National Center for Risk and Economic Analysis of Terrorism Events
University of Southern California

and

Econometrica, Inc.

ECONOMIC BENEFITS OF CBP CENTERS OF EXCELLENCE AND EXPERTISE

by

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with

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Report to U.S. Customs and Border Protection

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About CREATE

The National Center for Risk and Economic Analysis of Terrorism Events (CREATE) was the first university-based Center of Excellence (COE) funded by University Programs of the Science and Technology (S&T) Directorate of the Department of Homeland Security (DHS). CREATE started operations in March of 2004 and has since been joined by additional DHS centers. Like other COEs, CREATE contributes university-based research to make the Nation safer by taking a longer-term view of scientific innovations and breakthroughs and by developing the future intellectual leaders in homeland security.

CREATE's mission is to improve our Nation's security through research and development of advanced models and tools to evaluate risks, costs and consequences of terrorism and natural and man-made hazards and to guide economically viable investments in homeland security. We are accomplishing our mission through an integrated program of research, education and outreach that is designed to inform and support decisions faced by elected officials and governmental employees at the national, state, and local levels. We are also working with private industry, both to leverage the investments being made by the Department of Homeland Security in these organizations, and to facilitate the transition of research toward meeting the security needs of our nation.

CREATE employs an interdisciplinary approach merging engineers, economists, decision scientists, and system modelers in a program that integrates research, education and outreach. This approach encourages creative discovery by employing the intellectual power of the American university system to solve some of the country's most pressing problems. The Center is the lead institution where researchers from around the country come to assist in the national effort to improve homeland security through analysis and modeling of threats. The Center treats the subject of homeland security with the urgency that it deserves, with one of its key goals being producing rapid results, leveraging existing resources so that benefits accrue to our nation as quickly as possible.

By the nature of the research in risk, economics, risk management and operations research, CREATE serves the need of many agencies at the DHS, including the Transportation Security Administration, U.S. Customs and Border Protection (CBP), Immigration and Customs Enforcement, FEMA and the US Coast Guard. In addition, CREATE has developed relationships with clients in the Offices of National Protection and Programs, Intelligence and Analysis, the Domestic Nuclear Detection Office and many State and Local government agencies. CREATE faculty and students take both the long-term view of how to reduce terrorism risk through fundamental research, and the near-term view of improving the cost-effectiveness of counter-terrorism policies and investments through applied research.

About Econometrica

Econometrica is a private research and management organization that has extensive capabilities and experience in evaluation and technical assistance activities. Our work has been conducted on behalf of a diverse range of U.S. Government agencies, including several component agencies of the Department of Homeland Security (the U.S. Coast Guard, Immigration and Customs Enforcement, and the Private Sector Office.) Econometrica's primary services include program evaluation, economic analysis, statistical analysis, risk analysis, cost-benefit analysis, policy analysis, simulation modeling, survey research, operations research, training, data graphics design and production, and technical writing and editing. Econometrica's work for U.S. Government agencies encompasses short- and mid-term projects, as well as long-term, ongoing, and quick-turnaround efforts.

TABLE OF CONTENTS

Organization of Report

This report presents the results of research on the economic benefits of the Centers of Excellence and Expertise (CEEs). The results are presented in three parts, with the final benefits estimates resulting from the research presented first in Part I. The research supporting the results is presented in Parts II and III.

The report is organized for the convenience of readers already familiar with CBP import processes, the CEE program and the results of earlier phases of this study. Readers unfamiliar with the import process or the CEE program may want to start with Part III to provide context for the analysis in Part I.

Key Findings presents the 1-page summary of the key results of the study.

Executive Summary presents a concise overview summary of the study analysis, key results, benefits and savings attributed to the CEEs, and data and statistical methodology used in the study.

Part I presents the results of the study and documents the data, methodology and findings of the statistical analysis used to estimate the direct impacts of the CEEs on the rate of trade exams and various CBP forms. It also presents the final estimates of CEE benefits from cost savings to participating importers and the potential benefits of expanding CEE membership.

Part II describes the survey research and data analysis the team conducted related to importer costs. The estimates of the unit cost to importers of exams and compliance with various CBP forms are used in the benefits calculations in Part I.

Part III provides information on the logistics of processing imports, the associated documents and forms, the role of the CEEs in general, the role of the Electronics CEE—one of the first CEE's to open—in particular, and trade in the electronics sector.

Key Findings[1]

The study found evidence that some of the CEEs generated measurable cost savings for participating accounts by reducing the frequency of trade exams and some CBP forms.

- CEE membership is associated with a reduction of 38 exams per 100,000 entries in the electronics CEE and a reduction of 13 exams per 100,000 entries in the automotive CEE.
- In FY2014, these reductions resulted in a realized savings in trade exam costs of approximately 85% for members of the electronics CEE and 29% for members of the automotive CEE.
- The net result was a combined savings of over $1 million totaled across all of the members in the Automotive and Electronics CEE in FY 2014.
- Estimated reductions in Form 28 issuance rates ranged from a 78% decrease for the Electronics CEE to a 31% decrease for the Apparel CEE.
- Annual aggregates savings from avoided Form 28 issuances totaled across all participants in FY2014 ranged from $11,000 in the Apparel CEE to $26,000 in the Electronics CEE.

Significant benefits could potentially be achieved from expanding membership to cover more importers.

- If all of the CEEs could generate the same degree of exam and form rate reductions as the electronics and automotive CEEs and all "Trusted" traders participated:
    - Total importer savings summed across all CEE participants could yield savings of between $7 million and $18 million annually[2].
    - CBP could redirect approximately 9,000 exams, 4,000 Form 28s, and 3000 Form 29s from the shipments of lower-risk participating importers to higher-risk shipments from less well known importers.

[1] All calculations and assumptions behind these findings are fully described in the Executive Summary of this report.

[2] The lower bound estimate was calculated by multiplying the estimated reductions in the rates of exams, Form 28s and Form 29s for members of the automotive CEE by the total number of entries from IORS that participated in any CBP trade partnership program in FY2014. This product is the aggregate annual reduction in exams and forms for all participants in the expanded CEE program. The $7 million lower bound was obtained by multiplying the estimated form and exam reductions by the unit costs of forms and exams to importers. The upper bound estimate of $18 million was calculated using the same method but with the estimated rate reductions in the Electronics CEE.

Executive Summary

ES 1.0 Executive Summary Part I – Key Results of the Study, Data, Statistical Methodology

ES 1.1 Overview of the Analysis

The establishment and operation of the CEEs potentially impacts importers and the trade community in a variety of ways. This research focuses on the benefits derived from the effects of CEEs on the following four outcomes:

- Trade exams
- Form 28 Requests for Information
- Form 29 Notices of Action
- Form 4647 Notices to Mark and/or Redeliver

The analysis of the effects of each of the 10 CEEs on these outcomes proceeds in three steps:

1. Compile CBP administrative data on entries, exams and forms for FY2008-FY2014.
2. Apply a Difference-in-Difference (DID) statistical model to estimate the reductions in the rates of trade exams and forms associated with joining a CEE.
3. Combine the exam and form unit cost estimates developed in Part II of this report with estimated changes in exam and form rates to estimate the:

    - cost savings realized by CEE participants
    - potential benefits from the expansion of CEE membership to additional participants

ES 1.2. Key Results

The study found evidence that some of the CEEs have already generated measurable cost savings to participating accounts by reducing the frequency of trade exams and some CBP forms. Results varied across CEEs, with benefits tending to accrue primarily to the first CEEs to open, the Electronics and Automotive CEEs. Reductions in the rate of trade exams generated most of the cost savings to importers due to the relatively high per unit cost of exams relative to the other outcomes examined.

ES 1.2.1 Estimated Benefits Realized by CEE Participants

Exams

The evidence of cost savings through lower examination rates was strongest for the Electronics and Automotive CEEs[3], two of the first centers to open and accept members. Findings related to the effects of these two centers on trade exams include:

- CEE membership is associated with a reduction of 38 exams per 100,000 entries in the electronics CEE and a reduction of 13 exams per 100,000 entries in the automotive CEE.
- In FY2014, these reductions resulted in a realized savings in trade exam costs of approximately 85% for members of the electronics CEE and 29% for members of the automotive CEE.
- The net result was a combined savings of over $1 million totaled across all of the members in the Automotive and Electronics CEEs in FY 2014.
- This amounted to an average realized savings from avoided exams of approximately $10,000 and $15,000 in FY 2014 per participating company in the Electronics and Automotive CEEs respectively.
- CBP was able to redirect about 1300 trade exams away from the relatively low-risk shipments of participating importers in the Electronics and Automotive CEEs to shipments from less well-known potentially higher risk importers.

Table ES-1 below shows how these findings were calculated from the results of our analysis. Some caveats to keep in mind when interpreting these results:

- The reported percentage reduction in exam costs is based on the realized savings in FY 2014 and will vary from year to year due to changes in the observed exam rate. Differences in percentage reductions between CEEs are due both to different estimated reductions in the number of exams per 100,000 entries and different underlying exam rates.
- Results are based on an average unit cost of exams across all importers. Actual savings may be higher or lower if CEE members differ from the average importer in ways that affect the unit cost of an exam.
- The per company savings and percent reduction in exam rate estimates are specific to the CEE members at the time of the study and cannot be transferred to non-CEE members without adjusting for company size and observed underlying exam rates.

[3] We classified the evidence as strong if the change estimated by the statistical model was statistically significant at the 95% confidence level and there were no clear violations of the assumptions required for the validity of the statistical model. The 95% confidence level means that according to the statistical analysis the results are unlikely to be attributable to random fluctuations in exam rates.

Table ES-1: Estimated Benefits from Exam Rate Reductions for Members of the Electronics and Automotive CEEs in FY 2014

Row	Annual Estimates for FY 2014	Electronics CEE Members	Automotive CEE Members
1	Observed rate of trade exams per 100,000 entries for CEE members	7	32
2	The reduction in trade exams per 100,000 entries for CEE members. Estimate obtained from results of our statistical model.	38	13
3	Counterfactual number of trade exams per 100,000 entries for CEE members. (The exam rate that the model predicts the CEE members would have had if not for joining CEE. This equals the observed exam rate + estimated reduction in exam rates associated with CEE membership.)	45	45
4	Realized percentage reduction in rate of trade exams for CEE members	86%	29%
5	Estimated number of trade exams avoided totaled across CEE members.	1065	216
6	Unit cost to importer per trade exam	$2,626	$2,626
7	Aggregate total savings from avoided exams	$687,000	$346,000
8	Average realized savings per member company	$10,000	$15,000

Results of the model were inconclusive for the other eight CEEs. Possible explanations include:

- Not enough time to detect effects for CEEs that began accepting members later than the Electronics and Automotive CEEs
- Phased in implementation of CEE functions
- Too few participating companies in the CEEs
- Inconsistent recording of the exam data in the Agriculture CEE prevented us from obtaining a valid estimate
- Exams are infrequent events that often occur in clusters related to CBP enforcement initiatives which make it more difficult for statistical tests to detect changes.
- Sector characteristics that violate the assumptions of the statistical model or reduce the power of statistical tests to detect changes. Examples include:
    - In the Base Metals CEE, a large spike in exams that primarily affected one large company with many IORs after it joined the CEE created a spurious result.
    - In the Petroleum CEE, exams are very infrequent for the CEE participants, perhaps because a large share of participant imports enter through pipeline and aren't subject to the usual types of inspection. The infrequency of exams makes it difficult for statistical tests to detect changes.

Form 28s

Taken together the results of our statistical model suggest that joining a CEE is associated with a decrease in Form 28 issuance rates, with the strongest evidence for reductions in the Electronics, Apparel, and Consumer Products CEEs[4]. Key findings include:

- For nearly all CEEs, estimates suggest a reduction in Form 28 issuance rates for CEE participants[5].
- Statistical evidence of a reduction was strongest for the Electronics, Apparel and Consumer Products CEEs.
- Estimated reductions in Form 28 issuance rates ranged from a 78% decrease for the Electronics CEE to a 31% decrease for the Apparel CEE.
- Annual aggregates savings totaled across all participants in FY2014 ranged from $11,000 in the Apparel CEE to $26,000 in the Electronics CEE.

Table ES-2 below shows the estimated reductions and cost savings for Form 28 reductions calculated in the same way as exam reductions in Table ES-1 above. The same caveats that apply to interpretation of the results for exam reductions apply to the estimates related to Form 28s as well.

Table ES-2: Estimated Benefits from Form 28 Rate Reductions for Members of the Apparel, Consumer Products and Electronics CEEs in FY 2014

Row	Annual Estimates for FY 2014	Apparel CEE Members	Consumer Products CEE Members	Electronics CEE Members
1	The reduction in Form 28s per 100,000 entries for CEE members estimated from our difference in difference statistical model.	47	23	15
2	Realized percentage reduction in rate of Form 28s for CEE members	31%	54%	78%
3	Estimated number of Form 28s avoided totaled across CEE members.	44	69	104
4	Unit cost to importer per Form 28	$245	$245	$245
5	Aggregate total savings from Form 28s	$11,000	$17,000	$26,000

[4] The estimated reductions for the Apparel, Electronics and Consumer Products CEEs were statistically significant at the 99%, 95% and 90% confidence level respectively. The higher the confidence level the less likely the result is due to random fluctuations of the outcome variable.

[5] The point estimates for the change in Form 28 issuance rates associated with CEE membership were negative for 9 out of 10 CEEs. The point estimate in the Machinery CEE was positive but not statistically significant.

ES 1.2.2 Potential Savings from Expanding CEE Membership

This study also quantifies the potentially significant benefits from extending CEE membership under two different scenarios. The following two bullet points summarize the key results for each scenario:

- Extending CEE membership to cover all "Trusted" traders participated in the Electronics and Automotive CEEs could save an additional $3.5 million per year in avoided exams and forms, for a total savings of nearly $5 million.
    - Almost 90% of these benefits are attributable to avoided exams.

- If all of the CEEs could generate the same degree of exam and form rate reductions as the electronics and automotive CEEs and all "Trusted" traders participated:
    - Participating accounts could yield savings of between $7 million and $18 million annually.
    - CBP could redirect approximately 9,000 exams, 4,000 Form 28s, and 3000 Form 29s from the shipments of lower-risk participating importers to higher-risk shipments from less well known importers.

Table ES-3 below shows the calculations used to obtain the results for the scenario in which membership is extended to "Trusted" IORs that were not CEE participants in FY2014 but that would have joined the Electronics and Automotive CEEs if they had participated[6]. We use the rate reductions in trade exams, Form 28s and Form 29s estimated in our statistical model to estimate the number of exams and forms that would have been avoided it these "Trusted" IORs had joined the Automotive or Electronics CEEs. We use the unit cost estimates presented in Part II of this report to value these reductions in Exams and forms.

[6] CBP provided predictions of which CEE non-member IORs would join based on the composition of their imports during the study period.

Table ES-3: Additional Benefits of Extending CEE Membership to Trusted IORs based on FY2014 Entries and Program Membership Status

Activity	Change in Activity per 100,000 Entries	Entries from "Trusted" Non-CEE Participants in FY2014 (100,000s)	Estimated Total Annual Impact on Activity	Unit Cost per Activity	Estimated Additional Benefits from CEE Expansion
Electronics CEE					
Trade Exams	37.7	28.3	-1065	$2,626	$2,800,000
Form 28s	15.2	28.3	-430	$245	$106,000
Form 29s	7.5	28.3	-212	$263	$56,000
Automotive CEE					
Trade Exams	13.1	16.5	-216	$2,626	$568,000
Form 28s	10.8	16.5	-178	$245	$44,000
Form 29s	10.1	16.5	-167	$263	$44,000
				Total	**$3,600,000**

Source: Activity change estimates from statistical analysis; unit cost estimates are adopted from Chapter 4 of the main report.

Table ES-4 below shows the calculations for the second scenario in which membership is extended to all non-CEE participants in "Trusted" trader programs and all CEEs achieve a rate reduction in trade exams, Form 28s, and Form 29s in the same range as the Electronics and Automotive CEEs.

Table ES-4: Total Benefits if CEE Membership had been extended to all "Trusted" IORs and all CEEs Achieved Results Similar to the Electronics and Automotive CEEs based on FY2014 Entries

Activity	Change in Activity per 100,000 Entries	Entries from all CEE and "Trusted" IORs in FY2014 (100,000s)*	Estimated Total Annual Impact on Activity	Unit Cost per Activity	Estimated Additional Benefits from CEE Expansion
Upper-Bound Calculations with Estimated Rate Reductions for Electronics CEE					
Trade Exams	37.7	172.8	6,515	$2,626	$17,107,235
Form 28s	15.2	172.8	2,627	$245	$643,507
Form 29s	7.5	172.8	1,296	$263	$340,848
				Upper-Bound	**$18,100,000**
Lower-Bound Calculations with Estimated Rate Reductions for Automotive CEE					
Trade Exams	13.1	172.8	2,264	$2,626	$5,944,424
Form 28s	10.8	172.8	1,866	$245	$457,229
Form 29s	10.1	172.8	1,745	$263	$459,009
				Lower-Bound	**$6,800,000**

*Based on entry and CEE membership data in CBPs FY2014 Performance and Accountability Report, which reports 32 million entries in FY2014 with 54% of these entries entering through "Trusted" IORs.

We did not estimate the benefits of any scenarios in which CEE membership is extended to IORs that did not participate in at least one CBP trade partnership program for the following reasons:

- A stated goal of CBP trade enforcement is risk segmentation so that enforcement activities are targeted based on risk. Importers who do not participate in any CBP trade partnership are not as well-known by CBP and may represent higher level of risk. One outcome of CEEs is that enforcement activities could be shifted from lower risk center participants to higher risk importers who are not yet center members and who do not participate in CBP trade partnerships.
- The non-participants in the CEE program and "Trusted" trader program are on average so different from CEE participating IORs, in terms of size and value per entry, that the effects of CEE membership are potentially very different.

ES.1.3. Documentation of Data and Statistical Methodology

This section documents the data and the difference-in-difference (DID) statistical model used to estimate the reduction in exams and forms associated with CEE membership.

ES.1.3.1 Data

Building the data set created for this analysis involved obtaining, editing, processing, and merging FY2008-2014 data from four CBP sources:

- Over 150 million records of individual entry data.
- IOR data, including approval dates for CEE members and the status of the importer with respect to C-TPAT, ISA and Managed Account participation.
- Trade exam records by IOR (masked to preserve confidentiality) and entry date.
- Records for each Form 28, Form 29 or Form 4647 issued from FY 2012 through FY2014.

These data were compiled and analyzed at the IOR level.

ES.1.3.2 Statistical Methodology

The effect of CEE membership on the rates of exams and forms per 1,000 entries is measured using difference-in-difference (DID) regression analysis which facilitates the comparison of outcomes of two groups across time. One group (importers that became CEE members during the period analyzed) was exposed to a treatment (gaining CEE membership), while the other group (importers who did not become CEE members) receives no treatment during the study time period.

We applied the DID model to monthly IOR level data, meaning we included an observation for each IOR for each month in which it had an entry. For each of the 10 CEEs we ran separate

regressions for each of the four outcome variables of interest: exams per 1000 entries, Form 28s per 1000 entries, Form 29s per 1000 entries, and Form 4647s per 1000 entries.[7]

In these regressions, non-CEE IORs served as controls in the regressions for the Center that CBP predicted they were most likely to join based on the types of goods they imported. Two subsets of non-CEE observations were initially considered for the DID model: observations for "Trusted" non-CEE members and a random sample of observations from all non-CEE members (trusted and non-trusted). "Trusted" refers to IORs that participate in at least one of CBPs trade partnership programs. The regression model using "Trusted" non-CEE IORs as the control group is our preferred specification because "Trusted" IORs are most similar to CEE members on key observable characteristics that may affect the outcome variables and likelihood of joining a CEE.

ES 2.0 Executive Summary Part II -- Survey Research and Data Analysis Related to Importer Costs

In 2014, CREATE conducted a survey of the trade community to identify and quantify the impacts of the Electronics CEE on the administrative and other business costs related to CBP procedures for bringing imported goods into the United States. Chapter 3 of this report presents the research question, target sample and distribution process, research design, and the process of survey development for the survey of importers conducted.

Chapter 4 of this report provides analysis of survey data and interviews with subject matter experts to estimate the unit cost per activity of numerous CBP-related activities. The data stem from a specially-the survey developed by the research team and from recent COAC surveys, in particular the stated costs per activity provided in the COAC (2014) survey. Specifically, this chapter presents the average activity cost estimates related to Customs Forms (CF-3461, CF-7501, CF-28, CF-29, CF-19, PEA, PSC), which range between $113 and $247 per activity. Estimates of average costs per exam of $2,626 are taken from the COAC survey, yet it is assumed that CEE participant cost estimates are equivalent to Non-CEE cost estimates. These estimates are validated through a combination of COAC 2014 survey results, interviews with key stakeholders, and exam fee schedules from CBP. The estimates are combined with analysis of primary data on activity levels to estimate benefits to CEE members and potential future members.

ES 3.0 Executive Summary Part III – General Information on CBP Import Processes and the CEE Program

Part III of this report provides a useful context for readers unfamiliar with CBP import processes or the CEE program. It also provides additional information on the electronics import sector—one of the sectors for which we were able to show measurable benefits of CEE participation.

[7] The rate per 1,000 entries ensures that differences in the volume of trade do not bias the results.

Chapter 5 provides information on the operation of CEEs in general and the Electronics CEE in particular. It explains ways that a CEE aims to facilitate and improve the CBP importing process for its members and other industry stakeholders. It explains the rationale for the CEEs and the many functions they perform. It notes the association between the CEEs and related CBP initiatives such as the Trusted Trader Program. It also provides insight into the complexities of customs processes and the CEEs role within it. Finally, it provides a description of the many forms used to process imports.

Chapter 6 provides an introduction to the electronics industry in the US and associated trade data. It includes a discussion of the changing nature of the industry in relation to technology and import trends. It also presents an overview of some aspects of import processing and trade practices. This discussion highlights the specific trade data associated with one of the first CEEs to be implemented—the Electronics CEE.

Chapter 7 then presents a description of import logistics with respect to import processing in relation to both trade facilitation and inspection/compliance. It aligns the routing of documents/forms with the actual physical cargo flows, addressing both pre- and post-entry activities.

Part I: Economic Impacts of the Centers of Excellence and Expertise (CEEs)

Part I, Chapter 1. Estimating Economic Benefits of CEEs from CBP Administrative Data

Bryan Roberts, Charles Baschnagel, Katie Foreman, Timothy Beggs

Chapter 1, Section 1. Introduction and Summary

The Centers of Excellence and Expertise (CEEs) are designed to support Customs and Border Protection (CBP) efforts to provide better, more efficient service to Importers of Record (IORs) while meeting CBP's dual missions of enforcing trade laws enforcement and enabling the flow of goods in legitimate trade. CBP funded this analysis to monitor and evaluate the CEEs. The results are expected to identify areas of potential improvement, anticipate unforeseen consequences, and statistically estimate the net economic benefit of the new account-based management approach that the CEEs are implementing.

The establishment and operation of the CEEs potentially impacts IORs and the trade community in a myriad of ways, some of which can be quantified, but others are unquantifiable. This analysis focuses on the subset of outcomes that:

- Are likely to be affected by the CEE.
- Have a potentially large economic value.
- Have adequate data available to quantify the impact.

Four outcomes of interest met these three criteria:[8]

- ***Trade Exams,*** which occur when CBP personnel conduct inspections of specific cargo entries to ensure that the required duties and fees are collected and to prevent goods that are not legally entitled to enter U.S. commerce from entering.
- ***Form 28 Requests,*** which are used to obtain additional information on a particular entry that is required to determine the appropriate tariff or course of action related to an entry.
- ***Form 29 Notices of Action,*** which are used to inform an importer of commencement of an investigation and the specific nature of the difference when an entry is made at a rate or value of merchandise that is too low or when the import quantity exceeds that of the entered quantity.
- ***Form 4647 Notices to Mark and/or Redeliver,*** which occur because CBP determined the goods are not legally marked with the country of origin or because CBP determined after release of the entry that the goods were not legally entitled to enter U.S. commerce. In the latter case, the importer must redeliver (return) the merchandise to CBP.

The analysis of the effects of each of the 10 CEEs on these outcomes proceeds in three steps:

[8] Each of these outcomes is defined as a rate per 1,000 entries to ensure that differences in the volume of trade do not bias the results.

1. Compile CBP administrative data on entries, exams and forms for FY2008-FY2014.
2. Apply a Difference-in-Difference (DID) statistical model to estimate the reductions in the rates of trade exams and forms associated with joining a CEE.
3. Combine the exam and form unit cost estimates developed in Part II of this report with estimated changes in exam and form rates to estimate the:
    - cost savings realized by CEE participants
    - potential benefits from the expansion of CEE membership to additional participants

Chapter 1, Section 2. Key Findings

This section presents the key findings of the analysis, and describes the assumptions and caveats necessary for proper interpretation of the results. It focuses on results with the strongest evidence and most economically significant effects. Evidence is classified as strong if the change estimated by the statistical model is statistically significant at the 95% confidence level and there were no clear violations of the assumptions required for model validity[9].

2.1 Estimated Benefits Realized by CEE Participants

Exams

The evidence of cost savings through lower examination rates was strongest for the Electronics and Automotive CEEs[10], two of the first centers to open and accept members. Findings related to the effects of these two centers on trade exams include:

- CEE membership is associated with a reduction of 38 exams per 100,000 entries in the electronics CEE and a reduction of 13 exams per 100,000 entries in the automotive CEE.
- In FY2014, these reductions resulted in a realized savings in trade exam costs of approximately 85% for members of the electronics CEE and 29% for members of the automotive CEE.
- The net result was a combined savings of over $1 million totaled across all of the members in the Automotive and Electronics CEE in FY 2014.
- This amounted to an average realized savings from avoided exams of approximately $10,000 and $15,000 in FY 2014 per participating company in the Electronics and Automotive CEEs respectively.
- CBP was able to redirect about 1300 trade exams away from the relatively low-risk shipments of participating importers in the Electronics and Automotive CEEs to shipments from less well-known potentially higher risk importers[11].

