total Manpower Costs		***$173.30***	***$99.43***	***$73.86***

Table Appendix 8-2. Fees and Expenses for Exporters

Assume Customs value = US$30,000/per consignment, taking the data from our case study interview.

Fees and Expenses	**Units**	**Before global e-CO**	**After global e-CO**	**Category**
Export Document	*US$*	$70.00	$70.00	2
Export Permit (=0.01% of Consignment Value, assumed US$30,000)	*US$*	$3.00	$3.00	2
SPS Certificate	*US$*	$0.00	$0.00	2
Travel Expenses to KCCI	*US$*	$0.00	$0.00	1
CO Fees at KCCI	*US$*	$7.00	$0.00	1
Global e-CO Fee for KTNET Service	*US$*	$0.00	$7.00	1
Printing CO Fee	*US$*	$0.50	$0.00	1
Visiting Taipei Mission Office Expenses	*US$*	$30.00	$0.00	1
Accommodation Fee for TMO (US$100/night if necessary - prorated to happen 1 in 10 times)	*US$*	$10.00	$0.00	1
Authentication Fees	*US$*	$25.00	$0.00	1
Express Mail Fee	*US$*	$26.00	$0.00	1
Communication Fee (US$26/hour)	*US$*	$52.00	$0.00	1
Inland Transportation and Handling	*US$*	$550.00	$550.00	4
Terminal Fee	*US$*	$250.00	$250.00	3
Total Fee and Expenses with overnight accommodation and KTNET charge	***US$***	**$1,023.50**	**$880.00**	

Fees and Charges ***Trading Across Borders Classification***		**Before global e-CO**	**After global e-CO**	***Difference***
1. Documents preparation		$150.50	$7.00	$143.50
2. Customs clearance and technical control		$73.00	$73.00	$0.00
3. Ports and terminal handling		$250.00	$250.00	$0.00
4. Inland transportation and handling		$550.00	$550.00	$0.00
Total		**$1,023.50**	**$880.00**	**$143.50**
Exporter Total ***Trading Across Borders Classification***				
1. Documents preparation		$210.16	$26.89	$183.27
2. Customs clearance and technical control		$118.45	$84.36	$34.09
3. Ports and terminal handling		$284.09	$284.09	$0.00
4. Inland transportation and handling		$584.09	$584.09	$0.00
Total		**$1,196.80**	**$979.43**	**$217.36**

Table Appendix 8-3 Manpower Costs for Importers based on Survey				
Manpower	**Units**	**Before global e-CO**	**After global e-CO**	**Category**
Preparing Import document	Minutes	90	90	1
Collect Delivery Order	Minutes	60	60	4
Terminal Handling	Minutes	120	120	3
CO Transmission to Customs Broker	Minutes	240	0	1
Applying Quarantine Certificate	Minutes	60	60	2
Customs Declaration	Minutes	20	20	2
CO Transmission to Customs	Minutes	45	0	2
Queuing at Customs	Minutes	30	0	2
Communication	Minutes	120	0	2
Inland Transportation	Minutes	120	120	4
Total manpower		**905**	**470**	
Total manpower costs		***$121***	***$63***	
Note: The average annual wage is US$8 per hour.				
Importer Manpower Costs Trading Across Borders Classification		**Before global e-CO**	**After global e-CO**	***Difference***
1. Documents preparation		*$44*	*$12*	$32
2. Customs clearance and technical control		*$37*	*$11*	$26
3. Ports and terminal handling		*$16*	*$16*	$0
4. Inland transportation and handling		*$24*	*$24*	$0
Total		***$121***	***$63***	***$58***