[9] The 95% confidence level means that according to the statistical analysis the results are unlikely to be attributable to random fluctuations in the outcome of interest. In general, the higher the confidence level the greater the strength of evidence for the result.

[10] The estimated exam rate reduction associated with CEE membership in the Electronic and Automotive CEEs were both statistically significant at the 99% confidence level. The higher the confidence level the stronger the evidence for the result provided the assumptions underlying the statistical model hold.

[11] Assumes total exams remain roughly constant so that exams avoided by CEE members are performed on presumably less well known higher risk importers.

Table 1 below shows how these findings were calculated from the results of our analysis. Some caveats to keep in mind when interpreting these results:

- The reported percentage reduction in exam costs is based on the realized savings in FY 2014 and will vary from year to year due to changes in the observed exam rate. Differences in percentage reductions between CEEs are due both to different estimated reductions in the number of exams per 100,000 entries and different underlying exam rates.
- Results are based on an average unit cost of exams across all importers. Actual savings may be higher or lower if CEE members differ from the average importer in ways that affect the unit cost of an exam.
- The per company savings and percent reduction in exam rate estimates are specific to the CEE members at the time of the study and cannot be transferred to non-CEE members without adjusting for company size and observed underlying exam rates.

Table 1: Estimated Benefits from Exam Rate Reductions Realized by Members of the Electronics and Automotive CEEs in FY 2014

Row	Annual Estimates for FY 2014	Electronics CEE Members	Automotive CEE Members
1	Observed rate of trade exams per 100,000 entries for CEE members	7	32
2	The reduction in trade exams per 100,000 entries for CEE members. Estimate obtained from results of our statistical model.	38	13
3	Counterfactual number of trade exams per 100,000 entries for CEE members. (The exam rate that the model predicts the CEE members would have had if not for joining CEE. This equals the observed exam rate + estimated reduction in exam rates associated with CEE membership.)	45	45
4	Realized percentage reduction in rate of trade exams for CEE members	86%	29%
5	Estimated number of trade exams avoided totaled across CEE members.	1065	216
6	Unit cost to importer per trade exam	$2,626	$2,626
7	Aggregate total savings from avoided exams	$687,000	$346,000
8	Average realized savings per member company	$10,000	$15,000

Results of the model were inconclusive with respect to exams for the other eight CEEs. Possible explanations include:

- Not enough time to detect effects for CEEs that began accepting members later than the Electronics and Automotive CEEs
- Phased in implementation of CEE functions

- Too few participating companies in the CEEs
- Inconsistent recording of the exam data in the Agriculture CEE prevented us from obtaining a valid estimate
- Exams are infrequent events that often occur in clusters related to CBP enforcement initiatives which make it more difficult for statistical tests to detect changes.
- Sector characteristics that violate the assumptions of the statistical model or reduce the power of statistical tests to detect changes. Examples include:
    - In the Base Metals CEE, a large spike in exams that primarily affected one large company with many IORs soon after it joined the CEE created a spurious result.
    - In the Petroleum CEE, exams are very infrequent for the CEE participants, perhaps because a large share of participant imports enter through pipeline and aren't subject to the usual types of inspection. The infrequency of exams makes it difficult for statistical tests to detect changes.

Form 28s

Taken together the results of our statistical model suggest that joining a CEE is associated with a decrease in Form 28 issuance rates, with the strongest evidence for reductions in the Electronics, Apparel, and Consumer Products CEEs[12]. Key findings include:

- For nearly all CEEs, estimates suggest a reduction in Form 28 issuance rates for CEE participants[13].
- Statistical evidence of a reduction was strongest for the Electronics, Apparel and Consumer Products CEEs.
- Estimated reductions in Form 28 issuance rates ranged from a 78% decrease for the Electronics CEE to a 31% decrease for the Apparel CEE.
- Annual aggregates savings totaled across all participants in FY2014 ranged from $11,000 in the Apparel CEE to $26,000 in the Electronics CEE.

Table 2 below shows the estimated reductions and cost savings for Form 28 reductions calculated in the same way as exam reductions in Table 1 above. The same caveats that apply to interpretation of the results for exam reductions apply to the estimates related to Form 28s as well.

[12] The estimated reductions for the Apparel, Electronics and Consumer CEEs were statistically significant at the 99%, 95% and 90% confidence level respectively. The higher the confidence level the less likely the result is due to random fluctuations of the outcome variable.

[13] The point estimates for the change in Form 28 issuance rates associated with CEE membership were negative for 9 out of 10 CEEs. The point estimate in the Machinery CEE was positive but not statistically significant.

Table 2: Estimated Benefits from Form 28 Rate Reductions for Members of the Apparel, Consumer Products and Electronics CEEs in FY 2014

Row	Annual Estimates for FY 2014	Apparel CEE Members	Consumer CEE Members	Electronics CEE Members
1	The reduction in Form 28s per 100,000 entries for CEE members estimated from our difference in difference statistical model.	47	23	15
2	Realized percentage reduction in rate of Form 28s for CEE members	31%	54%	78%
3	Estimated number of Form 28s avoided totaled across CEE members.	44	69	104
4	Unit cost to importer per Form 28	$245	$245	$245
5	Aggregate total savings from Form 28s	$11,000	$17,000	$26,000

2.2 Potential Savings from Expanding CEE Membership

This study also quantifies the potentially significant benefits from extending CEE membership under two different assumed scenarios. The following two bullet points summarize the key results for each scenario:

- Extending CEE membership to cover all "Trusted" traders in the Electronics and Automotive CEEs could save an additional $3.5 million per year in avoided exams and forms, for a total savings of nearly $5 million.
    - Almost 90% of these benefits are attributable to avoided exams.

- If all of the CEEs could generate the same degree of exam and form rate reductions as the electronics and automotive CEEs and all "Trusted" traders participated:
    - Participating accounts could yield savings of between $7 million and $18 million annually.
    - CBP could redirect approximately 9,000 exams, 4,000 Form 28s, and 3,000 Form 29s from the shipments of lower-risk participating importers to higher-risk shipments from less well known importers.

Table 3 below shows the calculations used to obtain the results for the scenario in which membership is extended to "Trusted" IORs that were not CEE participants in FY2014 but that would have joined the Electronics and Automotive CEEs if they had participated[14]. We used the rate reductions in trade exams, Form 28s and Form 29s estimated in our statistical model to estimate the number of exams and forms that would have been avoided it these "Trusted" IORs had joined the Automotive or Electronics CEEs. We use the unit cost estimates presented in Part II of this report to value these reductions in exams and forms.

[14] CBP provided predictions of which CEE non-member IORs would join based on the composition of their imports during the study period.

Table 3: Additional Benefits of Extending CEE Membership to Trusted IORs based on FY2014 Entries and Program Membership Status

Activity	Change in Activity per 100,000 Entries	Entries from "Trusted" Non-CEE Participants in FY2014 (100,000s)	Estimated Total Annual Impact on Activity	Unit Cost per Activity	Estimated Additional Benefits from CEE Expansion
Electronics CEE					
Trade Exams	37.7	28.3	-1065	$2,626	$2,800,000
Form 28s	15.2	28.3	-430	$245	$106,000
Form 29s	7.5	28.3	-212	$263	$56,000
Automotive CEE					
Trade Exams	13.1	16.5	-216	$2,626	$568,000
Form 28s	10.8	16.5	-178	$245	$44,000
Form 29s	10.1	16.5	-167	$263	$44,000
				Total	**$3,600,000**

Source: Activity change estimates from statistical analysis; unit cost estimates from Chapter 4.

Table 4 below shows the calculations for the second scenario in which membership is extended to all non-CEE participants in "Trusted" trader programs and all CEEs achieve a rate reduction in trade exams, Form 28s, and Form 29s in the same range as the Electronics and Automotive CEEs.

Table 4: Total Benefits if CEE Membership had been Extended to all "Trusted" IORs and all CEEs Achieved Results Similar to the Electronics and Automotive CEEs based on FY2014 Entries

Activity	Change in Activity per 100,000 Entries	Entries from all CEE and "Trusted" IORs in FY2014 (100,000s)[15]	Estimated Total Annual Impact on Activity	Unit Cost per Activity	Estimated Additional Benefits from CEE Expansion
Upper-Bound Calculations with Estimated Rate Reductions for Electronics CEE					
Trade Exams	37.7	172.8	6,515	$2,626	$17,107,235
Form 28s	15.2	172.8	2,627	$245	$643,507
Form 29s	7.5	172.8	1,296	$263	$340,848
				Upper-Bound	**$18,100,000**
Lower-Bound Calculations with Estimated Rate Reductions for Automotive CEE					
Trade Exams	13.1	172.8	2,264	$2,626	$5,944,424
Form 28s	10.8	172.8	1,866	$245	$457,229
Form 29s	10.1	172.8	1,745	$263	$459,009

[15] Based on entry and CEE membership data in CBPs FY2014 Performance and Accountability Report which reports 32 million entries in FY2014 with 54% of these entries entering through "Trusted" IORs.

Lower-Bound	**$6,800,000**

We did not estimate the benefits of any scenarios in which CEE membership is extended to IORs that did not participate in at least one CBP trade partnership program for the following reasons:

- A stated goal of CBP trade enforcement is risk segmentation so that enforcement activities are targeted based on risk. Importers who do not participate in any CBP trade partnership are not as well-known by CBP and may represent higher level of risk. One outcome of CEEs is that enforcement activities could be shifted from lower risk center participants to higher risk importers who are not yet center members and who do not participate in CBP trade partnerships.
- The non-participants in the CEE program and "Trusted" trader programs are on average so different from CEE participating IORs, in terms of size, value per entry and other characteristics, that the effects of CEE membership are potentially very different.

Chapter 1, Section 3. Data

To quantify the effects of CEEs on rates of trade exams, we created a monthly entry and trade exam data set spanning FY 2008–2014 for each IOR. This data set included an observation for each IOR for each month in which it had at least one entry. However, this data set only spanned from FY 2012–2014 (the period for which CBP was able to provide forms data). We constructed a similar data set for the forms analysis. The final entry, exam, and forms data set we compiled had an observation for each IOR for each month in which it had at least one entry.

3.1 Data Processing Steps

For each of the final data sets we created, we had to edit, process, aggregate, and check numerous separate data sets provided by CBP. The data compilation process proceeded through the following steps:

- **Entry Data**: Processing the entry data involved reading in, cleaning, and aggregating 6 years of entry-level data with more than 150 million observations into a monthly IOR level data set with approximately 10 million observations. CBP provided us with a separate entry-level data set for each fiscal year from 2008 through 2014. For each entry that occurred in a fiscal year, CBP included the estimated import value, estimated duty, entry date, and a masked IOR number to prevent disclosure of Personally Identifiable Information (PII). These initial data sets contained additional variables on exams and dwell time. However, after a preliminary analysis we concluded the dwell time data were not reliable enough to use and the exam data included all types of exams (including narcotics and security exams) combined with trade exams. Because the focus of the analysis is on the trade facilitation effects of CEEs, we requested and CBP provided us additional data on trade exams only.
    - Each of the 6 entry data sets contained approximately 30 million observations. Because of the large size of the data sets, we needed to write programs and process the data in small steps due to computing time and limited processing

capacity. After reading in an annual data set, to prevent double counting we cleaned it by removing observations that were missing entry dates, masked IOR numbers, or had entry dates outside of the data set fiscal year. Overall, less than 2 percent of the observations were discarded due to missing or invalid data. We aggregated the cleaned data for each fiscal year from entry-level data to monthly totals for each IOR in each month it had an entry. Finally, we combined the aggregated data sets for each fiscal year into one data set spanning FY 2008–FY2014.

  - As a final check, we made sure that total annual import values and estimated duty values calculated from our data set matched those reported by CBP for each fiscal year.

- **Adding IOR data**: CBP also provided us with Excel files containing the approval dates for CEE members, as well as the status of the importer with respect to CTPAT, ISA, and Managed Account participation. We created an additional variable called "Trusted" that indicated whether the IOR was a member of any or none of these programs. For each importer, CBP also provided us with a prediction of which of the 10 centers each IOR would likely choose to join based on which category of goods constituted the largest portion of each IOR's imports.
  - We merged the importer data set created in this step with the larger entry data set matched by masked IOR. Finally, we created two indicator variables based on CEE approval dates. The "CEE Status" variable indicates whether an IOR was a CEE member in a particular month and the "Ever CEE" variable indicates whether the IOR had joined a CEE by the end of FY 2014, the end of the study period.
- **Adding Trade Exam Data**: CBP also provided us with data sets containing the masked IOR and entry date for each trade exam from FY 2008–2014. We aggregated these data on individual trade exams into monthly IOR data and merged them with the entry data. We created a variable with trade exams per 1,000 entries for each IOR for each month. Finally, we merged the trade exams data with the entry data set created in Step 2 by entry date and masked IOR.
- **Time Series Graphs from FY 2008–FY 2014**: As explained in the methodology section, we ultimately used a much shorter time series in the statistical model we utilized to estimate the effects of CEE membership on the rates of trade exams. However, we plotted monthly time series plots by CEE members and non-members over the entire FY 2008–FY 2014 timeframe as a check on the data and coding. This check of the long-term time trends was also necessary to assess the validity of the assumptions underlying our statistical model as explained in the methodology section.
- **Forms Data**: CBP provided us with Excel spreadsheets that contained observations for each issuance of a Form 28, Form 29, or Form 4647 for FY 2012 through FY 2014. These data contained the masked IOR, form type, and "Form CRT Date." We aggregated these

data by month and IOR so that there was one observation for each IOR for each type of form for each month in which a form was issued.

- **Adding Forms Data to Entry Data**: For FY 2012–FY 2014 we merged the forms data with the entry data by masked IOR and entry date in the entry data and "Form CRT" date in the Forms data.

3.2 Data Limitations

After numerous checks of the data, we concluded that the data in the final data set were sufficiently reliable for analysis. For example, we checked the total annual import values and estimated duty values in our data set against CBP's publicly reported estimates to ensure that our data was complete and accurate.

The data were compiled and analyzed at the IOR level. However, Table 4 shows that some companies, particularly those in the automotive, base metals, and pharmaceutical sectors, maintain multiple IOR accounts.

Table 4: IORs and Companies by CEE for Participating Importers

CEE	IORs	Companies	IORs per Company
Agriculture & Prepared Products	62	23	2.7
Apparel, Footwear & Textiles	99	36	2.8
Automotive & Aerospace	217	22	9.9
Base Metals	81	22	3.7
Consumer Products and Mass Merchandising	63	37	1.7
Electronics	158	69	2.3
Industrial & Manufacturing Materials	55	23	2.4
Machinery	56	25	2.2
Petroleum, Natural Gas & Minerals	53	12	4.4
Pharmaceuticals, Health & Chemicals	382	48	8.0
Total	**1226**	**317**	**3.9**

Ideally, we would have been able to analyze the data at the company level rather than the IOR level for statistical reasons and to facilitate comparisons between CEE members and non-CEE members.[16] For example, when trying to compare the size of CEE members with non-members, it's not possible to determine to what extent a relatively low rate of entries for an IOR is due to the IOR belonging to a small importing company with a single IOR account or whether the IOR belongs to a large importer that spreads its entries across multiple IORs. However, the IOR-level data were used to avoid disclosing the identities of the importing companies.

[16] Because the rate of trade exams and forms issuances are likely correlated among IORs belonging to the same company, the use of IOR-level data rather than company-level data may lead to underestimation of standard errors in regression analysis. It also prevents us from controlling for characteristics of an importer that change over time.

3.3 Summary Statistics and General Observations

In this section we present some descriptive statistics that compare IORs in the study that were approved for CEE membership, IORs that were members of CBP trusted trader program but were not CEE members before the end of FY 2014, and IORs that were not members of a CEE or trusted trader program.

Table 5 provides counts of the numbers of IORs in each sector served by a CEE. The largest numbers of CEE members are in the pharmaceuticals, automotive, and electronics sectors, three of the first CEEs to open.

Table 5: Number of IORs by CEE Sector*

CEE Sector	CEE Members	Non-member "Trusted"	Non-member Non-"Trusted"
Agriculture	49	822	32,731
Apparel	85	757	36,542
Automotive	205	743	14,261
Base Metals	68	482	16,168
Consumer	23	1,159	86,102
Electronics	104	717	9,557
Industrial	45	651	34,374
Machinery	28	1,092	51,023
Petroleum	34	95	919
Pharmaceuticals	362	478	6,374
Total	**1,003**	**6,996**	**288,051**

*IORs approved for CEE membership by March 2014.

For most sectors, the typical CEE IOR member has a larger average annual number of entries than non-member "Trusted" IORs. Both groups of IORs have substantially higher average numbers of entries than is the case for non-member, non-"Trusted" IORs.

Table 6: Annual Entries per IOR

CEE Sector	CEE Members	Non-member "Trusted"	Non-member Non-"Trusted"
Agriculture	1,461	1,111	61
Apparel	2,124	1,159	28
Automotive	5,354	2,108	76
Base Metals	232	896	53
Consumer	25,203	2,305	65
Electronics	5,529	4,583	116
Industrial	2,356	1,100	51
Machinery	2,546	1,022	37
Petroleum	698	1,283	171
Pharmaceuticals	512	1,303	152

On average, the center members tend to have a higher volume of entries per IOR than members of "Trusted" programs. One possible reason that this relationship does not hold for pharmaceuticals, base metals, or petroleum is because companies that are center members have more IORs per company on average than IORs that are not CEE members.

As expected, IORs that are not center members or trusted traders tend to have significantly lower value per entry than CEE members or IORs that participate in CBP trade partnership programs. The notable exceptions occur in the Industrial and Consumer CEEs.

Table 7: Current Dollar Value of Imports per Entry

	Average Value per Entry FY 2011-FY2014 ($)		
CEE Sector	CEE Members	Non-member Trusted	Non-member Non-Trusted
Agriculture	66,628	50,728	38,597
Apparel	63,420	81,194	48,947
Automotive	87,689	125,043	73,113
Base Metals	164,223	83,687	75,558
Consumer	50,528	62,509	50,700
Electronics	173,310	58,864	68,430
Industrial	32,277	46,313	51,657
Machinery	87,588	76,790	53,907
Petroleum	1,323,350	2,685,329	498,380
Pharmaceuticals	144,658	181,615	81,325

Chapter 1, Section 4. Methodology

4.1 Difference-in-Difference (DID) Regression Model

In this analysis the effect of CEE membership on the rates of exams and various forms per 1,000 entries is measured using DID regression techniques. The DID technique facilitates the comparison of outcomes of two groups across time, which is divided into pre- and post-treatment period. One group (importers that became CEE members during the period analyzed) was exposed to a treatment (gaining CEE membership), while the other group (importers who did not become CEE members) receives no treatment during the study time period. We apply this model to

We applied the DID model to the monthly data set, with an observation for each IOR in each month in which it had one or more entry. We only included IORs that had at least one entry before the first date that IORs joined the CEE and at least one entry afterwards. We did this to exclude IORs that did not exist in the before period or had ceased importing after the CEEs started approving members. For each of the 10 CEEs we ran separate regressions for each of the 4 outcome variables of interest: exams per 1,000 entries, Form 28s per 1,000 entries, Form 29s per 1000 entries, and Form 4647s per 1,000 entries.

Our regression specification accounted for the fact that CEE members did not all join at the same time. Table 8 below shows the opening dates and date that the first importer was approved for each CEE.

Table 8: CEE Open and First IOR Join Dates

CEE	CEE Open Date	First IOR Joined
Electronics	Oct-11	Nov-12
Pharmaceuticals	Oct-11	Nov-12
Automotive	Sep-12	Nov-12
Petroleum	Sep-12	Dec-12
Base Metals	Apr-13	Jun-13
Industrial	Apr-13	Jul-13
Machinery	Apr-13	Jun-13
Agriculture	Jun-13	Jul-13
Apparel	Jun-13	Jul-13
Consumer	Jun-13	Jul-13
The statistical analysis uses the date each CEE member joined the CEE to estimate the effects of CEE membership.		

Following standard practice, we implemented the DID model using indicator variables. In addition to monthly fixed effects dummies, we included the following:

- An indicator variable for whether or not an IOR was approved for CEE membership during the study period. This variable equaled "1" for every observation on any IOR that joined a CEE before the end of FY 2014 and "0" for all observations on IORs that had not joined a CEE by the end of FY 2014.
- An indicator variable for whether an observation occurred before or after an IOR joined a CEE. This indicator was equal to "0" for every observation on IORs that were never approved for CEE membership. It also equaled "0" for observations on IORs that eventually became CEE members, for observations in the months before that IOR was approved. This variable only equaled "1" for IORs that were CEE members for observations in the months after their approval.

The second indicator variable described above is the variable of interest that measures the effect of CEE participation on the outcome variable in the regression after controlling for:

- Average differences in the outcome variable between the CEE members and control group that are constant over time with the first indicator variable described above.
- Factors that change over time but affect CEE members and IORs in the control group in the same way.

Therefore, the interacted dummy variable captures factors that change over time and affect the outcome variable for treatment and controls differently. In our model, CEE membership is what

changes over time (0 before approval and 1 after) and affects CEE members but not IORs in the control group.

Ideally, any characteristic that may be correlated with the outcomes of interest, occur in different rates in the treatment and control groups and vary over time should be included as a control variable in the model to isolate the effect of CEE membership. We discuss the limitations of our analysis and required assumptions in more detail in the results section below. Future research on this subject with access to data sets with richer IOR characteristic data could potentially improve on this analysis.

4.2 Control Group Selection

Membership in the CEEs was not assigned randomly. In fact, the IORs invited to join the CEEs were a select group who for the most part already had lower average rates of the outcomes of interest than the typical IOR even before the CEEs were up and running. Therefore, comparing the rates of those in the CEEs to those not in the CEEs would not provide an accurate estimate of the impact of the CEEs. This holds true even if the control group is limited to non-members that are already in a "Trusted" trader program. Furthermore, comparing the rates before and after membership for those who joined the CEEs also presents challenges. Other changes in the specific industry a CEE is focused on or in the trade environment overall may also have changed over time. These changes would bias the estimate of the effect of the CEEs if only a pre-post methodology is used.

The DID methodology used in this analysis addresses this problem by using as the dependent variable the change in the outcome of interest for both CEE members and non-members over time. DID analysis allow the relaxation of the assumption that the treatment and control group have the same rate for the outcome variables before or in absence of the intervention. Instead, a DID analysis requires the weaker assumption that the time trends for the outcome variable for both the treatment and control group be parallel.[17]

Therefore, our control group selection for each CEE we examined began with the identification of IORs that import similar goods and thus would be subject to similar trends over time specific to the cargo imported. Colleagues at CBP helped to assign each non-member IOR to the CEE they would most likely join, based on which CEE specialized in the largest share of the goods the IOR recently imported. Thus, for each CEE we examine a treatment group consisting of its specific IOR members; our broadest control group consists of a sample of all the IORs projected to eventually join that CEE once the program becomes universal. This should help ensure that the treatment and control groups, although having different base rates in terms of the outcomes of interest, are likely to have similar trends in the baseline period to satisfy a key assumption of the model.

In addition to having a control group that exhibits similar pre-treatment trends, having a control group that is similar to the treated group protects against the potential bias that could enter

[17] This assumption is checked for each CEE and outcome pairing.

the model if other factors also change over time that affect IORs which different characterizes differently. That is why our preferred control group for each CEE consists of IORs that are most similar to the treated IORs on key observable characteristics. Specifically, our preferred control groups are limited to only those non-CEE-member IORs that are also in a "Trusted" trader program and are projected to be in the specific CEE for which they are serving as a control. When the sample is not limited to "Trusted" traders, a variable identifying IORs as members of a "Trusted" trader program is included in the regression as a control variable. When such a variable is included, it is often shown to be correlated with the outcomes of interest and this relationship is statistically significant.

Chapter 1, Section 5. Results of the DID Statistical Analyses

This section presents the estimated changes in exam and form issuance rates per 1000 entries associated with joining a CEE obtained from the DID model. In Section 5.1, we use the results of the Electronics CEE to illustrate the DID model and explain our specification choices. We present the detailed results for two alternative sets of regressions that use different control groups. In Section 5.2, we present and discuss the results for the variable of interest—the estimated change in exam or form issuance rates associated with joining a CEE—for all ten CEEs, but only for the preferred model specification.

5.1 Illustration of DID Model and the Interpretation of Results Using the Electronics CEE

The electronics CEE had its grand opening for pilot programs in October 2011. However, our records indicate that the first IOR did not become a full member of the Electronics CEE until November 2012. Our data extract included data through the end of FY 2014. This means there are 22 months of post-CEE data for the electronics CEE. To ensure that the estimated fit of the model is derived equally from its performance in the pre- and post-CEE period, an equal number of pre-CEE months were included in each model based on the number of post-treatment months of data available. For the Electronics CEE, the pre-CEE observation period begins in February 2011 for the exam regression and October 2011 for the forms regressions.

Table 9 presents the results from the DID regressions. The first two columns show the regression results of the DID model where exams per 1,000 entries is the outcome and the control group is either a sample of non-CEE-member IORs projected to eventually be serviced by the Electronics CEE including non-"Trusted" trader IORs or all the projected Electronics CEE IORs that are currently non-members and that are also "Trusted" traders, respectively. In column 1, where both "Trusted" traders and non-"Trusted" traders are included in the control group, a variable indicating whether an IOR is a "Trusted" trader is included in the model to control for this characteristic. This pattern of results for an outcome using the full control group followed by results using only "Trusted" traders in the control group is repeated for the Form 28, Form 29, and Form 4647 outcomes.

In both specifications with exams per 1,000 entries as the outcome (columns 1 and 2 of Table 9), the coefficient for the selection variable of whether an IOR was ever in the Electronics CEE is negative and statistically significant at the 99% confidence level. This indicates that even without the treatment the IORs that are members of the Electronics CEE are a select group and a simple comparison between the treated and non-treated would generate a biased result. For

the key variable of interest (the one that predicts the effect of CEE membership), the point estimate in our preferred regression including only "Trusted" traders in the control group is statistically significant at the 99% confidence level and indicates that CEE membership is associated with a reduction of 37.7 exams per 100,000 entries.

Table 9: Regression Results for Electronics Industry IORs

	Exams per 1,000 Entries		Form 28s per 1,000 Entries		Form 29s per 1,000 Entries		Form 46s per 1,000 Entries	
Control Group	**Sampled**	**"Trusted"**	**Sampled**	**"Trusted"**	**Sampled**	**"Trusted"**	**Sampled**	**"Trusted"**
Constant	2.820***	1.418***	0.878***	0.324***	0.777***	0.306***	0.224***	0.102***
	(0.318)	(0.143)	(0.184)	(0.092)	(0.232)	(0.061)	(0.021)	(0.008)
Ever in a CEE	-0.818***	-0.789***	-0.349**	-0.273***	-0.297*	-0.270***	-0.039***	-0.030***
	(0.181)	(0.079)	(0.139)	(0.053)	(0.163)	(0.035)	(0.014)	(0.005)
CEE Membership	0.333	-0.377***	-0.021	-0.152**	-0.007	-0.075	-0.032*	-0.026***
	(0.381)	(0.146)	(0.178)	(0.071)	(0.218)	(0.048)	(0.018)	(0.006)
"Trusted" Trader	-1.649***		-0.725***		-0.625***		0.054***	
	(0.107)		(0.082)		(0.095)		(0.008)	
Observations	100,000	32,721	100,000	29,297	100,000	29,297	100,000	29,297

* Statistically significant at the 90 percent confidence level.
** Statistically significant at the 95 percent confidence level.
*** Statistically significant at the 99 percent confidence level.
Note: An IOR entry was considered "Ever in CEE" if the IOR had gained CEE membership before September 1, 2014. An IOR entry was considered in "CEE Membership" if the entry date was after the date that the IOR had joined the CEE. An IOR entry was considered in the "Trusted" Trader Program" if the IOR was an ISA Member, CTAP Member, or a Managed Account. For Exams the timeframe was limited so that there was an equal amount of time before and after the first IOR in the CEE became active. For the two-model groupings: "Sampled" indicates that a random sample of 100,000 observations was used, and "Trusted" indicates that the sample was limited to IORs that were part of a "Trusted" Trader Program.

The regression results for the form issuance rates are as follows:

- **Form 28.** The business case for the CEEs included the argument that the CEEs would include subject matter experts who were familiar with both the industry as a whole and the individual IORs assigned to the CEE so that issuance of Form 28s would be less frequent. Furthermore, a close working relationship with the CEEs and their assigned IORs would allow CBP to work with the IORs to improve their compliance rate and detail in the entry summary package to further decrease the rate of Form 28s. [18]

  Columns 3 and 4 of Table 9 show the results of the DID analysis on the Electronics industry when the outcome of interest is the rate at which Form 28s are issued. In our preferred specification in column 4, which uses only "Trusted" traders in the control group, the coefficient for the variable of interest indicated that the membership in the Electronics CEE is associated with a reduction of 15 Form 28s per 100,000 entries.

[18] Form 28s are issued to IORs when CBP personnel decide they require additional information on a particular entry when the entry summary package has insufficient information so that it is difficult to determine admissibility, appraised value, or classification of imported merchandise.

- **Form 29**. The business case for the CEEs included arguments that repeated interaction with a dedicated case manager would provide consistent instruction on how to estimate and fill out entry forms and could reduce the rate at which Form 29s would need to be issued.

  Columns 5 and 6 of Table 6 show that the results of both DID regressions with the Form 29 rate for IORs in the Electronics CEE as the outcome variable failed to find a statistically significant effect of the Electronics CEE. It may be possible that in instances where the Form 29 rate does not start as low that a CEE may be able to push the Form 29 rate down. Therefore, this outcome should continue to be examined in other CEEs whose members started off with a higher rate and for all CEEs when the CEE program is extended industry wide.

- **Form 4647**. The business case for the CEEs included the argument that repeated interactions with case managers would improve the compliance rates of IORs and reduce the need for forms such as Form 4647. This section shows the results of our analysis of the effects of the CEEs on the rate of Form 4647.

  Columns 7 and 8 of Table 6 show the results of the DID regressions with both control groups when the outcome of interest is the rate of Form 4647s in the Electronics sector. The coefficient for the variable of interest is statistically significant at the 0.10 level in the larger sample and statistically significant at the 0.01 level in the regression where the control group is limited to "Trusted" traders. Both point estimates for the coefficient of interest are negative but of low magnitude. In our preferred specification, the Electronics CEE appears associated with a 0.026 reduction in Form 4647s per 1,000 entries.

Finally, the DID used in this analysis relies on the assumption that the outcome of interest exhibits similar trends in the pre-CEE period. Figures 1-4 below examine whether this assumption is valid for the various components of the Electronics CEE regression model.

5.1.1 Trade Exams: Electronics

Figure 1 shows the number of trade exams per 1,000 entries for members of the Electronics IOR as well as the exam rate for both potential control groups, all current non-member IORs projected to be in the Electronics CEE eventually, and a subset of that larger control group consisting of only those IORs currently in a "Trusted" trader program. The reader can see that the graph of the exam rate for each of the potential control groups satisfies the parallel trends assumption. Given the parallel trends, either control group would be valid. However, as the exam rate for Electronics industry non-members who are also "Trusted" traders track closer to the CEE members in the pre-period than the full control group, the subgroup of IORs who are also "Trusted" traders are used as the control group in our preferred specifications. Finally, the black line in Figure 1 shows the number of Electronic CEE members over time. Although the number of member IORs increased over time, the exam rates shown are for consistent samples over the entire time period. If an IOR was a CEE member by the end of the data extract window

(September 2014), then the IOR was included in the treated group for the entire period the line graphs illustrate. This methodology is consistent across all figures presented in this section.

5.1.1 Form 28s: Electronics

Figure 2 illustrates the Form 28s per 1,000 entries rate for members of the Electronics IOR as well as the corresponding rate for both potential control groups. The figure shows that both potential control groups satisfy the parallel trends assumption but that the control group including only "Trusted" traders begins and persists at a level more similar to the treatment group than the other control group. Another point of note from Figure 2 is that the period of observation for forms data only extends back to October 2011. Therefore, the pre-treatment window does not encompass a period of observation as long as the available post-treatment window. In fact, if the CEE grand opening date were used for the date Electronic CEE members began treatment then there would not be any pre-treatment period. It is only due to the fact that the grand opening corresponded to a pilot program that did not offer the full array of CEE services that the DID analysis had a pre-treatment period available and was even available as a potential analysis tool given the short window of data availability.

5.1.1 Form 29s: Electronics

Figure 3 shows the Form 29 rate for both the treatment group and both possible controls. The figure shows that the parallel trends assumption is satisfied by both potential control groups. Figure 3 also shows how the Form 29 rate for the IORs that joined the Electronics CEE was already extremely low even before they joined the center.

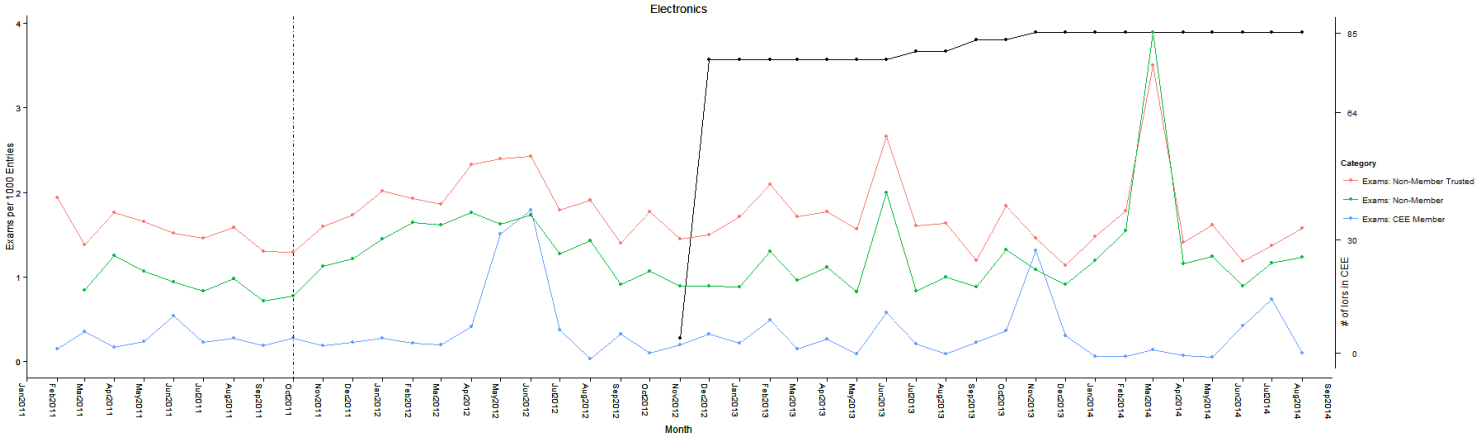
5.1.1 Form 4647: Electronics

Figure 4 shows the rate at which Form 4647 was issued to IORs assigned to the Electronics industry. The figure shows how 4647 forms were almost never issued to IORs that eventually joined the Electronics CEE both before and after the start of the Electronics CEE. Furthermore, the rate of Form 4647s being issued appears to increase for nonmember CEEs over time. The slight upward slope of the outcome in both control groups in the pretreatment period while the treatment group remains flat means that the parallel trends assumption necessary for DID may be violated for this CEE and outcome pairing, given the available control groups. The results of the regression analysis are shown for completeness, but caution should be taken when interpreting the results.

5.1.1 Summary of Results for the Electronics CEE

Based on these results, the Electronics CEE appears to have achieved significant reductions in the rates of trade exams and receipts of Form 28s for current members. The results for the effects of the Electronics CEE on the rate of Form 29s were not statistically significant. Finally, although our regression results show a negative and statistically significant impact of the Electronics CEE on the rate of Form 4647s, the parallel trends assumption necessary to use this methodology was not satisfied in this instance.

Figure 1: Exams per 1000 Entries for Electronic Industry IORs



Source: Calculations based off of data extracted from the ACS system at the (line/entry) level from FY 2008 - FY2014;Notes: Entry and (exam/form) data merged together at the IOR month level, using the entry date and the (form create/exam) date. IORs were included is a entry was recorded both before and after the CEE start date for the industry of 01OCT2011. To be included in the CEE member line an IOR would have to be a member before 01SEP2014

Figure 2: Rate of Form 28s per 1000 Entries for Electronic Industry IORs

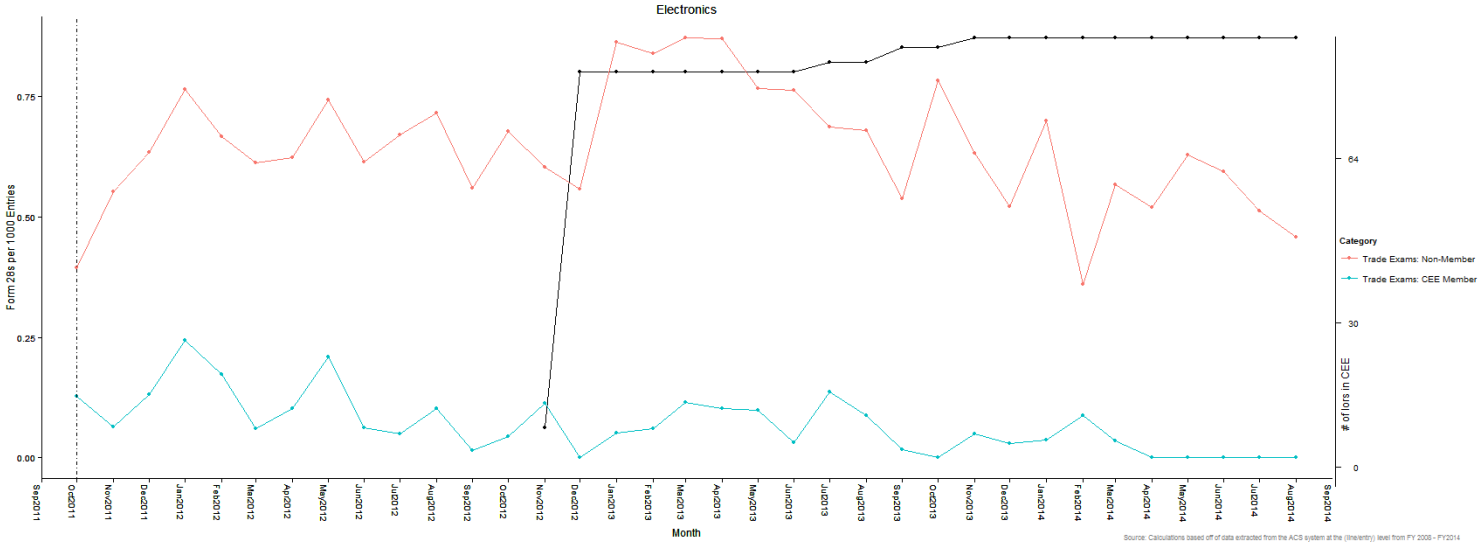
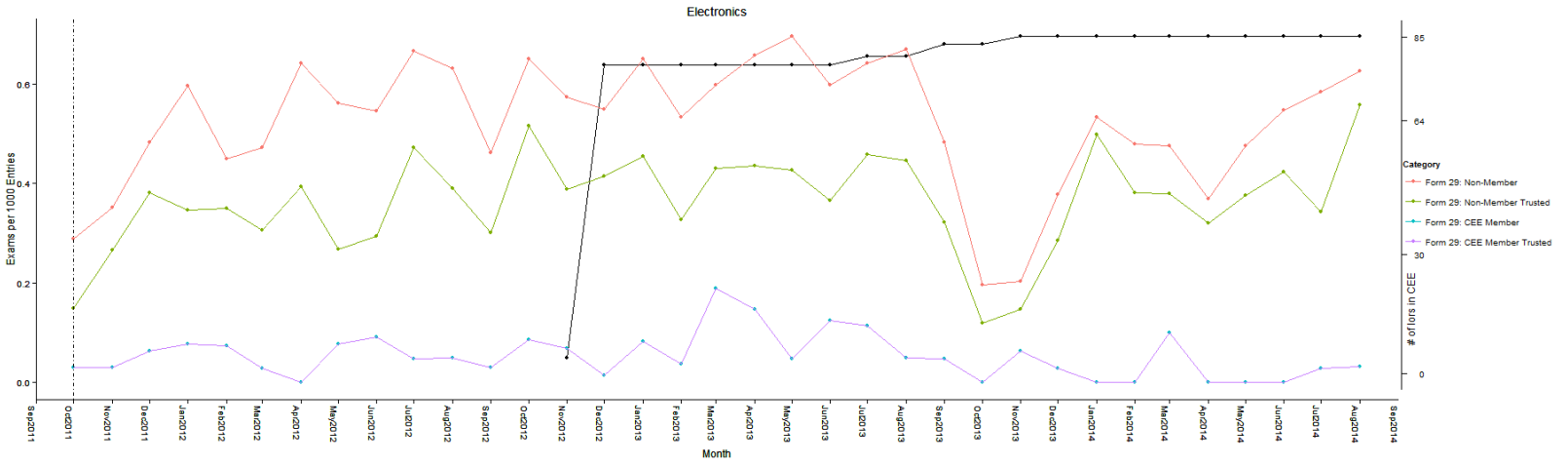
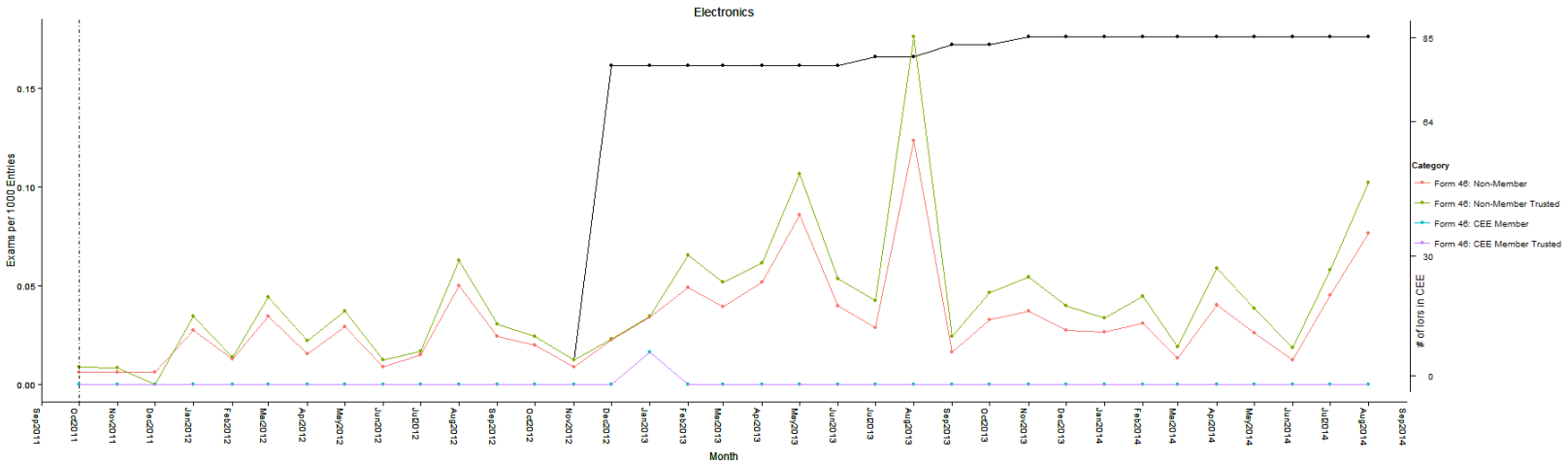


Figure 3. Rate of Form 29s per 1000 Entries for Electronic Industry IORs



Source: Calculations based off of data extracted from the ACS system at the (line/entry) level from FY 2008 - FY2014;Notes: Entry and (exam/form) data merged together at the IOR month level, using the entry date and the (form create/exam) date. IORs were included is a entry was recorded both before and after the CEE start date for the industry of 01OCT2011. To be included in the CEE member line an IOR would have to be a member before 01SEP2014

Figure 4: Rate of Form 4647s per 1000 Entries for Electronic Industry IORs



Source: Calculations based off of data extracted from the ACS system at the (line/entry) level from FY 2008 - FY2014;Notes: Entry and (exam/form) data merged together at the IOR month level, using the entry date and the (form create/exam) date. IORs were included is a entry was recorded both before and after the CEE start date for the industry of 01OCT2011. To be included in the CEE member line an IOR would have to be a member before 01SEP2014

5.2. Combined Results for All CEEs

In this section we present the results obtained for each of the four outcomes for all 10 CEEs. Table 10 shows the value of the coefficient of interest for each CEE outcome pairing for the preferred specification of the regression model, which uses "Trusted" traders in the control group.

Table 10: Base Results for All CEE-Outcome Pairings Using the Preferred Specification

CEE Membership	Date Center Opened	Date First Participant Joined	Reduction in Rate of Activity per 1,000 Entries Associated with Joining a CEE			
			Exams	Form 28	Form 29	Form 4647
Electronics	Oct-11	Nov-12	-0.377***	-0.152**	-0.075	-0.026**
Pharmaceuticals	Oct-11	Nov-12	0.713	-0.279	-0.177	-0.367***
Automotive	Sep-12	Nov-12	-0.131***	-0.108	-0.101*	0.003
Petroleum	Sep-12	Dec-12	3.478	-0.457	0.095	0
Base Metal	Apr-13	June-13	10.491***	-0.341	-0.015	-0.0003
Industrial	Apr-13	July-13	1.177	-0.535	-0.039	0.002
Machinery	Apr-13	June-13	0.03	0.419	0.275	0.002
Agriculture	Jun-13	July-13	----------	-0.182	0.256	0.093
Apparel	Jun-13	July-13	-0.475	-0.474***	-0.412**	-0.004
Consumer	Jun-13	July-13	-0.109	-0.233*	0.0005	-0.027

* Statistically significant at the 90 percent confidence level.
** Statistically significant at the 95 percent confidence level.
*** Statistically significant at the 99 percent confidence level.

The results presented in Table 10 above vary across CEEs and across outcome variables. The validity of these results depends on whether the parallel trends assumption described in the previous section holds. This assumption requires that the pre-treatment (before joining CEE) trends for the CEE members and the control group be parallel. We evaluate the results separately for each CEE and present graphs showing the trends in the CEEs and the non-CEE "Trusted" Traders with the interpretation of results

Electronics CEE

The results provide strong evidence that the Electronics CEE has reduced exam and form rates for participating accounts. As discussed in the previous section, the parallel trends assumption required for model validity appears to hold for the rate of exams, the rate of Form 28s and Form 29s. See Figure 5 and Figure 6 Below.

- At a 99% level of confidence, members of the Electronics CEE realized an exam rate reduction of 37.7 exams per 100,000 entries.
- The reduction in the rate of Form 28s per 100,000 entries was estimated at 15.2 with a 95% confidence level.
- Although the estimate for Form 4647s is negative and statistically significant, as discussed in the previous section, this may be because the parallel trends assumption doesn't hold. In this case, it doesn't hold because both before and after joining the Electronics CEE the rate of Form 4647s per 1000 entries for CEE members was

essentially zero. The negative estimate resulted from an increase in the rate of Form 4647s in the control group while the members of the Electronics CEE continue to get virtually no Form 4647s.

- The estimate for Form 29s was negative but not statistically significant. The result is suggestive of a reduction in Form 29 issuance rates, but the result could be due to chance.

Figure 5: Rate of Exams per 1000 Entries for Electronics CEE Members and "Trusted" Traders Control Group, Monthly Data

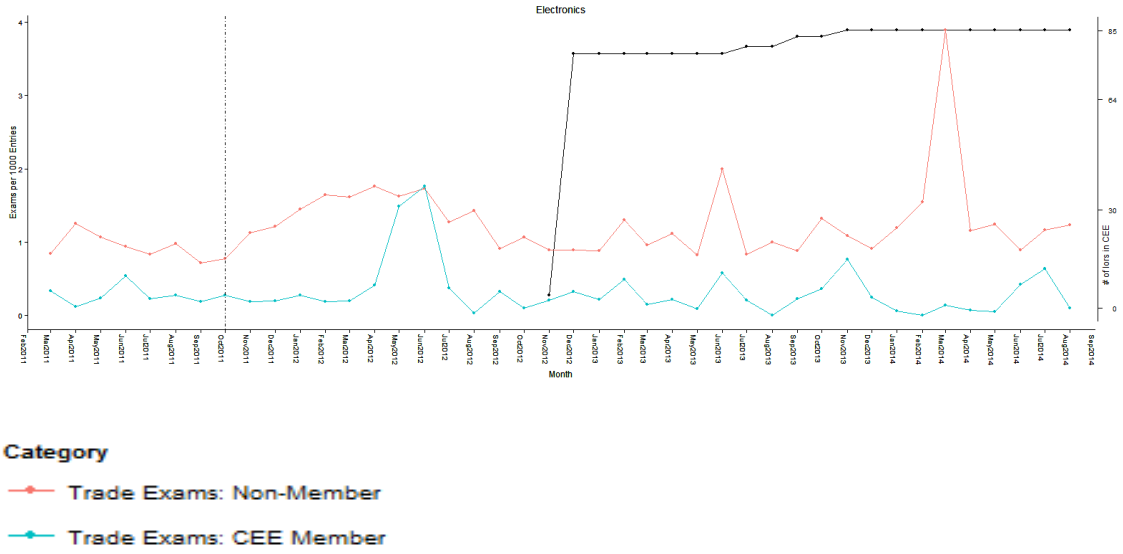
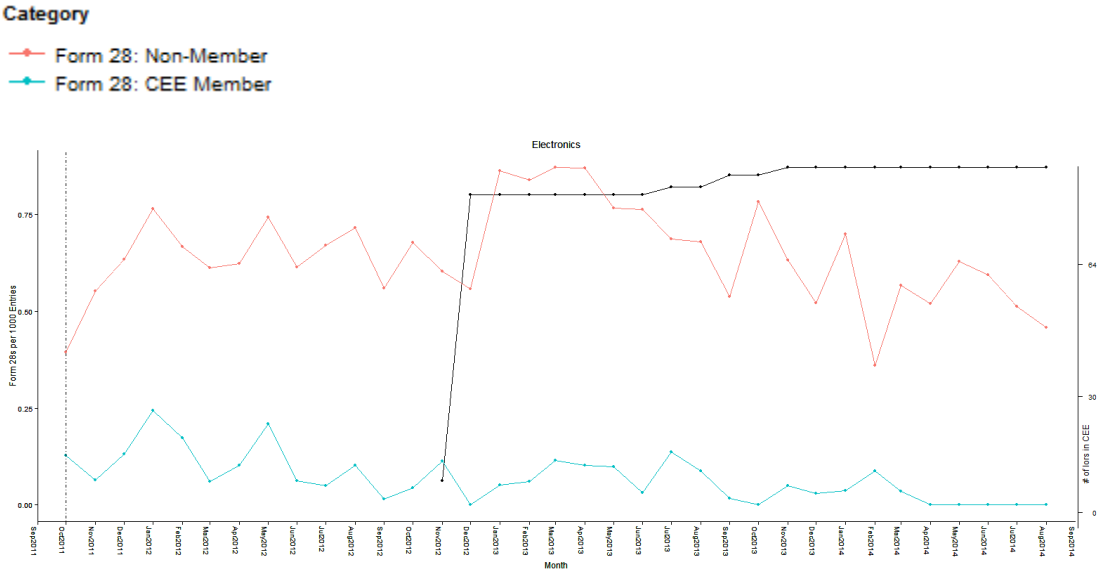


Figure 6: Rate of Form 28s per 1000 Entries for Electronics CEE Members and "Trusted" Traders Control Group, Monthly Data



Automotive and Aerospace CEE

Like the Electronics CEE, the Automotive CEE was among the first to begin operating and it has achieved demonstrable reductions in exam and form rates for its members. See Figure 7 and Figure 8 below show that the parallel trends assumption appears to hold.