Table Appendix 8-4 Fees and Expenses for Importers				
Fees and Expenses	**Units**	**Before global e-CO**	**After global e-CO**	**Category**
Document Fees	*US$*	$80	$80	1
Delivery Order Fee	*US$*	$39	$39	4
Terminal Handling Fee	*US$*	$303	$303	3
CO Transmission Fees to Customs Broker	*US$*	$55		1
Declaration Fee for Trade-Van	*US$*	$2	$2	2
CO Transmission Fee to customs	*US$*	$8	$0	2
Warehouse Fees (if CO is returned due to error)	*US$*	$32	$0	2
Quarantine Inspection Fee	*US$*	$32	$32	2
Communication Fees US$26 per hour	*US$*	$52	$0	2
Inland Transportation and Handling	*US$*	$250	$250	4
Total Fees and Expenses	*US$*	**$852**	**$705**	
Fees and Charges ***Trading Across Borders Classification***		**Before global e-CO**	**After global e-CO**	***Difference***
1. Documents preparation		$135	$80	$55
2. Customs clearance and technical control		$126	$34	$92
3. Ports and terminal handling		$303	$303	$0
4. Inland transportation and handling		$289	$289	$0
Total		**$852**	**$705**	***$147***
Importer Total ***Trading Across Borders Classification***				
1. Documents preparation		$179	$92	$87
2. Customs clearance and technical control		$163	$44	$118
3. Ports and terminal handling		$319	$319	$0
4. Inland transportation and handling		$313	$313	$0
Total		**$973**	**$768**	***$205***

Table Appendix 8-5 Business Loss Avoidance Calculation

Assume in 7% of the cases the CO is rejected by Chinese Taipei Authorities and has to be re-issued. This results in a delay of 8 days where the goods are on hold, resulting in loss of revenue opportunities, interest loss (3% p.a.) and compensation (20%) to be paid by the exporters to the importer

Business Loss for Exporter:	**Before global e-CO**	**After global e-CO**	***Category***
Interest Loss = US$30,000 cost per consignment (FOB value) *3% interest p.a.*1/365 *8 days	$19.73	$0.00	2
Compensation to Importers for Revenue Loss = 1080 boxes *50% Price Drop *US$6 per box * 20% compensation share	$648.00	$0.00	2
Cost to Re-Issue CO[1]	$141.00	$0.00	2
Sub-Total	*$808.73*	$0.00	2
Happens in 7% of the Cases - Total	**$56.61**	**$0.00**	2
Business Loss for Importer:			
Interest Loss = US$32,400 (wholesale price) per consignment *3% (interest p.a.) *1/365 *8 days	$21.30	$0.00	2
Loss in Sales Revenues = 1080 boxes *50% *US$6 * 80% Compensation Share	$2,592.00	$0.00	2
Cost to Re-Issue CO[2]	$131.00	$0.00	2
Sub-Total	*$2,744.30*	$0.00	2
Happens in 7% of the Cases - Total	**$192.10**	**$0.00**	2

Notes:

[1] Additional direct cost to reissue CO = CO fees at KCCI (US$7) + Printing CO fee (US$0.50) + Visiting Taipei Mission Office fee (US$30) + expected accommodation fee for TMO (US$10) + Authentication fee (US$25) + Express Mail Fees (US$26) + Manpower costs (US$42.5) = US$141. The manpower costs are calculated as follows: (applying and printing CO 10 minutes +visiting and queuing at TMO 2 hours 20 minutes)*US$17/h=US$42.5.

[2] Additional direct cost to reissue CO = Fees for returning CO back Korea (US$26) + CO transmission fee to customs broker (US$55) + CO transmission fee to Customs (US$8) + Manpower costs (US$42) = US$131. The manpower costs are calculated as follows: (CO transmission to customs broker 4 h + CO transmission to Customs 45 min + Queuing at Customs 30 min) *US$8/h= US$42)

Table Appendix 8-6 Total Cost Summary Based on Survey

Total Direct and Business Loss Costs	**Before global e-CO**	**After global e-CO**	***Difference***
Exporter Total *Trading Across Borders Classification*			
1. Documents preparation	$210	$27	***$183***
2. Customs clearance and technical control	$175	$84	***$91***
3. Ports and terminal handling	$284	$284	***$0***
4. Inland transportation and handling	$584	$584	***$0***
Total	**$1,253**	**$979**	***$274***
Importer Total *Trading Across Borders Classification*			
1. Documents preparation	$179	$92	*$87*
2. Customs clearance and technical control	$355	$44	*$310*
3. Ports and terminal handling	$319	$319	*$0*
4. Inland transportation and handling	$313	$313	*$0*
Total	**$1,165**	**$768**	***$397***

APPENDIX 9: TRADE VALUES AND CONTAINER VOLUMES FOR INTRA-APEC TRADES (EXPORTS AND IMPORTS), 2010

	Total Shipments 2010 (TEU)	Estimated 2010 Export Shipments to APEC (TEU)	Estimated 2010 Import Shipments from APEC (TEU)	Exports to APEC (US$ Million)	Imports from APEC (US$ Million)	2010 Total Trade with APEC (US$ Million)
Australia	5,840,000	2,237,014	2,057,102	$163,171	$150,048	$313,219
Brunei Darussalam	80,000	54,090	19,346	$7,639	$2,732	$10,371
Canada	4,280,000	1,736,375	1,743,423	$331,629	$332,975	$664,604
Chile	2,610,000	872,841	628,257	$42,570	$30,642	$73,212
China	110,430,000	35,833,167	30,804,056	$965,130	$829,676	$1,794,806
Hong Kong, China	13,030,000	5,010,593	5,904,893	$316,811	$373,356	$690,167
Indonesia	8,480,000	3,343,521	3,065,007	$115,715	$106,076	$221,791
Japan	14,570,000	5,846,805	4,626,651	$588,191	$465,443	$1,053,634
Korea	11,220,000	3,922,505	3,747,656	$309,629	$295,827	$605,456
Malaysia	5,790,000	2,524,832	2,131,547	$186,105	$157,116	$343,221
Mexico	2,760,000	1,179,355	1,174,174	$249,264	$248,169	$497,433
New Zealand	2,020,000	726,371	745,674	$22,341	$22,935	$45,276
Papua New Guinea	90,000	32,099	27,473	$5,307	$4,542	$9,849
Peru	870,000	275,523	254,143	$19,099	$17,617	$36,715
Philippines	4,050,000	1,462,843	1,923,711	$48,322	$63,545	$111,867
The Russian Federation	2,650,000	327,892	249,675	$83,165	$63,327	$146,492
Singapore	5,400,000	2,159,012	1,767,832	$265,690	$217,551	$483,241
Chinese Taipei	6,140,000	2,628,711	2,058,879	$225,179	$176,367	$401,546
Thailand	6,520,000	2,303,175	2,214,292	$134,226	$129,046	$263,272
United States	30,410,000	7,252,128	11,919,204	$774,046	$1,272,180	$2,046,226
Viet Nam	4,740,000	1,299,003	2,374,088	$46,761	$85,462	$132,223
Total	**241,980,000**	**40,151,530**	**41,336,740**	**$4,899,990**	**$5,044,630**	**$9,944,620**

Note: The container volumes for intra-APEC trades are estimated based on Trade Value for each economy.

APPENDIX 10: INTRA-APEC TRADE TRANSACTION COSTS AND ECONOMY CONTRIBUTION, 2010

APEC Trade Transaction Cost Contribution - Based on World Bank 2010 Trading Across Borders Costs								
	Unit Trade Transaction Cost (Export Total) US$ per TEU	Unit Trade Transaction Cost (Import Total) US$ per TEU	Estimated 2010 Export Shipments to APEC (TEU)	Estimated 2010 Import Shipments from APEC (TEU)	2010 Export Trade Transaction Costs (US$ Million)	2010 Import Trade Transaction Costs (US$ million)	2010 Total Trade Transaction Costs (US$ Million)	2010 Trade Transaction Cost Contribution
Australia	1,060	1,119	2,237,014	2,057,102	$2,371	$2,302	$4,673	4.23%
Brunei Darussalam	630	708	54,090	19,346	$34	$14	$48	0.06%
Canada	1,610	1,660	1,736,375	1,743,423	$2,796	$2,894	$5,690	4.99%
Chile	745	795	872,841	628,257	$650	$499	$1,150	1.16%
China	500	545	35,833,167	30,804,056	$17,917	$16,788	$34,705	32.00%
Hong Kong, China	625	600	5,010,593	5,904,893	$3,132	$3,543	$6,675	5.59%
Indonesia	704	660	3,343,521	3,065,007	$2,354	$2,023	$4,377	4.20%
Japan	1,010	1,060	5,846,805	4,626,651	$5,905	$4,904	$10,810	10.55%
Korea	790	790	3,922,505	3,747,656	$3,099	$2,961	$6,059	5.53%
Malaysia	450	450	2,524,832	2,131,547	$1,136	$959	$2,095	2.03%
Mexico	1,420	1,880	1,179,355	1,174,174	$1,675	$2,207	$3,882	2.99%
New Zealand	855	825	726,371	745,674	$621	$615	$1,236	1.11%
Papua New Guinea	664	722	32,099	27,473	$21	$20	$41	0.04%
Peru	860	880	275,523	254,143	$237	$224	$461	0.42%
Philippines	675	730	1,462,843	1,923,711	$987	$1,404	$2,392	1.76%
The Russian Federation	1,850	1,850	327,892	249,675	$607	$462	$1,068	1.08%
Singapore	456	439	2,159,012	1,767,832	$985	$776	$1,761	1.76%
Chinese Taipei	645	700	2,628,711	2,058,879	$1,696	$1,441	$3,137	3.03%
Thailand	625	795	2,303,175	2,214,292	$1,439	$1,760	$3,200	2.57%
United States	1,050	1,315	7,252,128	11,919,204	$7,615	$15,674	$23,288	13.60%
Viet Nam	555	645	1,299,003	2,374,088	$721	$1,531	$2,252	1.29%
Total	**17,779**	**19,168**	**40,151,530**	**41,336,740**	**$55,997**	**$63,002**	**$118,999**	**100.00%**