- The estimated reduction of 13.1 exams per 100,000 entries associated with joining the automotive CEE was statistically significant at the 99% significance level.
- Members of the Automotive CEE realized a reduction of 10.1 Form 29s per 100,000 entries. The estimate was significant at the 90% confidence level.
- The estimated reduction in Form 28s was negative but not statistically significant.

Figure 7: Rate of Exams per 1000 Entries for Automotive CEE Members and "Trusted" Traders Control Group, Monthly Data

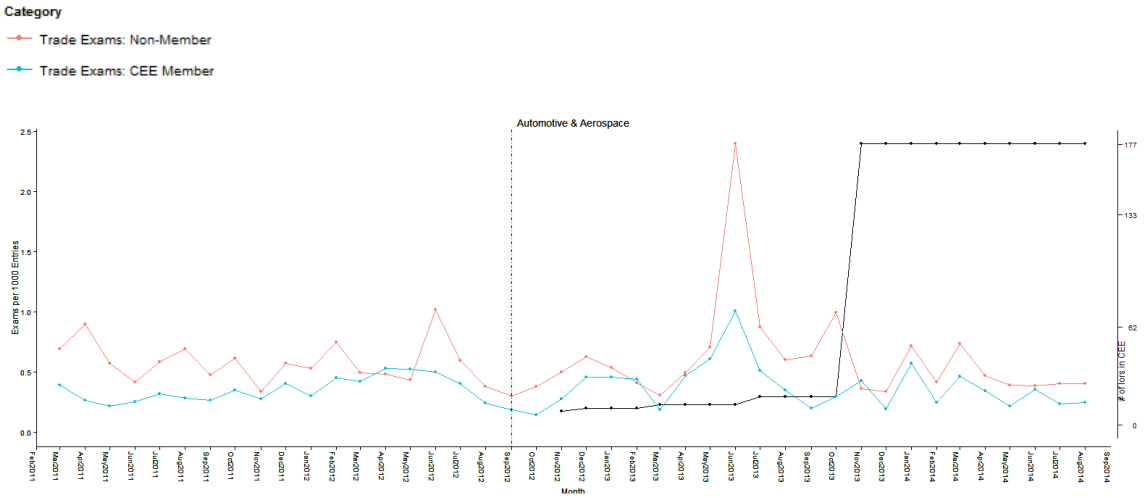
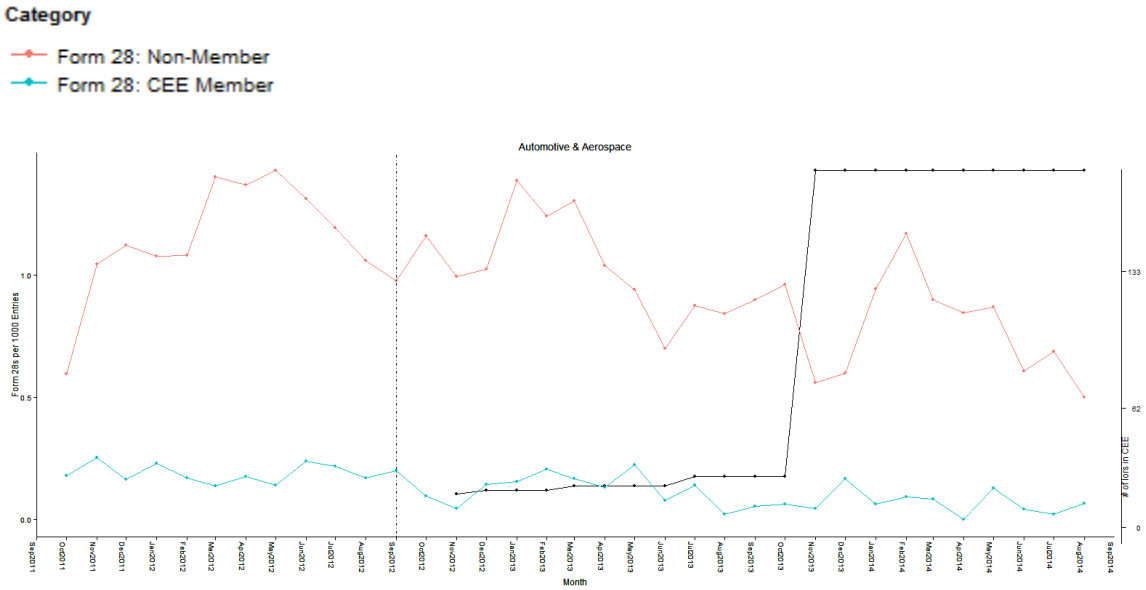


Figure 8: Rate of Form 28s per 1000 Entries for Automotive CEE Members and "Trusted" Traders Control Group, Monthly Data

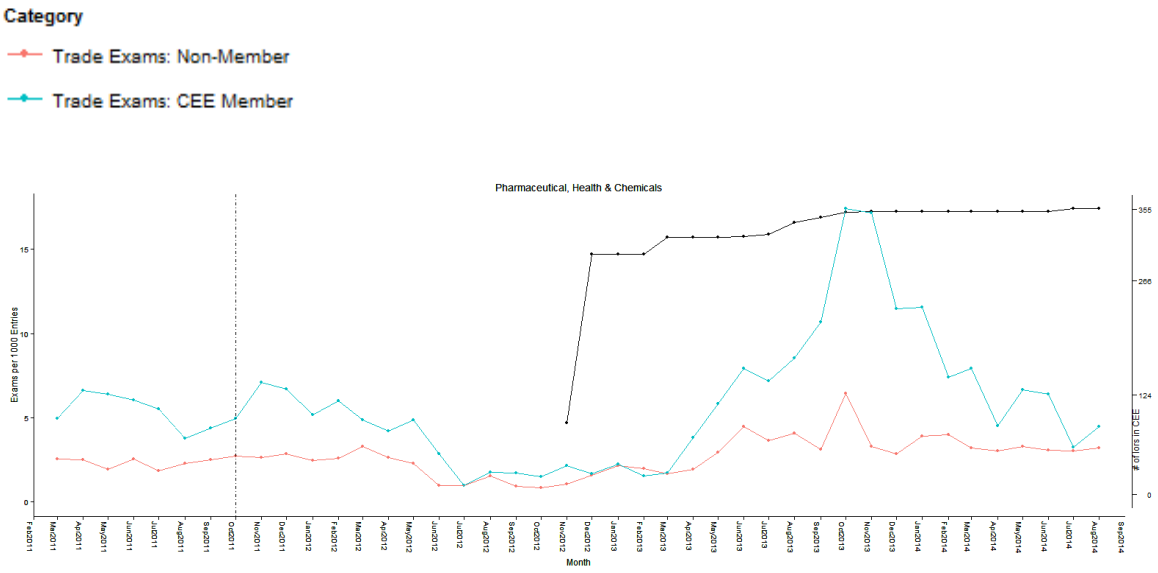


Pharmaceutical, Health and Chemical CEE

The only statistically significant effect on the outcome variables in the Pharmaceutical CEE was a reduction in Form 4647s. However, as was the case in the Electronics CEE, there are virtually zero Form 4647s issued to CEE members, either before or after joining. In this situation, an increase in the outcome variable for the control group will lead to a negative estimated effect of CEE membership on Form 4647 rates. The results for exams and the other forms are not statistically significant.

Figure 9 below shows that the Pharmaceutical CEE is unique in that the CEE members have a higher rate of exams both

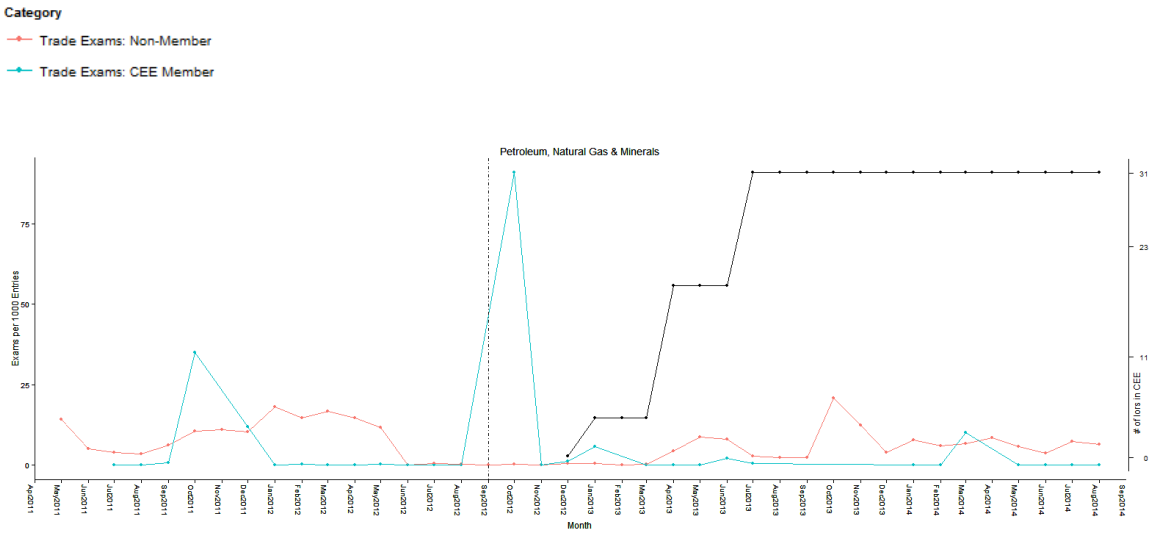
Figure 9: Rate of Exams per 1000 Entries for Pharmaceutical CEE Members and "Trusted" Traders Control Group, Monthly Data



Petroleum, Natural Gas and Minerals CEE

None of the results of this model are statistically significant and the point estimate for exam rates is actually positive. However, this result appears to be due to the fact that exams are very rare for the CEE members. This might be because CEEs in this sector bring in a large percentage of their imports through pipelines which may not be subject to the same types of enforcement activities as the imports that enter through other modes.

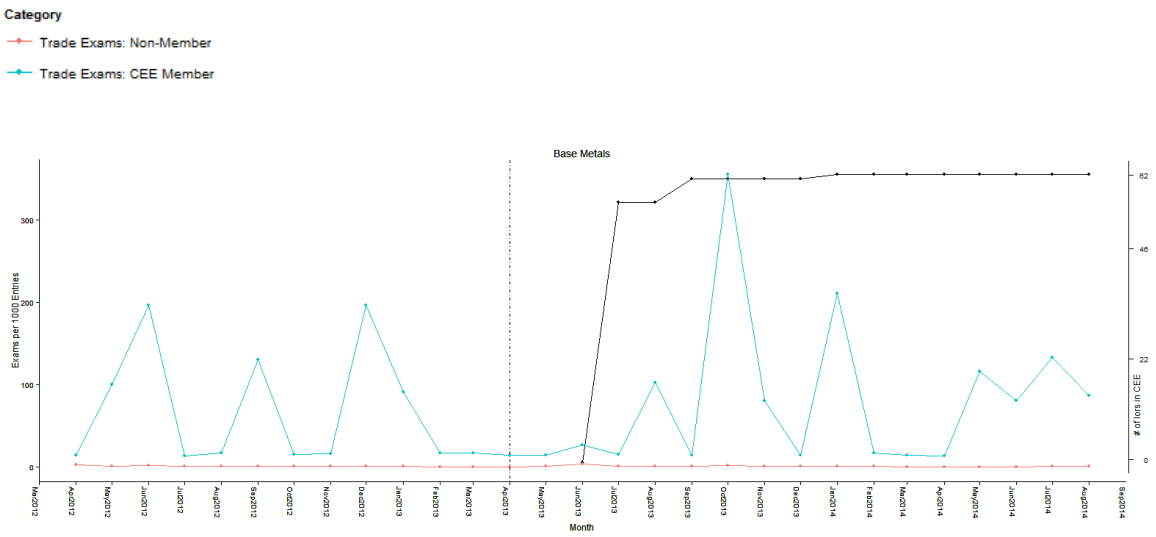
Figure 9: Rate of Exams per 1000 Entries for Petroleum CEE Members and "Trusted" Traders Control Group, Monthly Data



Base Metals CEE

The results indicate a large and statistically significant increase of an additional 1,050 exams per 100,000 entries associated with joining a CEE. However, this result is spurious. It appears to be driven by a large exam spikes that primarily affected one large company with many IORs. The results for Form 28s and Form 29s are negative, but not statistically significant.

Figure 10: Rate of Exams per 1000 Entries for Base Metal CEE Members and "Trusted" Traders Control Group, Monthly Data



Apparel, Footwear and Textiles CEE

The point estimates were negative for each potential outcome in this CEE and statistically significant for the rate of Form 28s per 1,000 entries and the rate of Form 29s per 1,000 entries. The parallel trend assumptions appear to hold as well. Therefore,

- Joining the Apparel CEE was associated with a reduction of 47.4 Form 28s per 100,000 entries and a reduction of 41.2 Form 29s per 100,000 entries.

Figure 10: Rate of Exams per 1000 Entries for Apparel CEE Members and "Trusted" Traders Control Group, Monthly Data

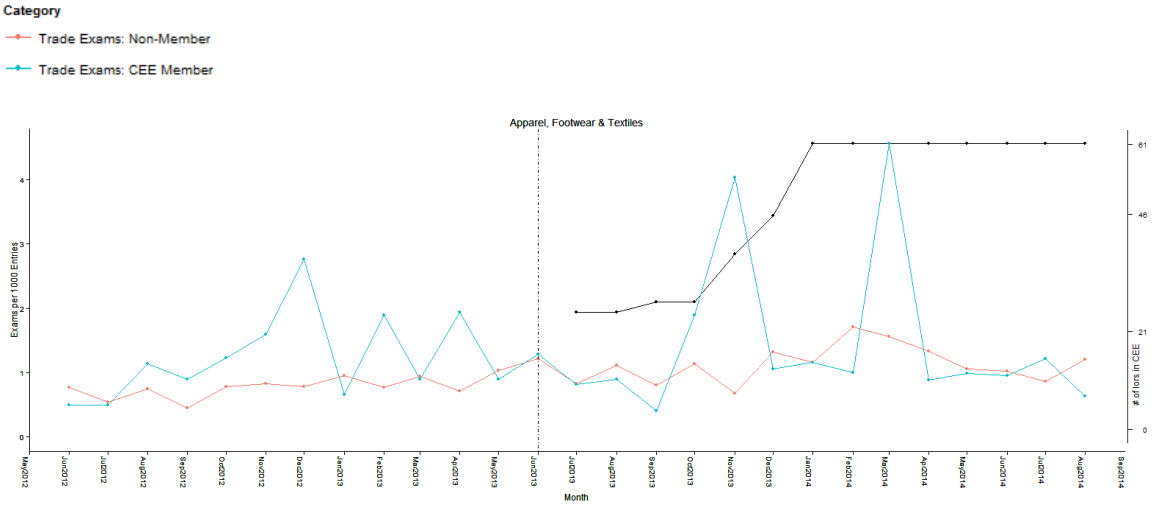
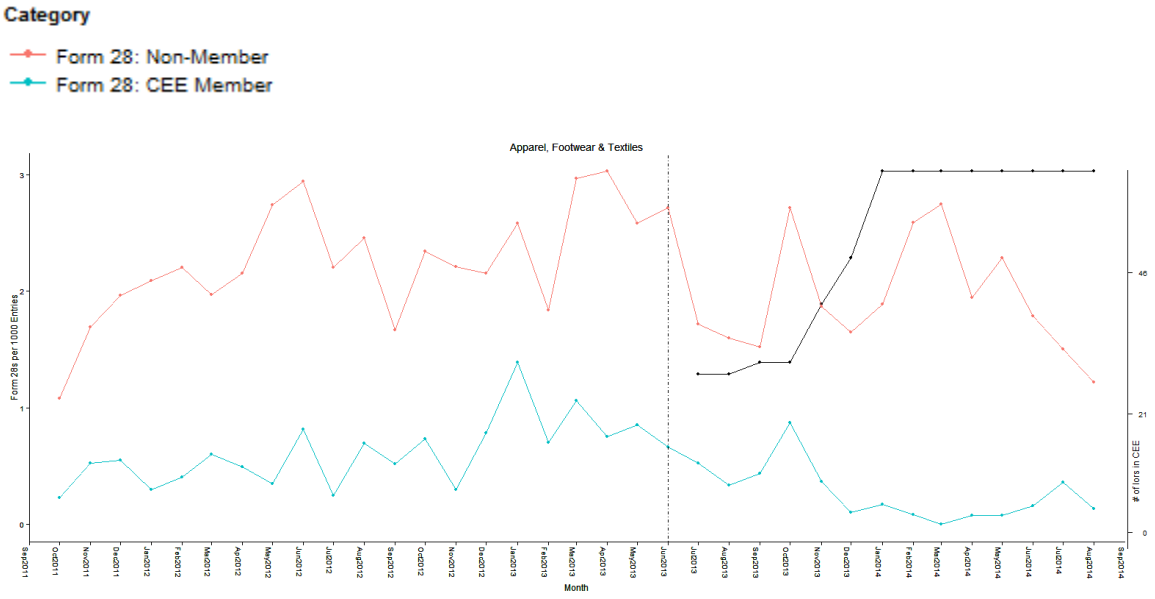


Figure 11: Rate of Form 28s per 1000 Entries for Apparel CEE Members and "Trusted" Traders Control Group, Monthly Data



Consumer Products and Mass Merchandising CEE

The point estimates were negative for each potential outcome in this CEE. There was a reduction of 23.3 Form 28s per 100,000 entries that was statistically significant at the 90% confidence level.

Figure 12: Rate of Exams per 1000 Entries for Consumer Products CEE Members and "Trusted" Traders Control Group, Monthly Data

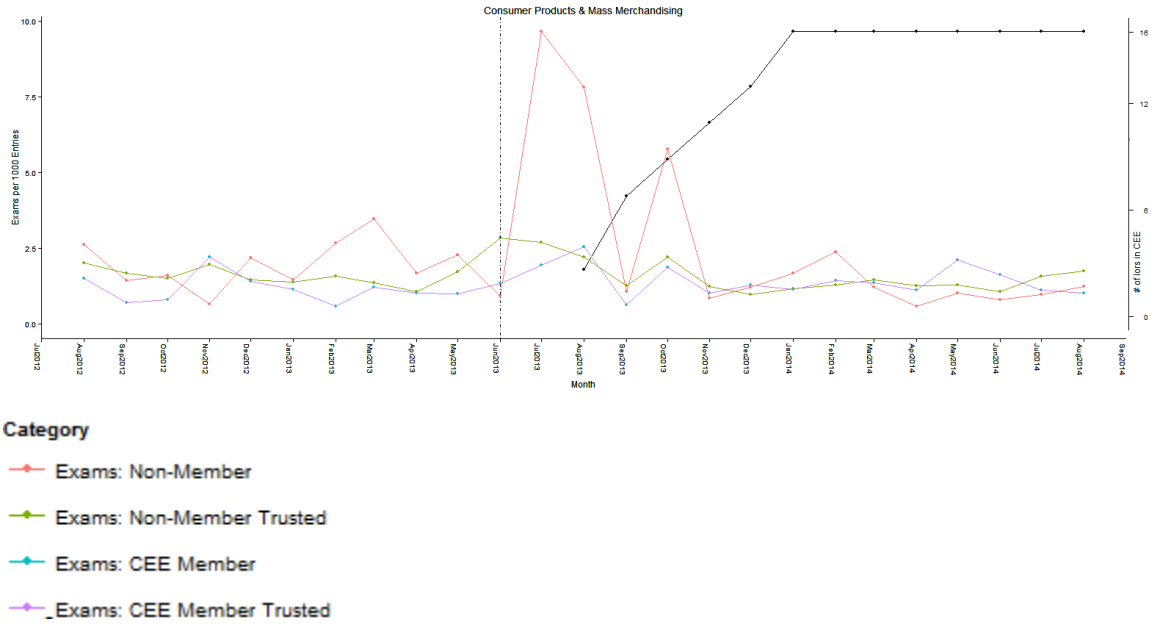
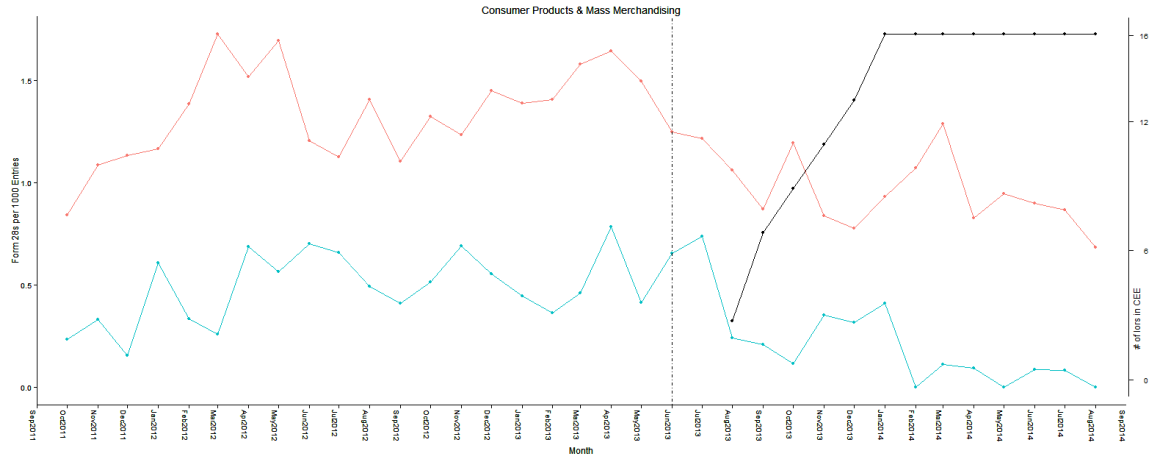


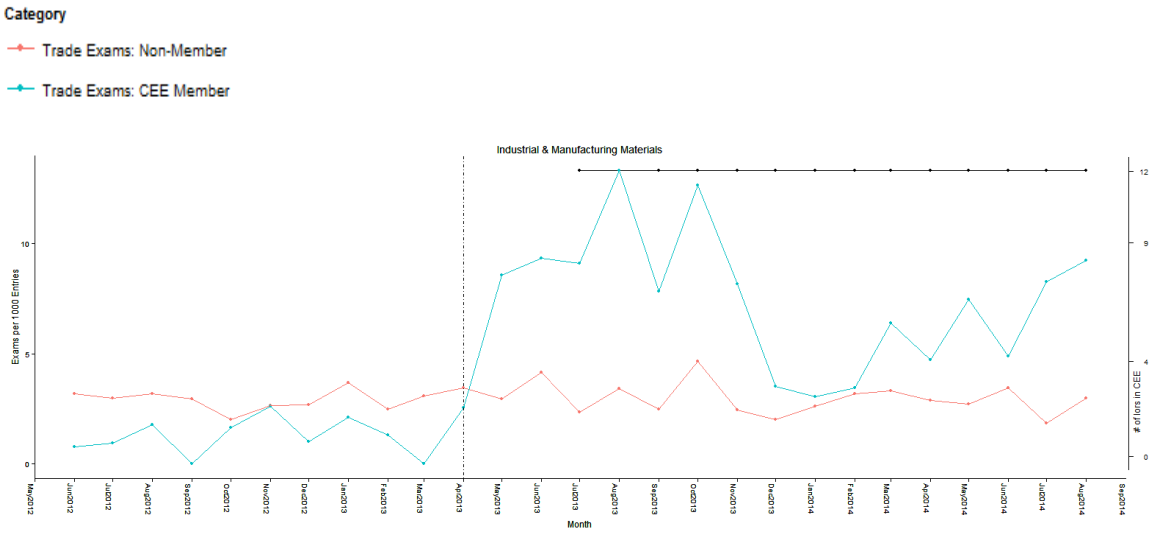
Figure 13: Rate of Form 28s per 1000 Entries for Consumer Products CEE Members and "Trusted" Traders Control Group, Monthly Data



Industrial and Manufacturing Material CEE

None of the results were statistically significant.