APPENDIX 11: APEC EXTRAPOLATED UNIT TRADE TRANSACTION COST (TTC) FOR E-CO SHIPMENTS - US$ /TEU (2010)

	Nature of Export Procedures						Nature of Import Procedures					
Economy	**Documents preparation**	**Customs clearance and technical control**	**Ports and terminal handling**	**Inland transportation and handling**	**Unit TTC (Export Total) US$ per TEU**	**% Reduction vs Base Unit TTC**	**Documents preparation**	**Customs clearance and technical control**	**Ports and terminal handling**	**Inland transportation and handling**	**Unit TTC (Import Total) US$ per TEU**	**% Reduction vs Base Unit TTC**
Australia	36	22	350	380	788	25.6%	138	15	350	380	883	21.1%
Brunei Darussalam	24	24	240	150	438	30.4%	73	10	315	171	569	19.6%
Canada	29	17	600	750	1396	13.3%	95	9	650	750	1504	9.4%
Chile	17	24	210	350	601	19.3%	95	6	210	350	661	16.8%
China	32	34	85	95	246	50.9%	134	9	80	135	357	34.4%
Hong Kong, China	12	24	265	220	521	16.7%	49	5	265	200	519	13.5%
Indonesia	27	81	165	160	433	38.5%	108	16	165	160	449	32.0%
Japan	14	77	250	490	831	17.7%	103	14	250	495	862	18.7%
Korea	8	14	200	500	722	8.6%	31	4	200	500	735	7.0%
Malaysia	11	31	135	165	342	24.0%	44	8	135	165	352	21.8%
Mexico	26	72	170	900	1168	17.8%	118	50	300	950	1418	24.6%
New Zealand	26	24	300	300	650	23.9%	90	6	300	300	696	15.6%
Papua New Guinea	28	28	174	214	444	33.2%	112	7	233	214	566	21.6%
Peru	19	48	330	280	677	21.2%	77	15	330	280	702	20.2%
Philippines	19	41	270	170	500	25.9%	87	23	200	175	485	33.5%
The Russian Federation	26	241	250	900	1417	23.4%	103	62	250	900	1315	28.9%
Singapore	13	15	180	140	348	23.6%	45	4	180	140	369	15.9%
Chinese Taipei	24	39	180	200	442	31.4%	123	10	180	200	513	26.7%
Thailand	35	24	85	220	364	41.8%	154	9	200	220	584	26.6%
United States	24	29	400	400	853	18.7%	105	11	420	600	1137	13.6%
Viet Nam	16	48	150	180	394	29.0%	49	12	175	280	516	20.1%