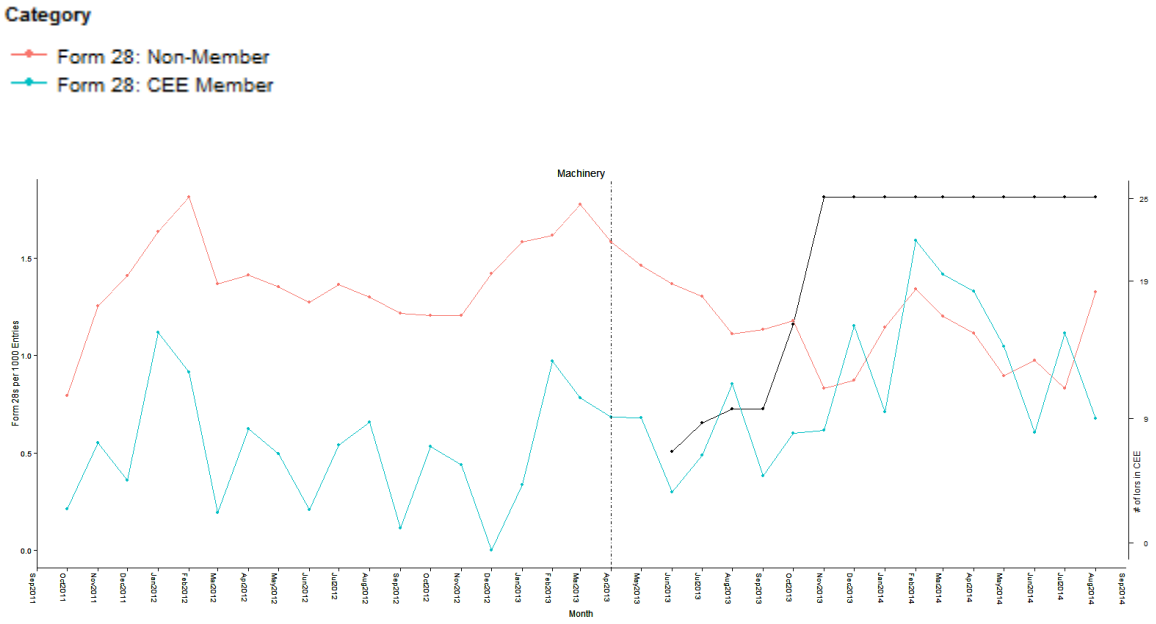
Figure 14: Rate of Exams per 1000 Entries for Consumer Products CEE Members and "Trusted" Traders Control Group, Monthly Data



Machinery CEE

None of the estimates for the Machinery CEE were statistically significant. In this CEE, the rate of exams for the CEE members catches up and begins to exceed the rate for the control group.

Figure 15: Rate of Exams per 1000 Entries for Machinery CEE Members and "Trusted" Traders Control Group, Monthly Data



Agriculture and Prepared Products CEE

Inconsistent recording of the exam data in the Agriculture CEE prevented us from obtaining a valid estimate of the effects of the Agriculture CEE on exam rates.

Chapter 1, Section 6. Conclusions

Examining the results of Table 10 in the context of the results relating to cases where the assumptions of our analytic model might not have held allows us to have more thorough and accurate understanding of the impact of CEEs on IORs. The results show that the various CEEs appeared to have driven down the rate of exams, the rate of issuance of Form 28s, and the rate of issuance of Form 29s. Furthermore, the estimates for many of the results that were not statistically significant still have a negative point estimate. This suggests the results may be more broadly applicable than to just the cases with statistically significant results. In addition, the results appear to vary by CEE with the centers open the longest achieving the greatest success on average.

The parallel trends assumption appears to hold for the Electronics, Automotive, Apparel and Consumer Products CEE. However, in the estimates of the effect of the Base Metal CEE on exam rates and the effects of the Electronics CEE and the Pharmaceutical CEE on Form 4647 issuance rates appear to be spurious due to violations of model assumptions.

Results of the model were inconclusive for some of the CEEs. Possible explanations include:

- Not enough time to detect effects for CEEs that began accepting members later than the Electronics and Automotive CEEs
- Phased in implementation of CEE functions
- Too few participating companies in the CEEs.
- Inconsistent recording of the exam data in the Agriculture CEE prevented us from obtaining a valid estimate
- Exams are infrequent events that often occur in clusters related to CBP enforcement initiatives which make it more difficult for statistical tests to detect changes.
- Sector characteristics that violate the assumptions of the statistical model or reduce the power of statistical tests to detect changes. Examples include:
    - In the Base Metals CEE, a large spike in exams that primarily affected one large company with many IORs soon after it joined the CEE created a spurious result.
    - In the Petroleum CEE, exams are very infrequent for the CEE participants, perhaps because a large share of participant imports enter through pipeline and aren't subject to the usual types of inspection. The infrequency of exams makes it difficult for statistical tests to detect changes.

The study did find measurable and significant benefits to importers from participating in some of the CEEs. It also found potentially large benefits from extending membership to more importers.

Part I, Chapter 2. Recommendations for Future Research

Bryan Roberts, Katie Foreman, Adam Rose, and Isaac Maya

This study has provided evidence that some of the CEEs have already generated measurable benefits to participating IORs in terms of reduced examination and form issuance rates, even in the very early stages of implementation. Additionally, the study estimated a rough upper bound on the benefits that could potentially be generated by extending membership to more trusted traders in some of the CEEs. However, there is still significant work to be done to refine and extend the benefit estimates captured in this study and to measure the additional facilitation and enforcement benefits of the CEEs in order to get a fuller picture of their value. Important areas for additional study are presented below.

Chapter 2, Section 1. Estimation of Enforcement Benefits

This study did not attempt to measure the enforcement benefits of CEEs. However, as CBP continues to expand the CEE program to cover more IORs and take over additional functions that are still handled locally by ports, measuring enforcement benefits will become critical. Ultimately, CBP's goal is to assign all IORs to a CEE in order to transform the import process from a transaction processing approach to an account management approach. As CEE coverage expands to more and more IORs that are not currently Trusted Traders or that may represent a higher level of risk, the enforcement roll of the CEEs will become even more important. If CEEs are able to successfully segment IORs by risk for more effective targeting of enforcement efforts, the burden of trade exams and administrative forms may be shifted from lower risk to higher risk members. Relatively high-risk members may experience increased examination and form issuance rates. However, if CEEs are successful in their risk segmentation efforts, benefits in terms of deterrence, detection of violations and revenue collection would be expected to increase.

In our Phase II analysis, the CREATE/ Econometrica team has assessed the benefits and costs of enforcement efforts in CBP's Priority Trade Issues (PTIs):

- Intellectual property rights (IPR).
- Antidumping countervailing duty (AD/CVD).
- Free trade agreements (FTAs).
- Import safety.
- Textiles.

The work from this CEE study and the PTI study can be leveraged to evaluate the enforcement impact of the CEEs in terms of each PTI.

Chapter 2, Section 2. Benefits of Improved Coordination with Partner Government Agencies

This study focused on CBP's trade enforcement and facilitation activities and did not attempt to assess the effectiveness of CEEs in terms of coordination with partner government agencies

(PGAs). In addition to extending CEE coverage, CBP is also continuing to work with trusted government agencies to implement a "single window" that will allow IORs to interact seamlessly with CBP and its trusted government agencies. The specialization of CEEs according to sector, should allow them to build more effective lines of communication and coordination with the PGAs most relevant to the sectors covered by given CEE.

Chapter 2, Section 3. Estimation of Total Social Costs and Benefits

In this Phase I study, the CREATE team was able to develop estimates of the private cost savings achieved by IORs from reduction in examination and form issuance rates. However, there are significant additional costs and benefits from a societal perspective that should be taken into account when assessing the value of CEEs, including:

- **Time Cost Savings**. We did not have sufficiently reliable data to estimate the benefits of reduced dwell time from CEE participation. Because CBP data systems are not currently able to capture dwell time in terms of hours and the current dwell-time estimates in terms of days captured by CBP systems are not considered reliable, estimation of this potentially significant benefit might require the design of a program evaluation that collects information on a sample of importers.
- **Budgetary Savings to CBP and PGAs.** This study focused on the savings from the importer point of view. It did not assess the savings to CBP and other PGAs that might be achieved by CEEs or the additional tariff revenue that might be collected.
- **Other Social Costs and Benefits**. Ideally, a cost-benefit analysis should capture the total benefits of enforcement and trade facilitation on U.S. consumers and businesses. Additional benefits might include the value of additional trade facilitated by the CEEs in terms of consumer and producer surplus or increased GDP and job growth, the value of injuries and deaths prevented due to more effective import safety enforcement and the value of improved intellectual property enforcement.

Chapter 2, Section 4. Development of Refined Metrics and Estimates Specific to Individual CEEs

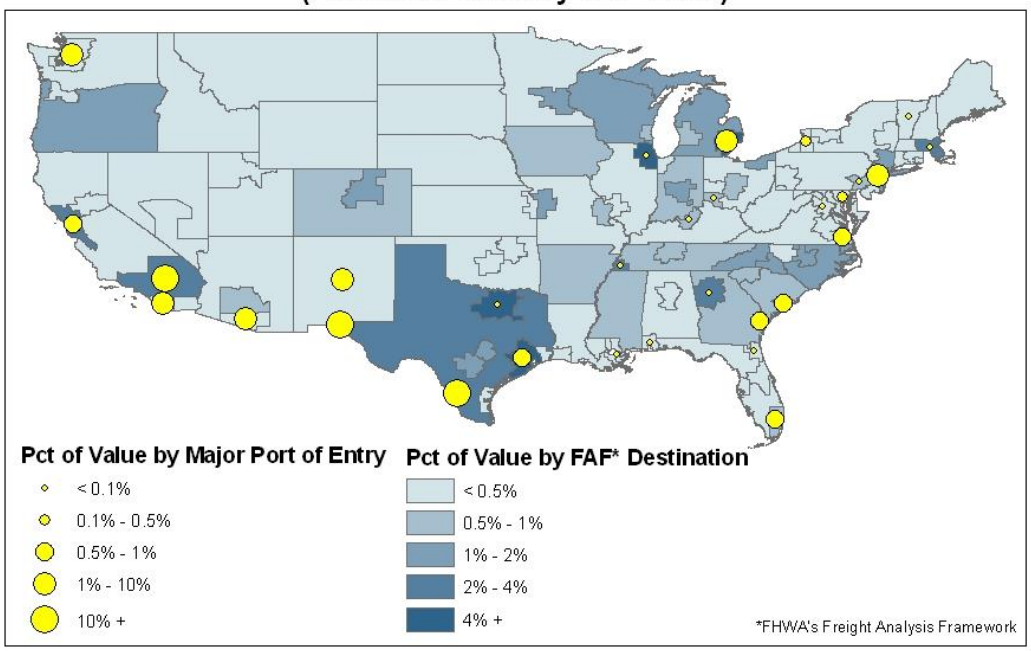
This study used the same methodology to estimate benefits in all of the CEEs in terms of the same three outcome variables. However, as the case of the Base Metals CEEs indicates, the sectors managed by each of the CEEs pose different enforcement and facilitation challenges based on characteristics of the covered sectors, such as type of trade risks, primary modes of entry, and types of technical expertise Trust required.

Chapter 2, Section 5. Spatial Analyses

Spatial analyses could be used to support a number of different analytical objectives, such as refining net benefit estimates derived from logistics and time cost savings, developing metrics and estimates for specific CEEs, et cetera. A wide variety of relevant data sources come with geographic identifiers that can be linked to underlying mapping software and used to generate not only maps but also spatial variables based on distance. For example, as part of its Freight

Analysis Framework (FAF), the Federal Highway Administration (FHWA) has combined several date sources on U.S. foreign imports into a database that describes transportation flows, by transportation mode and commodity, between foreign origins, U.S. ports of entry, and U.S. domestic destinations. The following figure provides an example of a map based on these data, which could be used to help identify shipment patterns of foreign imports of electronics that are time sensitive in nature (and which therefore may be more affected by CEE practices that affect CBP's import processing time). The map was restricted to truck movements that travel more than 500 miles from the port of entry to the domestic destination (calculated by the mapping software used); rail is competitive at these longer distances so it is assumed that truck shipments at these distances reflect some sensitivity to time.

Foreign Imports of Electronics
Delivered by Truck to Domestic Destinations > 500 Miles from Port of Entry
(Percent of Value by FAF* Zone)



Part II: Importer Survey Methodology and Results

Part II, Chapter 3. CREATE Survey

Fynn Prager, Adam Rose, Nathaniel Heatwole, Brett Shears, and Bryan Roberts

Chapter 3, Section 1. Introduction

This chapter presents the research question, target sample and distribution process, research design, and the process of survey development. We crafted a survey of the trade community to identify and quantify the impacts of the Electronics CEE on the administrative and other business costs related to CBP procedures for bringing imported goods into the U.S. The survey requested general information about importing companies in the industry sectors covered by the Electronics CEE, and inquired about changes in administrative costs associated with importing between 2010 and 2013. Responses to this survey were combined with data from CBP and other government agencies to estimate all benefits and costs of the Electronics CEE program.

Chapter 3, Section 2. Research Question

Our main research question for the survey was: *What are the changes in administrative and other business costs experienced by importing companies resulting from Electronics CEE implementation?*

This survey complements data collected from CBP detailed in the chapter on benefits estimations. In the survey, we sought to identify and quantify changes in administrative and other business costs associated with fulfilling CBP regulatory requirements at the company and employee level, and how they have changed after introduction of the Electronics CEE. These administrative costs include filing paperwork with government agencies or keeping abreast of policy specifics and changes. These costs do not include the monetary value of taxes, tariffs or other payments to governments. We also sought to identify business costs associated with Audits, Holds and Exams, and Communications with CBP and/or Electronics CEE.

Chapter 3, Section 3. Survey Target Sample and Distribution Process

The survey was designed to solicit responses from companies importing goods covered by the Electronics CEE, as well as the brokers which represent them. Specifically, this means the HTS codes outlined in Chapter 2. Responses from other trade community members, such as individuals representing law firms, consulting firms, and industry associations were not desired, and hence a screening question removed these responses from the survey. Included in the target sample were importing companies and their brokers who are members and non-members of the Electronics CEE program, as well as both US-owned and foreign-owned companies and brokers. The Electronics CEE currently has 47 participants, while the broader industry is estimated to include 2000 companies (Interview with Anne Maricich, Electronics CEE Director).

The survey was designed in the Qualtrics online system, and distributed via email and weblink (including a cover letter from the USC CREATE Homeland Security Center) with assistance from Maria Luisa Boyce (CBP Senior Advisor Private Sector Engagement), the Electronics CEE, and members of Advisory Committee on Commercial Operations of Customs and Border Protection (COAC). The intention was to reach Electronics CEE members though the CBP database, and the non-Electronics CEE members through the trade associations such as TechAmerica (formerly the American Electronics Association), ICPA (International Compliance Professionals Association), and AAEI (American Association of Exporters and Importers), which have representatives or connections to the COAC board.

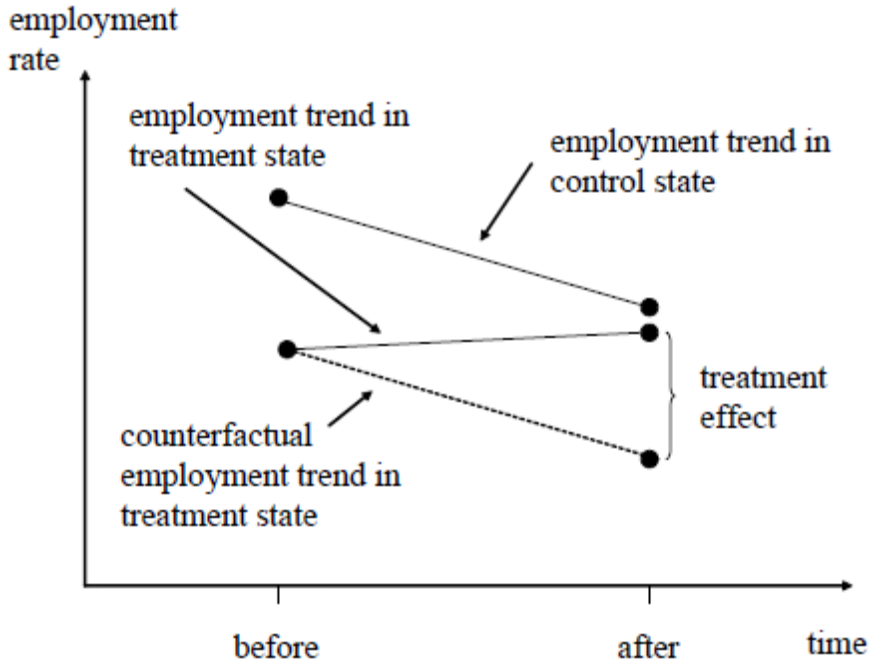
Chapter 3, Section 4. Research Design

The research design combines ideas from the Standard Cost Model (SCM) and the Difference-in-Differences estimation approach. The SCM is a framework used to estimate the administrative costs of regulatory changes, while the Difference-in-Differences estimation approach is used to identify policy impacts by comparing treatment and control groups before and after a policy is implemented. This study used the SCM as a guide to designing survey questions about administrative costs the trade community faces with respect to CBP regulatory burdens; please see further details in sections 4.2, 4.3, and 4.4. The Difference-in-Differences approach was used as a guide to developing the broader research design. For example, most questions are structured to solicit cost changes between 2010 (before the CEE program) and 2013 (the latest full year of operation), as well as a comparison between CEE participants and non-CEE participants. Please see further details in section 4.1.

Chapter 3, Section 5. Differences-in-Differences

Differences-in-Differences is a policy impact estimation approach which compares treatment (policy intervention) and control (no policy intervention) groups over two time periods (before and after the policy intervention). The change over time for the control group is subtracted from the change over time for the treatment group. If we compare only second period differences between the treatment and control groups, we may not be controlling for important differences between the two groups. As such, our survey asked for administrative and business costs changes between 2010 and 2013, and compared CEE and non-CEE responses.

For example, Card and Krueger (1994) analyzed the impact of an April 1992 minimum wage change in New Jersey by comparing employment levels in fast food restaurants for New Jersey and eastern Pennsylvania between February and November 1992. If we only looked at the second time period, when New Jersey had lower fast food restaurant employment than Pennsylvania, the evidence would appear to confirm economic theory that minimum wage increases would reduce employment. However, when the Differences-in-Differences approach is employer, the two states are compared between the two time periods as well. This approach shows that between February and November 1992, fast food restaurants reduced employment in Pennsylvania, while increasing employment in New Jersey. This suggests that a higher minimum wage did not cause the job cuts predicted by economic theory, in the short term at least.



Source: Mostly Harmless Econometrics (Angrist and Pischke, 2008)

Follow up studies suggested that Pennsylvania in fact had notably distinct employment variations to New Jersey, implying that it was not a good control state with which to examine effect of a policy treatment in New Jersey. This same problem may diminish the efficacy of the Differences-in-Differences approach for this research project. An important assumption behind this approach is that the treatment and control groups are similar in all (or at least the most important) respects except for the policy intervention. However, CEE participants and non-CEE participants are not randomly assigned; they were selected by the Electronics CEE program on the basis of membership in other CBP programs. Initially, the Electronics CEE program targeted those companies participating in the Importer Self-Assessment (ISA) program. ISA provides numerous benefits on the basis of high compliance rates and a program fee; hence, these companies tend to be larger, lower risk, and "first movers". The Electronics CEE has since broadened this to include importers participating in the Customs-Trade Partnership Against Terrorism (C-TPAT) program, which is also a selective group.

One possible definition for the control group is those companies which are likely to join the CEE program in the future. The Electronics CEE has determined that it would target those companies with 50 percent or more of imports within the HTS commodities list for the center, regardless of which other CBP programs the companies currently participate in.

Chapter 3, Section 6. Standard Cost Model

The SCM is a commonly used approach to evaluate the administrative costs of policies to regulated companies. These "burdens" include costs of administration such as filing paperwork with government, or keeping abreast of policy specifics and changes. These burdens do not include taxes, tariffs or other formal payments to governments.

Following the SCM framework, our headline research question is comprised of the following sub-questions (see Figure 1 for a visual of the SCM):

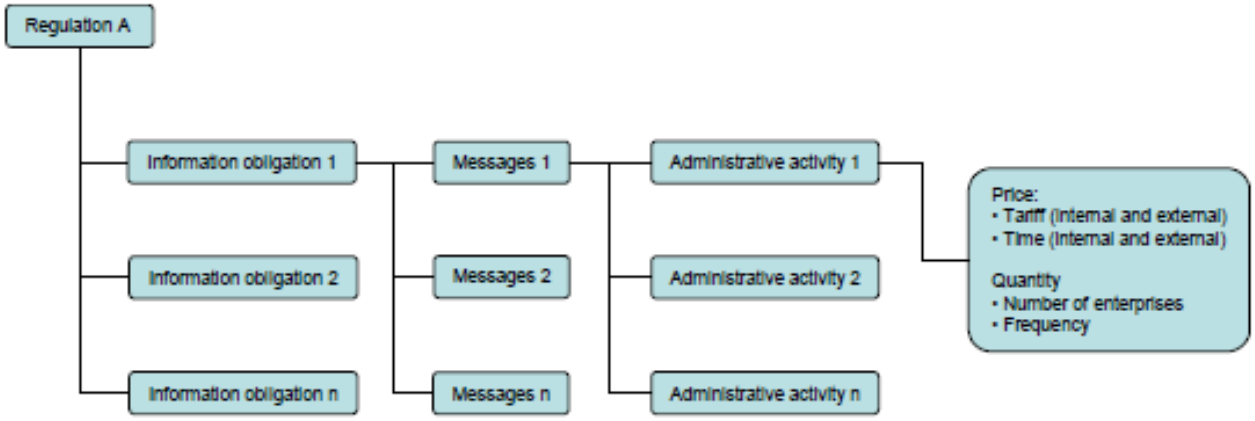
1. What are the *information obligations* facing Electronics importers?
    a. In SCM, *information obligations* are categories of communications flows from companies (many to government) required/changed by particular policies.
    b. In this case, these would include the various forms and import processes that the CEE aims to impact, such as the forms CF-3461, CF-7501, CF-28 and CF-29, CF-19 and other Post-Entry Amendment forms, Holds and Exams, and communications with CBP.

2. What *messages* are required by each *information obligation?*
    a. In SCM, *messages* are specific company communications required/changed by policies.
    b. In this case, the messages required for the CF-3461 Entry Summary form, for example, are those detailed in the form.

3. What are the *administrative activities* associated with each *message*?
    a. In SCM, *administrative activities* are the day-to-day activities undertaken by companies to communicate messages.
    b. In this case, the *administrative activities* required for the CF-3461 Entry Summary form, for example, are the entry of bill of lading data into the form, as well as the submission of the form. In most cases, the CF-3461 is submitted electronically, yet paper submissions are still undertaken by some importers; other forms are sometimes submitted in paper form, thus requiring a mailing process.

4. How have the costs associated with these *administrative activities* changed as a result of the Electronics CEE implementation?
    a. Costs are estimated by multiplying the wages, time taken, and frequency of compliance messages by the number of businesses impacted by the Electronics CEE

Figure 1: Relationship Between the Different Components of the Standard Cost Model



Source: Eurostat, 2004.

It is important to note that, alongside the inclusion of the Differences-in-Differences estimation approach, we have diverged from the SCM in numerous further respects, including: Observation Approach, Sampling, and Costs Changes Estimated.

- *Observation Approach*. SCM is usually conducted with interviews of administrative officers at relevant businesses. While this approach is likely to achieve more accurate results – primarily because follow up or clarifying questions can be asked by the interviewer – it is a time consuming approach. More importantly, in this study the CBP would not provide our research team with names and addresses of target companies for privacy and security reasons. Instead, we developed an online survey to reflect the same conceptual framework as the SCM, yet which could be administered anonymously.
- *Sampling.* SCM follows an unusual sampling approach, such that a "normally efficient business" is identified through an iterative process of interviews, analysis (to identify the median responses), and expert validation. This is one way to identify the true "average" business when sample sizes are small. In our case, the sample of Electronics CEE participants is currently 47 and hence we aimed to survey as many as possible to reveal their likely cost changes. The population of non-Electronics CEE participants is not precisely known by CBP (due to market fluctuations, the complexity of international trade, and, most importantly, the overlap of commodities imported between different CEEs), though it is estimated to be about 2000. We aimed to solicit responses from a large enough sample to capture the true "average" business through statistical analysis.
- *Cost Changes Estimated.* SCM usually focuses on administrative cost impacts only. Our broader study – estimating the Costs and Benefits of the Electronics CEE program implementation – analyzes administrative costs as well as willingness to pay for improvements in dwell time and reliability. As such, we have included in the survey numerous questions on the business cost of delays caused by CBP holds, exams, and other import processes. These questions aim to provide us with corroborating evidence for the willingness to pay calculations, as well as further insight and data inputs into the total cost change estimates of CEE program implementation. Table 1 outlines our initial

understanding of the information obligations, messages, and administrative activities related to CEE implementation. The aim in Table 1 is to first be as comprehensive as possible in terms of the regulatory requirements facing Electronics importers. The second step is to identify which elements may have changed as a result of the Electronics CEE implementation (while accounting for other parallel economic and policy changes).