APPENDIX 12: INTRA-APEC TRADE TRANSACTION COSTS IMPROVEMENT WITH GLOBAL E-CO ADOPTION BY ALL APEC ECONOMIES, 2010

Survey Results Applied to World Bank 2010 Trading Across Borders Costs with Projected Ratio of Shipments Requiring CO											
	Ratio of Export Shipments Requiring CO	**Estimated Export Shipments to APEC with e-CO (TEU)**	**Estimated Export Shipments to APEC without e-CO (TEU)**	**Ratio of Import Shipments Requiring CO**	**Estimated Import Shipments from APEC with e-CO (TEU)**	**Estimated Import Shipments from APEC without e-CO (TEU)**	**Export Trade Transaction Costs (US$ Million)**	**Import Trade Transaction Costs (US$ million)**	**Total Trade Transaction Costs (US$ Million)**	**Total Trade Transaction Costs Contribution**	**Trade transaction Costs Improvement (%)**
AUS	25%	559,253	1,677,760	25%	514,276	1,542,827	$2,219	$2,181	$4,400	4.0%	5.8%
BD	25%	13,522	40,567	25%	4,837	14,510	$31	$13	$45	0.0%	6.8%
CDA	25%	434,094	1,302,281	25%	435,856	1,307,567	$2,703	$2,826	$5,529	5.0%	2.8%
CHL	25%	218,210	654,631	25%	157,064	471,193	$619	$478	$1,097	1.0%	4.6%
PRC	25%	8,958,292	26,874,875	25%	7,701,014	23,103,042	$15,639	$15,343	$30,982	27.9%	10.7%
HKC	25%	1,252,648	3,757,945	25%	1,476,223	4,428,670	$3,001	$3,423	$6,424	5.8%	3.8%
INA	60%	2,006,113	1,337,408	60%	1,839,004	1,226,003	$1,811	$1,634	$3,445	3.1%	21.3%
JPN	25%	1,461,701	4,385,104	25%	1,156,663	3,469,988	$5,644	$4,675	$10,319	9.3%	4.5%
ROK	25%	980,626	2,941,879	25%	936,914	2,810,742	$3,032	$2,909	$5,941	5.4%	2.0%
MAS	25%	631,208	1,893,624	25%	532,887	1,598,660	$1,068	$907	$1,975	1.8%	5.7%
MEX	25%	294,839	884,516	25%	293,544	880,631	$1,600	$2,072	$3,672	3.3%	5.4%
NZ	25%	181,593	544,778	25%	186,418	559,255	$584	$591	$1,175	1.1%	4.9%
PNG	25%	8,025	24,075	25%	6,868	20,604	$20	$19	$38	0.0%	6.9%
PE	25%	68,881	206,642	25%	63,536	190,607	$224	$212	$437	0.4%	5.2%
PHL	25%	365,711	1,097,132	25%	480,928	1,442,783	$923	$1,287	$2,210	2.0%	7.6%
RUS	25%	81,973	245,919	25%	62,419	187,256	$571	$429	$1,000	0.9%	6.5%
SIN	25%	539,753	1,619,259	25%	441,958	1,325,874	$926	$745	$1,672	1.5%	5.1%
CT	10%	262,871	2,365,840	10%	205,888	1,852,991	$1,642	$1,403	$3,045	2.7%	2.9%
THA	20%	460,635	1,842,540	20%	442,858	1,771,433	$1,319	$1,667	$2,986	2.7%	6.7%
USA	25%	1,813,032	5,439,096	25%	2,979,801	8,939,403	$7,258	$15,142	$22,400	20.2%	3.8%
VN	25%	324,751	974,252	25%	593,522	1,780,566	$669	$1,455	$2,123	1.9%	5.7%
Total		20,917,731	60,110,125		20,512,477	58,924,606	$51,504	$59,410	$110,914	100.0%	**6.79%**