Table 1: Standard Cost Model Components in the CEE Project

Information Obligation	Messages	Admin. Activities	CEE impacts
Cargo Entry Form Submission	CBP 3461 Entry/Immediate Delivery Many importers have brokers file on their behalf; except "self-filing" companies.	Combine invoice and bill of lading Form filing for each form	CEE usually not involved as cargo is released by ports. CEE could intervene if there is an issue.
	CBP 7501 Entry Summary This is the primary document for each shipment or entry. Many importers have brokers file on their behalf; except "self-filing" companies.	Combine invoice and bill of lading Form filing for each form	CEE reviews all of participant 7501s flagged by CBP system. Non-CEE participant importers might have multiple ports review 7501s.
Post Entry Activities	Respond to CBP 28 "Request for information" form. CEEs centralize CF-28s so importers only have to deal with the CEE. Also the CEEs are supposed to combine multiple CF-28s and only issue one to the importer.	Form filing. Calls, emails, letters. Provide requested – e.g. physical sample, design documents, proof of payment.	Now CEE not port for participants. CEEs have aimed to eliminate and move to email dialogues. For non-CEE participants, now email rather than overnight mail in many cases.
	Respond to CF-29 "Notice of Action". Usually notifies importer of the CF-28 result, but could be issued without a CF-28.	Form filing. Calls, emails, letters. Provide requested – e.g. physical sample, design documents, proof of payment.	Now CEE not port for participants. CEEs have aimed to eliminate and move to email dialogues. For non-CEE participants, now email rather than overnight mail in many cases.
	CBP 19 Protest form Used by companies to challenge a CBP decision after liquidation of an entry (liquidation normally happens 10 months after the shipment released). Also used to request a refund after entry liquidation	Form filing.	

Information Obligation	Messages	Admin. Activities	CEE impacts
	Post Entry Amendment (PEA)/ Post Summary Correction (PSC) Both filed after entry is filed and before it is liquidated by importer (or broker) to correct an entry and request a refund. PEA is a manual paper document (filed in ACS); PSC is an electronic transmission (filed in ACE).	Form filing.	CEE participants benefit by being able to file PEAs with the CEE by e-mail. Also the importer can file all PEAs with the CEE but those not participating in the CEEs must file their PEAs at the individual ports.
General communication with port officials/CEEs	Over various matters including: Commodity classifications, Intellectual Property Rights Enforcement, Counterfeit Seizures, Exclusion Orders, etc.	Emails, calls.	CEE aids this process – through dissemination of specific-industry information.
Keeping abreast of regulations	Monitoring regulation information releases and trade journalism. Since the CEEs are industry specific they should be more informed about industry specific issues. The CEEs should become more involved in the industry, perhaps attending industry association events and speaking to industry groups. Communicating changes to other company employees and contractors.	Reading websites, mail, trade journals. Writing reports, presentations, emails, calls.	CEE aids this process – through dissemination of specific-industry information.

Chapter 3, Section 7. Change in Administrative Costs

The survey solicits administrative cost changes between 2010 and 2013 for importing companies to file CBP forms (CF-3461/7501, and other forms related to Post-Entry activity), respond to CBP requests for information (CF-28, CF-29) and audits, and conduct communications with CBP and Partner Government Agencies (PGAs). Following the SCM, the survey asks for changes to wages of administrators undertaking these activities, the changes in time taken per activity, and changes in the frequency of activities.

As reflected in Table 1, we asked SCM questions with respect to the following documents:

- CBP form CF-3461 Entry/Immediate Delivery,
- CBP form CF-7501 Entry Summary,
- CBP form CF-28 Request for Information,
- CBP form CF-29 Notice of Action,
- CBP form CF-19 Protest,
- Post Entry Amendment,
- Post Summary Correction.

The questions below apply to all the in-house activities importing companies undertakes to submit or respond to these documents, including printing, completing, filing, delivery, legal counsel, and broker services.

We also designed a separate stream of survey questions to solicit responses from import brokers. Brokers are often contracted by importing companies to administer the form-filing process; instead some importing companies "self-file". As such, some or all changes in administrative costs for particular forms resulting from the Electronics CEE could be experienced by the broker. In a competitive market we would expect any cost changes to be passed on to importers in the form of price changes; however, these might take some time to appear, so we sought responses from brokers directly. In general, these questions for brokers are similar to those for importing companies; specific language changes are required in some cases.

Chapter 3, Section 8. Change in Business Costs

There is also the potential for the Electronics CEE to change levels of business loss due to delays, holds and exams caused by CBP and PGAs. As such, another set of survey questions applies to other activities related to the import process that are the result of government regulation, such as holds and exams. The survey solicits the length of delays for each relevant category, as well as the cost per hour (or day) of delay.

Chapter 3, Section 9. Survey Question Development

The survey questions were developed through a process of engagement with government and trade community stakeholders. CBP COAC administered three previous surveys, each with a broader scope with respect to the number of companies in the sample pool. These surveys also sought to identify broader issues facing the trade community, the perception of and effectiveness of current CBP operations and programs, and the ways in which CBP could improve trade facilitation efforts. That said, some of the questions on the COAC surveys are relevant to this project and we adopted similar language accordingly.

Questions were also written with initial input and feedback from trade community representatives such as Julie Parks of Raytheon and Tom Gould of Sandler, Travis & Rosenberg, PA, and industry experts such as Rick van Schoik, North American Research Partnership. We also met and discussed the project and early survey drafts with CBP and CEE officials during the initial scoping phase. Further revisions were undertaken after the distribution of a pilot survey and subsequent engagement with trade community representatives such as Mary Ann Comstock of UPS, Ted Sherman of Target, and Kathleen Neal of Regal Beloit.

Chapter 3, Section 10. References

(COAC) Advisory Committee on the Commercial Operations of Customs and Border Protection (2012). “COAC 2012 Trade Efficiency Survey.” http://www.cbp.gov/linkhandler/cgov/trade/trade_outreach/coac/coac_12_meetings/aug15_seattle/coac_eff_survey.ctt/coac_eff_survey.pdf.

(Customer) U.S. Customs and Border Protection (2013). "2013 CEE Customer Satisfaction Survey." *IntegrationPoint.com.* http://www.integrationpoint.com/documents/2013CEE_Survey_FinalReport.pdf

Part II, Chapter 4. CREATE Survey Data Tabulation and Analysis

Fynnwin Prager

This document provides supporting evidence for the CREATE/Econometrica analysis of the economic benefits of Customs and Border Protection (CBP) Centers of Excellence and Expertise (CEE) program. This document presents data from COAC (2012, 2013, 2014) and CREATE (2014) surveys, in particular the stated costs per activity provided in the COAC (2014) survey. Primary data on activity levels – i.e. the numbers of CBP-related activities undertaken by importing companies – will be collected from CBP, and analyzed by Charles Baschnagel and Bryan Roberts of Econometrica.

Table 1 presents the average activity cost estimates. Average costs related to Customs Forms (CF-3461, CF-7501, CF-28, CF-29, CF-19, PEA, PSC) and total admin costs are taken directly from the COAC 2014 survey for the Non-CEE population. However, average costs for CEE participants with respect to CF-28s, CF-29s, CF-19s, and PEAs are derived from the respective Non-CEE values due to sampling issues. Please see further discussion below. Estimates for exam costs taken directly from the COAC survey, yet it is assumed that CEE participant cost estimates are equivalent to Non-CEE cost estimates. These estimates are validated through a combination of COAC 2014 survey results, interviews with key stakeholders, and exam fee schedules from CBP. Please see further discussion of the exam cost estimation below. Table 2 presents average process time delay costs by form. Each estimate in Table 2 is taken directly from the COAC 2014 survey.

Table 1: Average Activity Cost Estimates

Activity Cost	All Industries	
	CEE	Non-CEE
Exam Cost (Q28)	$2,626	$2,626
CF-3461 (Q32a)	$113	$121
CF-7501 (Q32b)	$119	$125
CF-28s (Q32c)	$234	$247
CF-29s (Q32d)	$224	$236
CF-19s (Q32e)	$189	$199
PEA (Q32f)	$188	$198
PSC (Q32g)	$176	$183
Total admin cost (Q29)	$214	$225

Table 2: Average Process Time Delay Costs by Form

Activity	All Industries	
	CEE	Non-CEE
CF-3461 (Q32a)	$154	$183
CF-7501 (Q32b)	$154	$160
CF-28s (Q32c)	$75	$164
CF-29s (Q32d)	$75	$164
CF-19s (Q32e)	$104	$148
PEA (Q32f)	$75	$154
PSC (Q32g)	$139	$152

Chapter 4, Section 1. COAC 2014 Survey Cost per Activity Analysis

Table 3 presents the average responses and sample sizes (in parentheses) from the COAC 2014 survey for the average costs of customs form-related activities and the average costs of exams.

For the average costs of customs form-related activities, the All Industries findings presented in Table 3 are the most defensible for two reasons. First, the sample sizes for the other categories (Electronics Industry and/or CEE members) are too low to be accepted as reliably representative of the overall population. Second, the CEE member costs per activity estimates do not follow intuition with respect to All Industries. CEE member costs should be lower for all activities, especially protest forms, which can all be submitted electronically to the single CEE (via an excel document) as opposed to multiple forms being submitted in paper form to each port where the protest is lodge. The exceptions here are the entry forms (CF-3461 and CF-7501) and the Post Summary Correction form; these are used in this analysis to estimate the CEE saving for the others. For process time delay costs, as shown in Table 4, while the sample sizes for the CEE participants (All Industries) is low, the values follow the intuition that CEE participants have lower costs than Non-CEE companies.

Because of these limitations with customs-form activity costs estimations, the following recommendations are made:

- The Electronics industry estimates are not proposed as reasonable estimates for form activity costs – All Industries results should be used for each industry.
- Estimates for CEE participants for CF-28s, CF-29s, CF-19s, and PEAs should be adjusted to follow the logic that CEE processes are less costly than equivalent processes at Ports. Here, the CEE participant figures are derived from the Non-CEE estimates using the average difference identified from the CF-3461, CF-7501 and PSC estimates, which are an average of 5.1% lower than the CEE estimates.
- Process time delay costs should be taken directly from the COAC 2014 results, and used for both CEE and Non-CEE participants, yet for All Industries only.

For the average costs of exams, in addition to the sample size issues described above, there is a concern that the question may have been misinterpreted by respondents. The question used in the COAC survey (question 28) was clear:

> "What was the cost of the average exam you experienced in 2013, including both direct costs (e.g. unloading and reloading cargo for inspection, time spent by employees resolving exams) and indirect costs (e.g. supply shortages/back-orders/failure to fulfill commitments to customers, manufacturing delays/plant shutdowns, delayed studies (e.g. clinical trials), loss of product (e.g. failure to maintain temperature controls at port, theft), increased port storage/demurrage expenses, and inventory planning issues)?"

However, initial examination of the results suggests that there are two significant problems with the question as it stands:

Table 3: Average Activity Cost (Questions 28, 29, 32; Form Activity Costs for Question 32 refer to Preparation and Response Costs) [19]

Activity Cost	Electronics		All Industries	
	CEE[a]	Non-CEE	CEE	Non-CEE
Exam Cost (Q28) Lower[b]	$625 (n=2)	$765 (n=16)	$528 (n=24)	$759 (n=284)
Exam Cost (Q28) Upper	$625 (n=2)	$11,328 (n=19)	$528 (n=24)	$2626 (n=307)
CF-3461 (Q32a)	$130 (n=5)	$88 (n=26)	$113 (n=19)	$121 (n=379)
CF-7501 (Q32b)	$130 (n=5)	$94 (n=28)	$119 (n=20)	$125 (n=400)
CF-28s (Q32c)	$210 (n=5)	$251 (n=30)	$308 (n=23)	$247 (n=419)
CF-29s (Q32d)	$210 (n=5)	$272 (n=29)	$309 (n=22)	$236 (n=356)
CF-19s (Q32e)	$250 (n=5)	$215 (n=20)	$361 (n=17)	$199 (n=283)
PEA (Q32f)	$190 (n=5)	$232 (n=33)	$248 (n=26)	$198 (n=397)
PSC (Q32g)	$190 (n=5)	$194 (n=34)	$176 (n=21)	$183 (n=352)
Total admin cost (Q29)	$250 (n=5)	$223 (n=40)	$244 (n=26)	$225 (n=621)

[a] Contact with CEEs is the determining factor here (Questions 20 and 52).
[b] Lower estimates here are based on closed-end responses only.

Table 4: (Question 34; Form Activity Costs refer to Process Time Delay Costs)

Activity	Electronics		All Industries	
	CEE[a]	Non-CEE	CEE	Non-CEE
CF-3461 (Q32a)	$100 (n=2)	$183 (n=18)	$154 (n=12)	$183 (n=291)
CF-7501 (Q32b)	$100 (n=2)	$165 (n=20)	$154 (n=12)	$160 (n=299)
CF-28s (Q32c)	$50 (n=2)	$111 (n=14)	$75 (n=12)	$164 (n=286)
CF-29s (Q32d)	$50 (n=2)	$111 (n=14)	$75 (n=12)	$164 (n=256)
CF-19s (Q32e)	$50 (n=2)	$115 (n=13)	$104 (n=12)	$148 (n=237)
PEA (Q32f)	$50 (n=2)	$109 (n=16)	$75 (n=12)	$154 (n=277)
PSC (Q32g)	$50 (n=2)	$111 (n=14)	$139 (n=14)	$152 (n=263)

[a] Contact with CEEs is the determining factor here (Questions 20 and 52).

[19] The data are cut into CEE and Non-CEE for the Electronics Importer industry only, and for All Importers. The All Importer analysis takes a "strict" definition of importers:

- 1674 responses in total,
- 854 of these respondents selected one of the Importer options for Question 1 ("Please select the area that best characterizes your expertise or responsibility"), and "Yes" to Question 7 ("Are you involved in importing into the U.S.?"),
- 35 of these respondents answered that they contacted a CEE (there is not a formal CEE membership question in the COAC survey); 819 did not contact a CEE.

For the Electronics sector:

- 1674 responses in total,
- 939 of these respondents selected one of the Importer options for Question 1,
- 66 of these respondents selected "Information Technology & Consumer Electronics - Integrated circuits, information technology, computers, and consumer electronics" for Questions 2 ("Based on the predominate number of imported products, please select the industry grouping below that most closely identifies your business:"),
- 59 of these respondents selected "Yes" for Question 7,
- 6 of these respondents answered that they contacted a CEE; 53 did not.

- First, the closed-ended response options were not sufficient. The highest cost of exam response option provided was $1,600 - $1,799; a notable cluster (2.8%) of respondents answered in this, and a similar number (2.8%) of respondents answered in the $1,800 and up response option.
- Second, the question combined both direct (exam fees and related admin costs) and indirect (business) costs, which is potentially confusing to respondents. Furthermore, one industry representative informed us that these costs may be handled by different departments, with exam fees and charges being monitored by trade compliance departments and business costs being monitored by logistics departments.

It is therefore recommended that for future surveys the exam cost questions are decomposed into separate questions on exam charges and fees, as well as business costs. In lieu of such decomposition, there are other data points from the COAC survey and CBP data sources that enable us to validate whether the survey COAC estimates are appropriate.

As shown in Table 5 below, the total exam costs facing an importing company are a combination of exam charges or fees (the frequency of each exam type multiplied by the charge per exam type) and the business cost from delays. Table 5 also presents data sources which can be used to validate the results from Question 28 of the COAC 2014 survey. This validation check does suggest that the average estimate for exam costs from the COAC 2014 survey ($2,626) is within the same order of magnitude as the validation check value of $2050 (exam fees) plus $964 (business costs), which equals $3114. Clearly here the distribution of exam costs, especially business costs due to delays, is skewed heavily to the right. This means that while the average delay cost is between $2000 and $3000, the highest costs from delays are as high as $100,000, yet the latter are infrequent.

Table 5: Validation of Total Exam Costs

Total Exam costs	=	The frequency of exams by exam type (x-rays, container exams, transit, storage, etc.)	x	The exam charges or fees by exam type (x-rays, container exams, transit, storage, etc.)	+	Business costs from delays[a]
Average estimate from COAC survey ($2,626)		Average of 12.3 exams		x-rays: $300-500 container exams: $400-1150 (could be up to 3000 for "garments on hangers") transit: $145-750 (plus additional fees) storage: $20-35 per day total: $300-3800 (mid-point of $2050)		Average delay is reported as 42.7 hours. At an average cost of $22.6 per hour of delay, average delay costs are $964
Validating data sources		COAC 2014 Survey: Q25 (frequency of exams)		CBP data on exam and terminal operator charges		COAC 2014 Survey: Q15 (Delays); Q16 (Reason for the delay); Q20 (Delay time); Q22 (Delay business impacts). COAC 12: Q10 (Delay cost per day)

[a]These may include supply shortages/back-orders/failure to fulfill commitments to customers, manufacturing delays/plant shutdowns, delayed studies (e.g. clinical trials), loss of product (e.g. failure to maintain temperature controls at port, theft), increased port storage/demurrage expenses, inventory planning issues (inability to effectively compute safety stock, increased administrative costs).

Chapter 4, Section 2. Comparison of COAC 2014 Results with Prior Surveys of the Electronics Sector

This document also compares COAC 2014 survey responses for the Electronics sector with responses for similar questions from the COAC 2012 and 2013 surveys and the CREATE 2014 survey. This comparison is provided for the Electronics sector only because the CREATE 2014 survey was administered to this sector only, and data for the other surveys is currently only available to CREATE for the Electronics sector.

Cost per Activity

Table 6: Comparison of average cost per activity

	COAC 2014		CREATE 2014	COAC 2013	COAC 2012
Document Type	Average Prepare/ Response Cost	Average Process Time Delay Cost	Average Prepare/ Response Cost	Average Prepare/ Response Cost	Average Prepare/ Response Cost
Cargo exam	$749-$10,308[a]		$725		$756
CF-3461	$95	$175			

CF-7501	$100	$159			
CF-28s	$245	$103	$105	$436	$350-460
CF-29s	$263	$103			
CF-19s	$222	$107	$88		
PEA	$226	$103	$66		
PSC	$194	$103	$65		
Total admin cost	$227				

[a] Upper bound includes outliers (Question 28)

Number of CBP-related activities per firm

For the COAC 2014 responses, the "estimated average" number is calculated by combining responses from the two following questions:

- Q3. Please select the number of entries your company filed in the U.S. during 2013. 2013 is defined as the calendar year, (01/01/13-12/31/13).
- Q13. On average, select the percentage of your entries that are impacted by the following activities.
- Q18. On average, select the percentage of your entries that are impacted by the following delays.

Both questions use ranges, so mid-points are used for both. These mid-points for each question are then multiplied to generate an estimated document number for each respondent, which are then summed across all respondents. Responses stating "Do not know" and "Blanks" are not counted in the average.

For the other surveys, the respondents were instead asked directly the numbers of documents they submitted.

This difference in survey question style helps to explain the notable differences for the CF-28 number, for example. This appears to be caused by the fact that the lowest option (which also has the largest share of responses for most sub-questions) is 1-20% of entries. Hence the mid-point for these answers (10.5%) is probably too high.

Questions 25 and 26 also refer to the number of exams:

- Question 25. Please list the number of times your cargo was stopped for an exam in 2013.
- Question 26. What percentage of your total shipments was stopped for an exam in 2013? For example, if your company made 12,500 shipments in 2013, and 100 were stopped last year, 0.8% of your shipments were stopped.

Table 7: Comparison of number of CBP-related activities per firm

	COAC 2014					CREATE 2014	COAC 2013	COAC 2012	
	Estimated Average (Q13; "Activities")		Estimated Average (Q18; "Delays")		Average (Q25, Q26)				CBP Admin Data (2013)
Document Type	Mid-point	Low-point	Mid-point	Low-point		Average	Average	Average	
Docs required	2,518	759	3,365	430					
Cargo holds	1,935	235	3,328	270		10.36		14.37	
Cargo exam	2,193	252	3,417	271	12.25[a] 86.60[b]				271
Third party logistics	3,691	618	5,975	583					
Broker delays	3,349	549	5,605	513					
CF-28s	2,080	138				3.27	3.68	5.55	52
CF-29s	553	34							
CF-19s						2.24			2,493
PEA						3.41			380
PSC						2.88			380
Audits						0.11			

[a] From Question 25
[b] From Question 26

Chapter 4, Appendix A. Stakeholder Interviews

Respondent Key:

SLH – Sherri Lee Hoffman (CEE Director)

JP - Julie Parks (Leader, Global Trade Organization) Raytheon.

TG - Tom Gould (Senior Director, Customs and international Trade) Sandler, Travis and Rosenberg.

RvS - Rick van Schoik (Director) North American Center for Transborder Studies (NACTS).

Questions

1. *Do the following cost-per-activity results from the COAC survey analysis seem reasonable?*

   SLH: Don't know – don't have visibility on company costs.
   TG: Yes, but some notes.
   - First, Entry Forms 3461 and 7501 are likely to be a single charge by brokers, and hence probably double-counted if both included from survey data.
   - Exams reasonable (FP note: see discussion of Exams below).
   - PSC should be lower than PEA. PSC is a newer process, with the ACE system; PEA is paper submission at ports and is likely to be phased out in coming years.

Summary analysis:

- We should be careful not to double count 3461 and 7501 form admin costs.
- PSC and PEA form costs make sense.
- Aside from that, they appear to be in the correct order of magnitude.

Table Error! No text of specified style in document.**-1: Average Activity Cost (Questions 28, 29, 32; Form Activity Costs for Question 32 refer to Preparation and Response Costs)**

Activity Cost	Electronics Industry Only			
	CEE[a]	Reasonable? (if not, please suggest alternative lower and upper bounds)	Non-CEE	Reasonable? (if not, please suggest alternative lower and upper bounds)
Exam Cost (Q28) Lower	$625 (n=2)		$765 (n=16)	
Exam Cost (Q28) Upper	$625 (n=2)		$11,328 (n=19)	
CF-3461 (Q32a)	$130 (n=5)		$88 (n=26)	
CF-7501 (Q32b)	$130 (n=5)		$94 (n=28)	
CF-28s (Q32c)	$210 (n=5)		$251 (n=30)	
CF-29s (Q32d)	$210 (n=5)		$272 (n=29)	
CF-19s (Q32e)	$250 (n=5)		$215 (n=20)	
PEA (Q32f)	$190 (n=5)		$232 (n=33)	
PSC (Q32g)	$190 (n=5)		$194 (n=34)	
Total admin cost (Q29)	$250 (n=5)		$223 (n=40)	

[a] Contact with CEEs is the determining factor here (Questions 20 and 52).

Activity Cost	All Industries			
	CEE	Reasonable? (if not, please suggest alternative lower and upper bounds)	Non-CEE	Reasonable? (if not, please suggest alternative lower and upper bounds)
Exam Cost (Q28) Lower	$528 (n=24)		$759 (n=284)	
Exam Cost (Q28) Upper	$528 (n=24)		$2626 (n=307)	
CF-3461 (Q32a)	$113 (n=19)		$121 (n=379)	
CF-7501 (Q32b)	$119 (n=20)		$125 (n=400)	
CF-28s (Q32c)	$308 (n=23)		$247 (n=419)	
CF-29s (Q32d)	$309 (n=22)		$236 (n=356)	
CF-19s (Q32e)	$361 (n=17)		$199 (n=283)	
PEA (Q32f)	$248 (n=26)		$198 (n=397)	
PSC (Q32g)	$176 (n=21)		$183 (n=352)	
Total admin cost (Q29)	$244 (n=26)		$225 (n=621)	

[a] Contact with CEEs is the determining factor here (Questions 20 and 52).

2. *Are there likely to be significant cost per activity differences between CEE and Non-CEE members in the Electronics Importer industry? (We ask this because the sample size for the Electronics CEE responses is too low to be reliable).*

SLH: Don't know
RvS: More likely due to size of businesses than CEE membership per se
JP: No. Reduction in frequency is key.
TG:

- New initiative at CEE – "partnership branch"(?), i.e. the major companies who are already trusted traders – CEE will run hold searches, get holds released without companies necessarily knowing – cost savings could not be perceived by the companies. This is a recent initiative that has been going at least 6 months, (FP notes: therefore, this may not register on the CBP data we are collecting as that may be available for prior to 6 months; the COAC survey was collected prior to 6 months ago, and hence the time period we are interested in analyzing; this could be a good source of future cost savings and analysis)
- Protest forms could be cheaper if a CEE member – If not, business must submit one protest form for each port – If CEE, one protest form for all entries (an excel table). This suggests the COAC survey responses are incorrect for CF19 and PEA.
- PEA/PSC/19/28/29: for CEE should all be electronic; for Non-CEE are paper to port. So should be cheaper for CEE.

Summary analysis:

- Tom Gould's comments suggests that the survey responses are misleading; CEE members tend to state higher costs for all forms yet Tom Gould makes a strong case for CEE members having lower costs per form. This could be explained by the smaller sample size for the CEE member respondents. At the very least, this warrants closer examination of the CEE and non-CEE member respondents – i.e. what size these companies are and other notable characteristics. I will run this analysis when I am back from vacation.

3. *In the COAC 2014 survey, we provide Exam Cost range boundaries for responses up to the value of $1800 per Exam. We also allow open-ended responses, and these range from $2000 to $100,000 per Exam.*
    - First, is the $1800 value too low to include as an upper bound?
    - Second, are the open-ended responses likely to be accurate?

TG: Process: X-ray on the docks by CBP, some movement costs charged by terminal (TG estimates cost in low $100s). Some may then be sent for further exams at Central Examination Stations, which are run by private businesses that will perform tasks requested by CBP. These could include storage, pick-up, unloading, and different levels of exams (e.g. minor check, major exam of all container contents). These all vary in price (please note document sent by Sherri Lee

Hoffman for some of the latest prices). TG estimates full container exam to be in the $1000s. Then if shipment is late, there could be significant business costs, depending on the length of the delay, and the commodities delayed.

SLH: CES charges can vary between ports – Los Angeles likely to charge more than port in region where land values are lower.

JP: CES is one part – other costs include drayage charges, other "trade" fees.

Summary analysis:

- Clearly exam charges can vary significantly based on which exams are performed, by whom, and what additional charges might arise, e.g. storage, pick-up, unloading, and whether there are delays during and from this process. This does not include the business costs, which could vary depending on the commodity and the length of delay.
- It is possible that CBP data – if they record which type of exam is performed, how long it takes, and whether other charges are levied – will allow us to estimate average exam charges. However, this might take some time.
- Either way, the wide distribution of the COAC survey response probably appropriately reflects the wide range of exam and other related charges, as well as additional business costs. It is quite possible that some respondents answered with respect to exam and other related charges only, and that other respondents answered with respect to both categories. Indeed, a couple of respondents made this clear in their open-ended responses.

4. *Are respondents likely to view Exam costs and delay costs as overlapping? How should we distinguish between them in our analysis of COAC 2014 data so that we do not double count?*

SLH: Yes, exam costs charged by CES; will charge by day. (See further discussion by TG above)

Summary analysis: The discussion above for question 3 covers this issue.

5. *Could Exam costs change with respect to time? Are there fixed and variable costs to Exams? As the length of Exams increases, are the daily costs likely to increase, decrease, or stay the same?*

SLH: Yes, will change by day.

TG: Recent labor disputes have had an important impact on exam costs and especially delays. In the past, 2 days; now 10 days due to port back logs.

JP: e.g. for a 1-day exam there would be no storage fees, 2+ days, there could be storage fees. Trucking or warehousing companies would have to pay these fees.

Summary analysis: The discussion above for question 3 covers this issue.

Chapter 4, Appendix B. Detailed Responses by Question

Question 3: Please select the number of entries your company filed in the U.S. during 2013. 2013 is defined as the calendar year, (01/01/13-12/31/13).

Less than 100 entries	3	5.1%
100 to 999 entries	19	32.2%
1,000 entries to 2,999 entries	11	18.6%
3,000 entries to 6,999 entries	10	16.9%
7,000 entries to 9,999 entries	1	1.7%
10,000 entries to 99,999 entries	10	16.9%
100,000 entries to 999,999 entries	2	3.4%
Don't know	3	5.1%
Grand Total	59	100.0%

Question 4: What is your company's average annual (in 2013) revenue in U.S. dollars?

Less than $500 million	24	40.7%
$501 million to $2.5 billion	11	18.6%
$2.5 billion to $10 billion	10	16.9%
$10 billion to $25 billion	2	3.4%
Over $25 billion	4	6.8%
Don't know	4	6.8%
Blank	4	6.8%
Grand Total	59	100.0%

Question 13: On average, select the percentage of your entries that are impacted by the following activities.

Q13a (Docs required)

0% of entries	13	22.0%
1-20% of entries	31	52.5%
21-40% of entries	3	5.1%
41-60% of entries	1	1.7%
81-100% of entries	1	1.7%
Do not know	7	11.9%
Blank	3	5.1%
Grand Total	59	100.0%

Q13b (Cargo holds)

0% of entries	14	23.7%
1-20% of entries	35	59.3%

21-40% of entries	2	3.4%
61-80% of entries	1	1.7%
81-100% of entries	1	1.7%
Do not know	2	3.4%
Blank	4	6.8%
Grand Total	59	100.0%

Q13c (Cargo exam)

0% of entries	7	11.9%
1-20% of entries	40	67.8%
21-40% of entries	1	1.7%
81-100% of entries	2	3.4%
Do not know	5	8.5%
Blank	4	6.8%
Grand Total	59	100.0%

Q13d (Third party logistics)

0% of entries	11	18.6%
1-20% of entries	29	49.2%
21-40% of entries	1	1.7%
41-60% of entries	2	3.4%
61-80% of entries	1	1.7%
81-100% of entries	1	1.7%
Do not know	8	13.6%
Blank	6	10.2%
Grand Total	59	100.0%

Q13e (Broker delays)

0% of entries	17	28.8%
1-20% of entries	31	52.5%
21-40% of entries	1	1.7%
61-80% of entries	1	1.7%
Do not know	5	8.5%
Blank	4	6.8%
Grand Total	59	100.0%

Q13f (CF-28s)

0% of entries	20	33.9%
1-20% of entries	21	35.6%
Do not know	12	20.3%

Blank	6	10.2%
Grand Total	59	100.0%

Q13g (CF-29s)

0% of entries	21	35.6%
1-20% of entries	17	28.8%
Do not know	12	20.3%
Blank	9	15.3%
Grand Total	59	100.0%

Question 18. On average, select the percentage of your entries that are impacted by the following delays.

Q18a (Docs required)

0% of entries	8	13.6%
1-20% of entries	23	39.0%
21-40% of entries	1	1.7%
41-60% of entries	1	1.7%
Blank	26	44.1%
Grand Total	59	100.0%

Q18b (Cargo holds)

0% of entries	8	13.6%
1-20% of entries	22	37.3%
61-80% of entries	2	3.4%
81-100% of entries	1	1.7%
Do not know	1	1.7%
Blank	25	42.4%
Grand Total	59	100.0%

Q18c (Cargo exam)

0% of entries	5	8.5%
1-20% of entries	24	40.7%
61-80% of entries	2	3.4%
81-100% of entries	1	1.7%
Do not know	2	3.4%
Blank	25	42.4%
Grand Total	59	100.0%

Q18d (Third party logistics)

0% of entries	6	10.2%
1-20% of entries	18	30.5%
21-40% of entries	2	3.4%
41-60% of entries	2	3.4%
81-100% of entries	1	1.7%
Do not know	4	6.8%
Blank	26	44.1%
Grand Total	59	100.0%

Q18e (Broker delays)

0% of entries	10	16.9%
1-20% of entries	18	30.5%
21-40% of entries	2	3.4%
Do not know	2	3.4%
Blank	27	45.8%
Grand Total	59	100.0%

Question 19. On average, how many hours or days does a docs required message delay the release of your merchandise?

Less than 1 hour	3	5.1%
1 to 4 hours	8	13.6%
5 to 8 hours	3	5.1%
9 to 23 hours	2	3.4%
1 day	10	16.9%
2 days	5	8.5%
3 to 4 days	1	1.7%
I receive no docs required messages	2	3.4%
Blank	25	42.4%
Grand Total	59	100.0%

Question 20. On average, how many hours or days does a hold delay the release of your merchandise?

Less than 1 hour	3	5.1%
1 to 4 hours	6	10.2%
5 to 8 hours	4	6.8%
1 day	7	11.9%
2 days	4	6.8%
3 to 4 days	8	13.6%
5 days or more	1	1.7%

Do not know	1	1.7%
Blank	25	42.4%
Grand Total	59	100.0%

Question 24. Was your company's cargo stopped for examination during 2013?

Do not know	3	5.1%
No	2	3.4%
Yes	29	49.2%
Blank	25	42.4%
Grand Total	59	100.0%

Question 25. Please list the number of times your cargo was stopped for an exam in 2013.

Less than 5	11	18.6%
5 to 9	5	8.5%
10 to 19	5	8.5%
30 to 39	3	5.1%
40 or more	2	3.4%
Do not know	3	5.1%
Blank	30	50.8%
Grand Total	59	100.0%

Question 26. What percentage of your total shipments was stopped for an exam in 2013? For example, if your company made 12,500 shipments in 2013, and 100 were stopped last year, 0.8% of your shipments were stopped.

Less than 0.25%	14	23.7%
0.25% to 0.49%	4	6.8%
0.50% to 0.99%	2	3.4%
1.00% to 2.99%	2	3.4%
3.00% to 4.99%	3	5.1%
5.00% or more	2	3.4%
Do not know	2	3.4%
Blank	30	50.8%
Grand Total	59	100.0%

Question 28. What was the cost of the average exam you experienced in 2013, including both direct costs (e.g. unloading and reloading cargo for inspection, time spent by employees resolving exams) and indirect costs (e.g. supply shortages/back-orders/failure to fulfill commitments to customers, manufacturing delays/plant shutdowns, delayed studies (e.g. clinical trials), loss of product (e.g. failure to maintain temperature controls at port, theft), increased port storage/demurrage expenses, and inventory planning issues)?

Less than $100	1	1.7%
$100 to $199	3	5.1%
$200 to $399	2	3.4%
$400 to $599	1	1.7%
$600 to $799	1	1.7%
$800 to $999	5	8.5%
$1,000 to $1,199	2	3.4%
$1,200 to $1,399	1	1.7%
$1,400 to $1,599	1	1.7%
$1,600 to $1,799	1	1.7%
48,000.00 USD	1	1.7%
$55,000	1	1.7%
$100,000 or more in delays in manufacturing	1	1.7%
Do not know	7	11.9%
	31	52.5%
Grand Total	59	100.0%

Question 29. On average, what is your company's total administrative cost of managing the lifecycle of an average entry?

Less than $100	14	23.7%
$100 to $199	19	32.2%
$200 to $399	6	10.2%
$400 to $599	2	3.4%
$600 to $999	3	5.1%
$1,000 or more	2	3.4%
Do not know	9	15.3%
Blank	4	6.8%
Grand Total	59	100.0%

Question 30. On average, how much personnel time does it take to manage the lifecycle of an average entry?

Less than 1 hour	17	28.8%
1 to 4 hours	24	40.7%
5 to 8 hours	5	8.5%
9 to 24 hours	4	6.8%
25 hours or more	1	1.7%
Do not know	4	6.8%
Blank	4	6.8%
Grand Total	59	100.0%

Question 31. On average, how much time in minutes did it take your company to prepare a response to one of the following CBP forms?

Q31a (CF-3461)

Less than 15 minutes	12	20.3%
15 minutes to 29 minutes	14	23.7%
30 minutes to 59 minutes	8	13.6%
1 hour to 3 hours	3	5.1%
Blank	22	37.3%
Grand Total	59	100.0%

Q31b (CF-7501)

Less than 15 minutes	14	23.7%
15 minutes to 29 minutes	16	27.1%
30 minutes to 59 minutes	5	8.5%
1 hour to 3 hours	4	6.8%
More than 3 hours (please list below)	1	1.7%
Blank	19	32.2%
Grand Total	59	100.0%

Q31c (CF-28)

Less than 15 minutes	4	6.8%
15 minutes to 29 minutes	10	16.9%
30 minutes to 59 minutes	3	5.1%
1 hour to 3 hours	12	20.3%
More than 3 hours (please list below)	12	20.3%
Blank	18	30.5%
Grand Total	59	100.0%

Q31d (CF-29)

Less than 15 minutes	7	11.9%
15 minutes to 29 minutes	8	13.6%
30 minutes to 59 minutes	4	6.8%
1 hour to 3 hours	9	15.3%
More than 3 hours (please list below)	11	18.6%
Blank	20	33.9%
Grand Total	59	100.0%

Q31e (CF-19)

Less than 15 minutes	10	17%
15 minutes to 29 minutes	7	12%
30 minutes to 59 minutes	2	3%
1 hour to 3 hours	3	5%
More than 3 hours (please list below)	8	14%
Blank	29	49%
Grand Total	59	100.0%

Q31f (Post entry amendment)

Less than 15 minutes	9	15%
15 minutes to 29 minutes	13	22%
30 minutes to 59 minutes	6	10%
1 hour to 3 hours	7	12%
More than 3 hours (please list below)	9	15%
Blank	15	25%
Grand Total	59	100.0%

Q31g (Post summary correction)

Less than 15 minutes	8	14%
15 minutes to 29 minutes	11	19%
30 minutes to 59 minutes	7	12%
1 hour to 3 hours	6	10%
More than 3 hours (please list below)	6	10%
Blank	21	36%
Grand Total	59	100.0%

Q32. On average, how much does preparing and responding to one of the following forms cost your company, including direct and indirect costs?

Q32a (CF-3461)

Less than $100	17	29%
$100 to $199	14	24%
Do not know	11	19%
Blank	17	29%
Grand Total	59	100.0%

Q32b (CF-7501)

Less than $100	18	30.5%
$100 to $199	14	23.7%
$200 to $399	1	1.7%
Do not know	11	18.6%
Blank	15	25.4%
Grand Total	59	100.0%

Q32c (CF-28)

Less than $100	12	20.3%
$100 to $199	8	13.6%
$200 to $399	7	11.9%
$400 to $599	4	6.8%
$600 to $999	3	5.1%
$1,000 or more (please list below)	1	1.7%
Do not know	11	18.6%
Blank	13	22.0%
Grand Total	59	100.0%

Q32d (CF-29)

Less than $100	12	20.3%
$100 to $199	7	11.9%
$200 to $399	6	10.2%
$400 to $599	5	8.5%
$600 to $999	2	3.4%
$1,000 or more (please list below)	2	3.4%
Do not know	11	18.6%
Blank	14	23.7%
Grand Total	59	100.0%

Q32e (CF-19)

Less than $100	11	18.6%
$100 to $199	8	13.6%
$200 to $399	1	1.7%
$400 to $599	3	5.1%
$1,000 or more (please list below)	2	3.4%
Do not know	11	18.6%
Blank	23	39.0%
Grand Total	59	100.0%

Q32f (Post entry amendment)

Less than $100	14	23.7%
$100 to $199	14	23.7%
$200 to $399	4	6.8%
$400 to $599	2	3.4%
$600 to $999	2	3.4%
$1,000 or more (please list below)	2	3.4%
Do not know	10	16.9%
Blank	11	18.6%
Grand Total	59	100.0%

Q32g (Post summary correction)

Less than $100	14	23.7%
$100 to $199	12	20.3%
$200 to $399	5	8.5%
$600 to $999	2	3.4%
$1,000 or more (please list below)	1	1.7%
Do not know	9	15.3%
Blank	16	27.1%
Grand Total	59	100.0%

Question 33. In 2013, has your company experienced a noticeable change in CBP processing time (i.e. from the time of submission to the receipt of the accept/deny-reject status) for any the following activity forms?

Q33a (CF-3461)

No change	36	61.0%
Less than 1 hour	6	10.2%
1 hour to 2 hours	2	3.4%
More than 4 hours	1	1.7%
Blank	14	23.7%
Grand Total	59	100.0%

Q33b (CF-7501)

No change	36	61.0%
Less than 1 hour	7	11.9%
1 hour to 2 hours	2	3.4%
3 hours to 4 hours	1	1.7%
More than 4 hours	1	1.7%
Blank	12	20.3%
Grand Total	59	100.0%

Q33c (CF-28)

No change	34	57.6%
Less than 1 hour	5	8.5%
1 hour to 2 hours	1	1.7%
More than 4 hours	4	6.8%
Blank	15	25.4%
Grand Total	59	100.0%

Q33d (CF-29)

No change	35	59.3%
Less than 1 hour	4	6.8%
1 hour to 2 hours	1	1.7%
More than 4 hours	4	6.8%
Blank	15	25.4%
Grand Total	59	100.0%

Q33e (CF-19)

No change	28	47.5%
Less than 1 hour	4	6.8%
More than 4 hours	3	5.1%
Blank	24	40.7%
Grand Total	59	100.0%

Q33f (Post entry amendment)

No change	33	55.9%
Less than 1 hour	7	11.9%
3 hours to 4 hours	1	1.7%
More than 4 hours	3	5.1%
Blank	15	25.4%
Grand Total	59	100.0%

Q33g (Post summary correction)

No change	31	52.5%
Less than 1 hour	7	11.9%
3 hours to 4 hours	1	1.7%
More than 4 hours	2	3.4%
Blank	18	30.5%
Grand Total	59	100.0%

Question 34. On average, how much did an hour of delay in CBP processing time for the following forms cost your company in 2013? These may include supply shortages/back-orders/failure to fulfill commitments to customers, manufacturing delays/plant shutdowns, inventory planning issues, and increased administrative costs.

Q34a (CF-3461)

Less than $100	13	22.0%
$100 to $199	3	5.1%
$200 to $399	2	3.4%
$600 to $999	1	1.7%
$1,000 or more	1	1.7%
Do not know	25	42.4%
Blank	14	23.7%
Grand Total	59	100.0%

Q34b (CF-7501)

Less than $100	15	25.4%
$100 to $199	3	5.1%
$400 to $599	3	5.1%
$600 to $999	1	1.7%
Do not know	25	42.4%
Blank	12	20.3%
Grand Total	59	100.0%

Q34c (CF-28)

Less than $100	14	23.7%
$100 to $199	1	1.7%
$600 to $999	1	1.7%
Do not know	29	49.2%
Blank	14	23.7%
Grand Total	59	100.0%

Q34d (CF-29)

Less than $100	14	23.7%
$100 to $199	1	1.7%
$600 to $999	1	1.7%
Do not know	29	49.2%
Blank	14	23.7%
Grand Total	59	100.0%

Q34e (Post entry amendment)

Less than $100	13	22.0%
$100 to $199	1	1.7%
$600 to $999	1	1.7%
Do not know	27	45.8%
Blank	17	28.8%
Grand Total	59	100.0%

Q34f (Post summary correction)

Less than $100	15	25.4%
$100 to $199	2	3.4%
$600 to $999	1	1.7%
Do not know	28	47.5%
Blank	13	22.0%
Grand Total	59	100.0%

Question 35. After you file a protest, CBP makes a decision on the protest to resolve it. The lag involved in your receiving a resolution of your protest can be termed the "protest resolution time." Do you experience increased administrative and/or business costs (e.g. lost revenue) if the time required for CBP to resolve a protest goes up?

No	4	6.8%
No, I don't know	1	1.7%
Yes, administrative costs	6	10.2%
Yes, administrative costs, I don't know	1	1.7%
Yes, administrative costs, No	1	1.7%
Yes, administrative costs, Yes, business costs	4	6.8%
Yes, business costs	4	6.8%
I don't know	11	18.6%
N/A	20	33.9%
Blank	7	11.9%
Grand Total	59	35.6%

Question 50b. Do you contact any of the following entities when you experience a cargo delay? (CBP Center of Excellence and Expertise)

No Contact	6	10.2%
Some contact	5	8.5%
1	1	1.7%
Blank	47	79.7%
Grand Total	59	100.0%

Chapter 4, Appendix C. CREATE Survey -- Questionnaire to Evaluate the Economic Impact of Customs and Border Protection's Centers of Excellence and Expertise for Electronics: Importer Version

Introduction

This questionnaire has been developed by researchers at the National Center for Risk Economic Analysis of Terrorism Events (CREATE), headquartered at the University of Southern California. CREATE was the first university-based Center of Excellence in Research and Education funded by the Department of Homeland Security (DHS), with a mission to perform independent research to improve the Nation's decisions to reduce terrorism impacts through the advancement of risk and economic science. Please see http://create.usc.edu/ for more information.

We are currently carrying out a project to evaluate the benefits to the importing community of the Customs and Border Protection's (CBP) Centers of Excellence and Expertise (CEE) Program. Our first application is to the Electronics CEE, which is based in Long Beach, California, and serves companies importing Consumer Electronics, Information Technologies, and related Electric items.

This questionnaire focuses on how the Electronics CEE has impacted the administrative and other business costs related to CBP procedures for bringing imported goods into the U.S. It is important to note that your company may or may not have interacted with or become a participant in the Electronics CEE. Either way, your responses are very important to us as we seek to compare both types of business. This questionnaire requests general information about your company and inquiries about changes in administrative costs associated with importing between 2010 and 2013. We are comparing these time periods because the Electronics CEE program commenced in 2012 and we seek to compare administrative and other business costs for all companies before and after the Program. Responses to this questionnaire will be combined with data from CBP and other government agencies to estimate all benefits and costs of the Electronics CEE program.

Let us briefly explain the following:

1. Who is going to use the data collected?

The CREATE research team will use the data collected by this survey to quantify the economic benefits of the Electronics CEE to the importing industry. CBP and others will use the CREATE study results to evaluate the CEEs. The importing industry can use study results to evaluate the benefits of CEE membership. All individual survey responses will be confidential and will not be shared with any party outside of the CREATE research team. Accordingly, the individual responses will not be available to CBP, industry, or others outside of CREATE.

2. How exactly will the data be used?

As an independent university research center, we intend to publish general results in academic journals, but our publications will in no way link to any single company or any of its answers. Your responses will be stored and protected by CREATE, and only aggregate tabulations across respondent strata will be combined with data from CBP and other government agencies to estimate all benefits and costs of the Electronics CEE program.

Research Question

Our main research question in the following pages is: *What are the changes in administrative and other business costs experienced by importing companies resulting from Electronics CEE implementation?*

Research Method

In this questionnaire we seek to identify and quantify changes in administrative and other business costs associated with fulfilling CBP regulatory requirements at the company and employee level, and how they have changed after introduction of the Electronics CEE. These administrative costs include filing paperwork with government agencies or keeping abreast of policy specifics and changes. These costs do not include the monetary value of taxes, tariffs or other payments to governments. We also seek to identify business costs associated with Audits, Holds and Exams, and Communications with CBP and/or Electronics CEE.

Administrative costs are estimated by first determining how much time it takes to fill out, file, and correct the forms required by CBP, and also the time it takes to interact with CBP by phone or face-to-face to resolve any issues that might arise during importation. Estimated time is then multiplied by the wages/salaries of company staff performing these actions, and the frequency with which these actions are performed.

We are particularly interested in the following documents:

- CBP form CF-3461 Entry/Immediate Delivery,
- CBP form CF-7501 Entry Summary,
- CBP form CF-28 Request for Information,
- CBP form CF-29 Notice of Action,
- CBP form CF-19 Protest,
- Post Entry Amendment,
- Post Summary Correction.

The questions below apply to all the activities your company undertakes to submit or respond to these documents, including printing, completing, filing, delivery, legal counsel, and broker services.

Another set of questions applies to other activities related to the import process that are the result of government regulation, such as audits, holds and exams, communicating with CBP officials (e.g., port staff, import specialists, or CEE) and other government inspection agencies (e.g., Federal Communications Commission, Consumer Product Safety Commission, Food and Drug Administration, and Environmental Protection Agency), keeping abreast of regulatory changes, and communicating changes within your company and to contractors.

Instructions

We are sending this questionnaire to you under the assumption you are the best person in the company to fill it out. If you need help, please obtain it from others in your organization. If you forward it to someone else, please confirm that they are willing to fill it out. However, we would like to receive only one response per company.

Requested responses are in multiple formats, including multiple choice, numerical estimates, and opened-ended written responses. Please answer them to the best of your abilities.

If you have any questions regarding the survey, please contact us at the following email: fprager@price.usc.edu.

General Company Information

1. Please select the type of company with which you are associated (multiple answers if appropriate):

Importer	
Broker	
Forwarding Company	
Law Firm	
Consulting Firm	
Industry Association	
Other (please describe)	

2. Please select your main role in your company:

Director	
Manager	
Supervisor	
Customs Compliance Officer	
Customs Attorney	
Accounting or Financial Officer	
Logistics Officer or Supply Chain Officer	
Other (please describe)	

3. Please provide an estimate of your firm's electronics/electrical goods imports as a proportion of total imports. These include goods in the Harmonized Tariff Schedule (HTS), Chapters 84 and 85 (Electronics and Electrical Goods). Please see the list of the HTS commodities covered by the Electronics CEE in Appendix A.

Electronics/Electrical imports as a proportion of total imports	
0-10%	
10-20%	
20-30%	
40-50%	
50-60%	
60-70%	
80-90%	
90-100%	

4. What was the average salary of your staff who prepared, reviewed and submitted CBP forms (such as CF-19 Protest, CF-28 Request for Information, CF-29 Notice of Action, CF-3461 Entry/Immediate Delivery, CF-7501 Entry Summary, Post Entry Amendments, and Post Entry Corrections), responded to audits, and communicated with CBP about entries in 2010 and in 2013? Values should be for gross annual salary (not including benefits.) Below are some ranges for the average salary.

	2010	2013
Less than $19,999 per year		
$20,000 to $39,999 per year		
$40,000 to $59,999 per year		
$60,000 to $79,999 per year		
$80,000 to $99,999 per year		
More than $100,000 per year		

Please also provide your best estimate of the average, lowest and highest salary figures:

	2010	2013
Average salary in dollars		
Lowest salary in dollars		
Highest salary in dollars		

5. In which of the following CBP-related programs does your company participate or file, and when did your company join a program? We will interpret black responses as "no" or "N/A" (not applicable).

	Participate (or "file in" for ACE)? (Yes or No)	If Yes, what year did your company join the program?
C-TPAT	Yes	2003
ISA	n/a	
CEE	Yes	2012
ACE	Yes	2012
Other		

If you answered "yes" for CEE, in which CEE do you a participant?

CEE	
1. Agriculture & Prepared Products	
2. Apparel	
3. Automotive & Aerospace	
4. Base Metals	
5. Consumer Products & Mass Merchandising	
6. Electronics	
7. Industrial & Manufacturing Materials	
8. Machinery	
9. Petroleum	
10. Pharmaceuticals	

If you have selected CEE here, you will only have to answer questions beginning: "FOR COMPANIES PARTICIPATING IN THE CEE ONLY"

6. Please indicate the percentage of submissions or responses that your company filed electronically and on paper for each of the following forms for goods related to the Electronics CEE. If your company made no filings of a form through one of the methods, please enter 0%. If all filings of a form were made through one of the methods, please enter 100%.

	2010	2013
CF-3461		
Electronic submission		
Paper submission		
CF-7501		
Electronic submission		
Paper submission		

CF-28		
Electronic submission		
Paper submission		
CF-29		
Electronic submission		
Paper submission		
CF-19		
Electronic submission		
Paper submission		
Post Entry Amendment		
Electronic submission		
Paper submission		
Post Entry Correction		
Electronic submission		
Paper submission		

Entry Forms: CBP Forms CF-3461 and CF-7501

7. Please indicate the percentage of forms CF-3461 Entry/Immediate Delivery and CF-7501 Entry Summary with supporting documents that were submitted directly by your company, by a licensed broker on your behalf, and with your company preparing the forms and a broker submitting them in 2010 and in 2013:

	2010	2013
Directly (self-filing importer)		
Through a licensed broker		
Your company prepares the forms (e.g. filling in and combining the invoice and bill of lading) and a broker submits.		