APPENDIX 13: APEC TRADE TRANSACTION COSTS IMPROVEMENT WITH VARIOUS ADOPTION LEVELS OF GLOBAL E-CO, 2010

	Chinese Taipei and Korea Only			Developed economies with ASEAN-6			Developed economies with ASEAN-6 + China		
	Ratio of Shipments Requiring CO	2010 Total Trade Transaction Costs (US$ Million)	Trade transaction Costs Improvement (%)	Ratio of Shipments Requiring CO	2010 Total Trade Transaction Costs (US$ Million)	Trade transaction Costs Improvement (%)	Ratio of Shipments Requiring CO	2010 Total Trade Transaction Costs (US$ Million)	Trade transaction Costs Improvement (%)
AUS	0%	$4,673	0.0%	25%	$4,400	5.85%	25%	$4,400	5.85%
BD	0%	$48	0.0%	25%	$45	6.83%	25%	$45	6.83%
CDA	0%	$5,690	0.0%	25%	$5,529	2.83%	25%	$5,529	2.83%
CHL	0%	$1,150	0.0%	0%	$1,150	0.00%	0%	$1,150	0.00%
PRC	0%	$34,705	0.0%	0%	$34,705	0.00%	25%	$30,982	10.73%
HKC	0%	$6,675	0.0%	25%	$6,424	3.75%	25%	$6,424	3.75%
INA	0%	$4,377	0.0%	25%	$3,988	8.87%	25%	$3,988	8.87%
JPN	0%	$10,810	0.0%	25%	$10,319	4.54%	25%	$10,319	4.54%
ROK	25%	$5,941	2.0%	25%	$5,941	1.96%	25%	$5,941	1.96%
MAS	0%	$2,095	0.0%	25%	$1,975	5.75%	25%	$1,975	5.75%
MEX	0%	$3,882	0.0%	0%	$3,882	0.00%	0%	$3,882	0.00%
NZ	0%	$1,236	0.0%	25%	$1,175	4.95%	25%	$1,175	4.95%
PNG	0%	$41	0.0%	0%	$41	0.00%	0%	$41	0.00%
PE	0%	$461	0.0%	0%	$461	0.00%	0%	$461	0.00%
PHL	0%	$2,392	0.0%	25%	$2,210	7.59%	25%	$2,210	7.59%
RUS	0%	$1,068	0.0%	0%	$1,068	0.00%	0%	$1,068	0.00%
SIN	0%	$1,761	0.0%	25%	$1,672	5.05%	25%	$1,672	5.05%
CT	10%	$3,045	2.9%	10%	$3,045	2.92%	10%	$3,045	2.92%
THA	0%	$3,200	0.0%	20%	$2,986	6.69%	20%	$2,986	6.69%
USA	0%	$23,288	0.0%	25%	$22,400	3.81%	25%	$22,400	3.81%
VN	0%	$2,252	0.0%	0%	$2,252	0.00%	0%	$2,252	0.00%
Total		**$118,789**	**0.18%**		**$115,667**	**2.80%**		$111,944	**5.93%**

APPENDIX 14: APEC TRADE TRANSACTION COSTS IMPROVEMENT WITH HIGH AND LOW SENSITIVITES OF GLOBAL E-CO ADOPTION, 2010

Survey Results Applied to World Bank 2010 Trading Across Borders Costs with Projected Ratio of Shipments Requiring CO						
	Low Sensitivity (5% of Shipments Require CO)			**High Sensitivity (40% of Shipments Require CO)**		
	Ratio of Shipments Requiring CO	**2010 Total Trade Transaction Costs (US$ Million)**	**Trade transaction Costs Improvement (%)**	**Ratio of Shipments Requiring CO**	**2010 Total Trade Transaction Costs (US$ Million)**	**Trade transaction Costs Improvement (%)**
AUS	5%	$4,618	1.2%	40%	$4,236	9.4%
BD	5%	$47	1.4%	40%	$43	10.9%
CDA	5%	$5,657	0.6%	40%	$5,432	4.5%
CHL	5%	$1,139	0.9%	40%	$1,066	7.3%
PRC	5%	$33,960	2.1%	40%	$28,748	17.2%
HKC	5%	$6,624	0.8%	40%	$6,274	6.0%
INA	5%	$4,299	1.8%	40%	$3,755	14.2%
JPN	5%	$10,711	0.9%	40%	$10,025	7.3%
ROK	5%	$6,036	0.4%	40%	$5,870	3.1%
MAS	5%	$2,071	1.1%	40%	$1,903	9.2%
MEX	5%	$3,840	1.1%	40%	$3,546	8.7%
NZ	5%	$1,224	1.0%	40%	$1,138	7.9%
PNG	5%	$41	1.4%	40%	$37	11.0%
PE	5%	$456	1.0%	40%	$422	8.3%
PHL	5%	$2,355	1.5%	40%	$2,101	12.1%
RUS	5%	$1,055	1.3%	40%	$958	10.3%
SIN	5%	$1,743	1.0%	40%	$1,618	8.1%
CT	5%	$3,091	1.5%	40%	$2,770	11.7%
THA	5%	$3,146	1.7%	40%	$2,772	13.4%
USA	5%	$23,111	0.8%	40%	$21,867	6.1%
VN	5%	$2,226	1.1%	40%	$2,046	9.2%
Total		**$117,452**	**1.30%**		**$106,627**	**10.40%**