8. How many times a year did you have to prepare and submit electronically the CBP forms CF-3461 Entry/Immediate Delivery and CF-7501 Entry Summary in 2010 and in 2013?

	2010	2013
Number of submissions of form CF-3461		
Number of submissions of form CF-7501		

9. If your company submits or prepares the CBP forms CF-3461 Entry/Immediate Delivery and CF-7501 Entry Summary, how much time, on average, did it take your company to prepare it in 2013? This should include all activities associated with document submission, such as printing, completing, requesting advice (e.g. from a legal service), delivery, and submission. Below are some ranges for the average time.

	2013	
	3461	7501
Less than 15 minutes		
15 minutes to 30 minutes		
30 minutes to 1 hour		
1 hour to 3 hours		
More than 3 hours		

Please also enter numerical values for your best estimate of the average, shortest, and longest times.

	2013	
	3461	7501
Average time in minutes		
Shortest time in minutes		
Longest time in minutes		

10. How many times a year did you have to respond to requests for further documents related to the CBP forms CF-3461 Entry/Immediate Delivery and CF-7501 Entry Summary in 2010 and in 2013?

	2010	2013
Number of submissions of form CF-3461		
Number of submissions of form CF-7501		

11. If your company responds to requests for further documents related to the CBP forms CF-3461 Entry/Immediate Delivery and CF-7501 Entry Summary, how much time, on average, did it take your company to prepare it in 2013? This should include all activities associated with additional document submission, such as printing, completing, requesting advice (e.g. from a legal service), delivery, and submission. Please also enter numerical values for your best estimate of the average, shortest, and longest times.

	2013	
	3461	7501
Average time in minutes		
Shortest time in minutes		
Longest time in minutes		

CBP Forms CF-28 and CF-29

FOR COMPANIES **NOT** PARTICIPATING IN THE CEE ONLY:

12. How many CBP form CF-28 Request for Information or CF-29 Notice of Action did you receive in 2010 and in 2013?

	2010	2013
Number of form CF-28s received		
Number of form CF-29s received		

13. On average, how much in-house personnel time did it take to respond to one CBP CF-28 Request for Information or CF-29 Notice of Action in 2013? What was the shortest time that it took? What was the longest time that it took? Below are some ranges for the average time per form.

	2013	
	CF-28	CF-29
Less than 1 hour		
1 hour to 4 hours		
5 hours to 7 hours		
8 hours to 10 hours		
11 hours to 13 hours		
More than 14 hours		

Please also enter numerical values for your best estimate of the average, shortest and longest time per form.

Average time in hours		
Shortest time in hours		
Longest time in hours		

FOR COMPANIES PARTICIPATING IN THE CEE ONLY:

14. Please indicate how many CBP form CF-28 Request for Information or CF-29 Notice of Action you received in 2010 and 2013. Please also indicate how many times CBP/CEE initiated communication with your company for a specific case by phone and/or e-mail in 2013 to gather information that previously would have been collected through a form CF-28 or form CF-29.

	Number of form CF-28s received	Number of form CF-29s received	Number of contacts by phone and/or e-mail in 2013
2010			NA
2013			

15. Was the average in-house time spent on responding to a phone and/or e-mail request from CBP different from the amount of time that you used to spend preparing a form CF-28 or CF-29 prior to participating in the CEE? If it was, by how much do you estimate the difference to be? Below are some ranges.

	Change from pre-CEE to CEE
No change	
Average time ***fell*** by:	
Less than 15 minutes	
15 minutes to 30 minutes	
30 minutes to 1 hour	
More than 1 hour	
Average time ***increased*** by:	
Less than 15 minutes	
15 minutes to 30 minutes	
30 minutes to 1 hour	
More than 1 hour	

If you have a precise number, please enter that as well:

Your best estimate of how much average time changed from 2010 to 2013:	

CBP Post-Entry Activity Forms: CF-19 Protest, Post Entry Amendment (PEA), Post Summary Correction (PSC), or Prior Disclosure.

16. [PRE-SCREEN QUESTION FOR QUESTIONS 17-18; If "None of the above" is selected, the respondent should not answer questions 17-18] Did you have to submit any CBP forms related to post-entry activity:

CF-19	
Post Entry Amendment	
Post Summary Correction (PSC)	
Prior Disclosure	
None of the above	

17. How many times a year did you have to submit the CBP forms related to post-entry activity: CF-19 Protest, Post Entry Amendment (PEA), Post Summary Correction (PSC), or Prior Disclosure? Below are some ranges.

	CF-19 Protest		Post Entry Amendment (PEA)		Quarterly PEA		Post Summary Correction (PSC)		Prior Disclosure	
	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013
Never										
1 to 4										
4 to 7										
7 to 10										
More than 10										

If you have a precise number, please enter that as well:

	CF-19 Protest		Post Entry Amendment (PEA)		Quarterly PEA		Post Summary Correction (PSC)		Prior Disclosure	
	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013
Number of forms submitted										

18. How much time, on average, did it take your company to prepare and/or submit a CBP form related to post-entry activity in 2013? What was the shortest time that it took? What was the longest time that it took? This should include all activities associated with document submission, such as printing, completing, requesting advice (e.g. from a legal service), delivery, submission. Below are some ranges for the average time per form.

Average time in 2013	CF-19 Protest	Post Entry Amendment (PEA)	Quarterly PEA	Post Summary Correction (PSC)	Prior Disclosure
Less than 1 hour					
1 hour to 2 hours					
2 hours to 3 hours					
More than 3 hours					

Please also enter numerical values for your best estimate of the average, shortest and longest time per form:

Average time in hours					
Shortest time in hours					
Longest time in hours					

Audits

19. How many times did CBP audit you (for example, focused assessment, etc.) in 2010 and in 2013? Below are some ranges. [IF YOU ANSWER "NONE" HERE, PLEASE SKIP TO QUESTION 21]

	2010	2013
Fewer than 2		
3 to 4		
5 to 9		
10 to 14		
15 to 19		
20 or more		
None		

If you have a precise number, please enter that as well:

	2010	2013
Number of audits		

20. On average, how much in-house personnel time did it take to respond to one CBP audit in 2013? What was the shortest time that it took? What was the longest time that it took? Below are some ranges for the average time per audit.

	Average in 2013
Less than 4 hours	
5 hours to 7 hours	
8 hours to 10 hours	
11 hours to 13 hours	
More than 14 hours	

Please also enter numerical values for your best estimate of the average, shortest and longest time per audit:

Average time in hours	
Shortest time in hours	
Longest time in hours	

Holds and Exams

21. Please list the number of times that your freight/shipments and entries were held in 2010 and 2013. Below are some ranges.

	2010	2013
Less than 5		
6 to 10		
11 to 20		
21 to 30		
31 to 40		
More than 40		
Other		

If you have a precise number, please enter that as well:

	2010	2013
Number of times stopped		

22. On average, how many hours did a CBP initiated ***security*** cargo hold **delay the release** of your merchandise in 2013? What was the smallest number of hours? What was the largest number of hours? Below are some ranges for the average time per cargo hold delay.

	Average in 2013
Under 1 hour	
1 to 4 hours	
5 to 10 hours	
11 hours to 23 hours	
1 to 2 days	
3 to 4 days	
5 to 6 days	
More than 7 days	

Please also enter numerical values for your best estimate of the average, lowest and highest cost per cargo hold delay:

Average number of hours	
Smallest number of hours	
Largest number of hours	

23. FOR COMPANIES **NOT** PARTICIPATING IN THE CEE ONLY: Did the average number of hours of delay resulting from a CBP-initiated ***security*** cargo hold change from 2010 to 2013? If it did, by how much do you estimate that it changed?

	Change between 2010 and 2013
No change	
Average time ***decreased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	
Average time ***increased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	

Your best estimate of how much average time changed from 2010 to 2013:	

24. FOR COMPANIES PARTICIPATING IN THE CEE ONLY: Did the average number of hours of delay resulting from a CBP-initiated ***security*** cargo hold change after your company joined the CEE? If it did, by how much do you estimate that it changed?

	Change between pre-CEE and CEE
No change	
Average time ***decreased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	
Average time ***increased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	

Your best estimate of how much average time changed from 2010 to 2013:	

25. On average, how many hours did a CBP initiated ***compliance*** cargo hold delay the release of your merchandise in 2013? What was the smallest number of hours? What was the largest number of hours? Below are some ranges/

	Average in 2013
Under 1 hour	
1 to 4 hours	
5 to 10 hours	
11 hours to 23 hours	
1 to 2 days	
3 to 4 days	
5 to 6 days	
More than 7 days	

Please also enter numerical values for your best estimate of the average, lowest and highest cost per ***compliance*** cargo hold delay:

Average number of hours	
Smallest number of hours	
Largest number of hours	

26. FOR COMPANIES **NOT** PARTICIPATING IN THE CEE ONLY: Did the average number of hours of delay resulting from a CBP-initiated ***compliance*** hold change from 2010 to 2013? If it did, by how much do you estimate that it changed?

	Change between 2010 and 2013
No change	
Average time ***decreased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	
Average time ***increased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	

Your best estimate of how much average time changed from 2010 to 2013:	

27. FOR COMPANIES PARTICIPATING IN THE CEE ONLY: Did the average number of hours of delay resulting from a CBP-initiated ***compliance*** hold change after your company joined the CEE? If it did, by how much do you estimate that it changed?

	Change between pre-CEE and CEE
No change	
Average time ***decreased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	
Average time ***increased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	

Your best estimate of how much average time changed from 2010 to 2013:	

28. On average, how many hours did a Participating Government Agency (PGA) cargo hold delay the release of your merchandise in 2013? What was the smallest number of hours? What was the largest number of hours? Below are some ranges.

	Average in 2013
Under 1 hour	
1 to 4 hours	
5 to 10 hours	
11 hours to 23 hours	
1 to 2 days	
3 to 4 days	
5 to 6 days	
More than 7 days	

Please also enter numerical values for your best estimate of the average, lowest and highest cost per PGA cargo hold delay:

Average number of hours	
Smallest number of hours	
Largest number of hours	

29. FOR COMPANIES **NOT** PARTICIPATING IN THE CEE ONLY: Did the average number of hours of delay resulting from a PGA-initiated cargo hold change from 2010 to 2013? If it did, by how much do you estimate that it changed?

	Change between 2010 and 2013
No change	
Average time ***decreased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	
Average time ***increased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	

Your best estimate of how much average time changed from 2010 to 2013:	

30. FOR COMPANIES PARTICIPATING IN THE CEE ONLY: Did the average number of hours of delay resulting from a PGA-initiated cargo hold change after your company joined the CEE? If it did, by how much do you estimate that it changed?

	Change between pre-CEE and CEE
No change	
Average time ***decreased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	
Average time ***increased*** by:	
Less than 1 hour	
1 hour to 4 hours	
4 hours to 8 hours	
8 hours to 1 day	
More than 1 day	

Your best estimate of how much average time changed from 2010 to 2013:	

31. On average, how much did a day of delay in the release of your merchandise cost your company in 2013? These may include supply shortages/back-orders/failure to fulfill commitments to customers, manufacturing delays/plant shutdowns, delayed studies (e.g. clinical trials), loss of product (e.g. failure to maintain temperature controls at port, theft), increased port storage/demurrage expenses, inventory planning issues (inability to effectively compute safety stock, increased administrative costs. Below are some ranges for the average cost per day of delay.

	Average cost per day of delay in 2013
Less than $299	
$300 to $499	
$500 to $699	
$700 to $999	
$1000 to $1500	
More than $1500	

Please also enter numerical values for your best estimate of the average, lowest and highest cost per day of delay:

Average cost per day of delay	
Lowest cost per day of delay	
Highest cost per day of delay	

Communicating with CBP About Entries

32. If you have contacted CBP's ports of entry and/or the CEE in 2013, please give the number of times that you contacted a port and/or CEE on each topic:

	Number of times contacted in 2013:	
	Port(s) of entry	CEE
No contact		
Import facilitation		
Import regulations		
Commodity classifications		
Exams		
PGA Holds/ Release Times		
…of which, Federal Communications Commission (FCC)		
…of which, Food and Drug Administration (FDA)		
…of which Consumer Product Safety Commission (CPSC)		
…of which, Environmental Protection Agency (EPA)		
CBP Holds/ Release Times		
Single Window		
Intellectual Property Rights Enforcement		
Counterfeit Seizures		
Customs Laboratory analysis		
Exclusion Orders		
Other		

If other, please describe:

33. FOR COMPANIES **NOT** PARTICIPATING IN THE CEE ONLY: Did the number of contacts you listed in the previous question with CBP change from 2010 to 2013? If it did, by how much do you estimate that it changed?

34. FOR COMPANIES PARTICIPATING IN THE CEE ONLY: Did the number of contacts with CBP you listed in the previous question change after your company joined the CEE? If it did, by how much do you estimate that it changed?

35. On average, how much time was spent per contact with CBP's ports of entry and/or the CEE in 2013?

	Average in 2013
Less than 5 minutes	
5 to 15 minutes	
15 to 30 minutes	
30 minutes to 1 hour	
1 to 2 hours	
More than 2 hours	

What was the shortest amount of time? What was the longest amount of time?

Average amount of time	
Shortest amount of time	
Longest amount of time	

36. Did the average amount of time change from 2010 to 2013? If it did, by how much do you estimate that it changed?

37. FOR COMPANIES PARTICIPATING IN THE CEE ONLY: Did the average amount of time change after your company joined the CEE? If it did, by how much do you estimate that it changed?

Overall Assessment

38. Please consider the time that your company must spend on performing all activities to comply with trade regulations. We asked you above about the time that you had to spend on various forms (forms CF-3461 and CF-7501, forms related to post-entry activity, and forms CF-28 and CF-29), time spent dealing with audits, holds and exams, and time involved in communicating with CBP. Does this reflect the total time your company takes to comply with U.S. import regulations? Or are there other activities related to complying with U.S. import regulations that require employee time that we have not included? Is the time associated with these activities significant? Please describe.

39. Consider the overall time required to perform all activities to comply with U.S. import regulations for the typical entry. Has this time changed from 2010 to 2013? If it has, did the change impact your business positively or negatively? Has it impacted the volume of import activity that you conduct? Please describe.

FOR COMPANIES PARTICIPATING IN THE CEE ONLY: Consider the overall time required to perform all activities to comply with U.S. import regulations for the typical entry. Did this time change after your company joined the CEE? If it did, did the change impact your business positively or negatively? Has it impacted the volume of import activity that you conduct? Please describe.

Part III: Additional Background Information

Part III, Chapter 5. Electronics Center of Excellence and Expertise (CEE) Operations

Brett Shears, Adam Rose and Fynn Prager

Chapter 5, Section 1. Introduction

This document provides background on the Electronics Center of Excellence and Expertise (CEE). In general, CEEs aim to facilitate trade and improve U.S. Customs and Border Protection's (CBP) importing process for its members and other industry stakeholders by combining some port functions, which would have previously been spread across multiple ports, into a single location that serves as the locus of control for an entire industry of imports. This concentration of expertise can reduce importer administrative and communications costs. The Electronics CEE aims to use its knowledge of the industry and interactions with other CBP operations to identify and remove bottlenecks in the import process.

While other chapters of this report take a broader examination of the impact of all CEEs, we focus on the Electronics CEE for a number of reasons. The Electronics CEE was one of the first two CEEs, along with the Pharmaceuticals CEE, and other CEEs have been modeled on these first two Centers.[20] Hence, while there are differences between the Centers, providing a detailed discussion of Electronics CEE Operations provides insights into the workings of CEEs more generally.

The rest of this chapter discusses the following topics:

- Company groupings served by the Electronics CEE, and related CBP programs
- Functions used by the Electronics CEE to communicate with members and industry stakeholders
- CBP Activities and Forms related to the Electronics CEE
- Participating Government Agencies (PGAs) and the Electronics CEE
- Electronics CEE organizational structure
- Electronics CEE activities, day-to-day work processes and the life-cycle of projects
- Electronics CEE strategies

[20] The former Director of the Electronics CEE, Anne Maricich, was a key figure in developing the CEE concept within CBP.

Chapter 5, Section 2. Company Groupings Served by Electronics CEE and Related CBP Programs

The Electronics CEE specializes in information technology, integrated circuits, automated data processing equipment, and consumer electronics (CBP, 2014).[21] Table A1 in the Appendix shows the Harmonized Tariff Schedule (HTS) commodities assigned to the Electronics CEE; most are housed under the 8500 sections (Electronics and Electrical Equipment), but there are also two under the 8400 section (Machinery and Mechanical Appliances), and one under the 3800 section (Miscellaneous Chemicals), though these latter three commodities are Electronics-related. Table A2 in the Appendix provides import data from USA Trade Online (2015) for the HTS commodities covered by the Electronics CEE. Participation in the CEE is voluntary, and companies importing commodities across numerous CEEs may choose the CEE in which they participate. As such, companies importing commodities on the Electronics CEE list could in fact choose an alternative CEE; however, CBP approves all participants and, to date, all participating importers are within the CEE that handle the bulk of their importations (Hoffman, 2015).

Companies served by CEEs can be divided into two groups: a) Electronic CEE participating accounts receive all the services provided by the CEE; b) informational services are provided to the rest of the Electronics trade.[22] "Participating accounts" are businesses that have been accepted to participate in the CEE test program announced in the Federal Register (CBP, 2014).

While the Electronics CEE originally targeted those companies with greater than 50 percent of imports in the HTS commodity groups listed in Table A1 (Maricich, 2013), the ultimate goal of covering the entire electronics industry was reached in April of 2015 (Maricich, 2016).

CEEs intersect with numerous CBP programs, including Customs-Trade Partnership Against Terrorism (C-TPAT), Importer Self-Assessment (ISA), Trusted Trader Program, and Managed Accounts. Companies are currently able to pick and choose in which of these CBP programs they participate. For example, as of April 2014 there are 104 total electronics CEE participant Importer of Record (IOR) accounts, whose membership in each of these programs is broken down as follows:[23]

- C-TPAT members: 99
- ISA members: 28
- Managed Accounts: 102

All 104 of the IOR accounts accepted into the electronics CEE previously participated in at least one trusted trader program. The only two IORs that weren't Managed Accounts prior to joining the electronics CEE were participants in C-TPAT.

[21] Maricich (2013) noted that the HTS 4-digit level commodities were divided up between the 10 CEEs on a commodity-by-commodity basis.
[22] Hoffman (2013) noted: "general questions about the industry and classification of merchandise is done for any importer in the industry".
[23] These numbers are based on CBP data on IOR companies.

Distinguishing importers in this process is complicated by the fact that each company can have multiple Importer of Record (or IOR) numbers. We have received two data sets, one from CBP and one from CEE. Both contain masked IORs for privacy purposes. While the CEE data relate the IOR accounts by company, the larger CBP dataset does not enable us to identify the IOR numbers for a given company.

The Trusted Trader Program is a CBP initiative. While it is distinct from the CEE program, many CEE participants are also members of the Trusted Trader Program. Both the Trusted Trader Program and the CEE programs are evolving in terms of membership. The Trusted Trader Program members were initially companies participating in both C-TPAT and ISA (Hoffman, 2013). However, there are numerous trade press online articles from late 2013 that highlight CBP's plans to expand the CEE program to companies that are non-ISA and/or non-C-TPAT (presumably with the appropriate checks).

Similarly, the Electronics CEE initially focused on participation from ISA and C-TPAT participants. In 2013 Hoffman noted: "with the exception of 3 accounts, all of the ISA companies in electronics industry have volunteered to participate in the CEE. As such, the Electronics CEE is accepting applications from non-ISA C-TPAT companies." As of April 2015, all electronics imports are processed by the Electronics CEE, regardless of other program participation.

Managed Accounts are a phrase used in the broader CBP context. Managed Accounts benefit from account-based, rather than transaction-based interactions with CBP through assigned National Account Managers (NAMs). An account may either be an importer or a customhouse broker. While enrollment in ISA automatically gives you managed account status, there are many companies not enrolled in ISA, but which do have managed accounts and it is not clear what warrants this status. As shown in the data above, all 90 Electronics CEE participating IOR accounts are Managed Accounts; that same dataset shows that the Electronics CEE represents 10.38% of CEE accounts across all sectors.

Chapter 5, Section 3. Communications Used by the Electronics CEE, (e.g. ACE/ACS, E-Mail, Telephone).

Anne Maricich (2013) suggests there is a difference in the cost to importers for filing a paper submission versus filing an electronic submission. This, she says, is in part because electronic entries receive a faster cargo release. CEEs, then, are tasked with reducing the amount of paper submissions CBP has requested of importers in the past.

According to the official CEE Test Guidelines, "entry summaries for participating accounts will continue to be submitted through the Automated Commercial System (ACS) or the Automated Commercial Environment (ACE) and will not be required to change the respective port of entry."

Participating accounts transmit the necessary documentation to the Center electronically via the ACE portal, the Document Image System (DIS), or to the Center's email address. Through this process, the date and time of this outgoing message from the filer to CBP, whether by portal, DIS or email, will serve as the functional equivalent of the physical date and time stamp

at the port office. CBP encourages participants to transition to automated and paperless processes to "realize the benefits of an industry focused and account-based processing concept" (CBP, 2014). Gould (2013) noted that "most CEE participants use ACE."

Chapter 5, Section 4. CBP Activities and Forms Related to the Electronics CEE

The Electronics CEE interacts with numerous CBP activities and forms, which below have been arranged in the order in which they occur in the import process.

- **CBP Form 3461 Entry/Immediate Delivery:** CBP Form 3461 is a basic "entry" form that is submitted when cargo arrives at the port. Submitting the actual document may not be required, but a data transmission with all the data elements from the form are always required for cargo release. The form can be submitted prior to the filing of the 7501 data elements or as a single submission of the data elements from the 3461 and the 7501 together as an entry/entry summary.
- **CBP Form 7501 Entry Summary:** CBP Form 7501 is an "entry summary" form that represents a final statement of what goods are imported. It requires more detail than form 3461, even though the data elements from the two forms may be submitted together. Importers have 10 business days to file this form. Entry summaries vary considerably; one 7501 might have a single line while the next might have 75 lines or more. The preparation and submission of CBP Forms 3461 and 7501 do not appear to be affected the introduction of the CEEs, nor do we suspect they are affected by a shift from paper submission to electronic submission.[24]

[24] Hoffman (2013) highlighted an important distinction between the CEE and non-CEE in terms of 3461/7501 form submission process:

1) "The current process at the Ports of Entry requires an importer or their broker submit to CBP via the Automated Broker Interface (ABI) the entry / entry summary transmissions. When the importer / broker submits the ABI transmission they receive an automated message that alerts them when documents are required to be submitted to CBP. Upon receipt of the documents required message the importer /broker submits the paper entry / entry summary (with supporting documents) to the port. In general, the paper document submissions are provided to the port by an employee of the broker (referred to as a runner). The runner time / date stamps the paper entry summary package at the CBP port office. The entry summary package is not mailed to CBP. When an importer / broker does not use ABI to transmit the entry / entry summary information to CBP then a non-ABI entry / entry summary is filed, which requires paper submission in the beginning of the process. CBP personnel then key in the entry / entry summary information into CBP's database. All entry / entry summary information is input into CBP's automated database via ABI or by CBP personnel for non-ABI."

2) "The CEE process initially is the same as the port. The importer / broker transmits the entry / entry summary information via ABI. The ABI transmission is required for all importations (unless filing non-ABI, which automatically requires documents). When the importer / broker of a CEE account submits via ABI they may receive the documents required message as well; however, they are receiving fewer of the documents required messages then the non-CEE importers. When the CEE importer / broker receives the documents required message the documents are sent to the CEE via email or using the Document Imaging System (DIS) rather than sending hard copy documents using a runner. The initial transmission of the entry / entry summary is always required. The participation in a CEE does not preclude an importer from the electronic transmission of the entry / entry summary via ABI. It is the reduction in the document submissions that will change, not the electronic ABI transmission, and the way in which the documents are submitted (no longer requiring printing of documents and use of a runner)."

- **Post Entry Amendment:** A CBP Post Entry Amendment (PEA) form can be filed to CBP for review before a shipment has been liquidated. The PEA allows importers to request corrections to entry summaries. This covers issues that can be considered under administrative review such as clerical, classification, and valuation errors, which result in requests for refunds or the submission of additional money owed 20 days prior to liquidation.
- **CBP Form 28 Request for Information:** CBP official guidelines say that Form 28 is used when the entry summary package has insufficient information, so that it is difficult to determine admissibility, appraised value or classification of imported merchandise.

  According to Electronics CEE officials, Form 28 is used “infrequently” (Maricich, 2016). Requests for information have transitioned to more informal channels such as phone and email. Other CBP officials suggest that CBP Form 28 has not been "phased out", however, as it still serves as a formal means of requesting information from importers, who are required to reply by law (Lord, 2014).

  The filing of CBP Form 28 begins a formal process that compels the importer to comply with a request for information. We understand that this process is rarely implemented and has been replaced by the informal process described above, through which CBP resolves concerns about information provided on CBP Form 7501 (entry summary).
- **CBP Form 29 Notice of Action:** CBP issues Form 29 any time there is a change made to the entry summary. CBP will notify the importer of the specific nature of the change when an entry is made at a rate or value of merchandise that is too low or when the import quantity exceeds that of the entered quantity. Such changes are prompted by new information indicating that the Entry Summary (Form 7501) was incorrect. New information can come from a Request for Information (Form 28s) or informally from the importer. Form 29s, in rare circumstances, inform the importer of commencement of an investigation.

  Anne Maricich has noted that the informal CEE process has almost completely eliminated the need for issuing CF 29s (Maricich, 2013). At times, based on the inquiry by CBP, an importer may recognize and correct their error by submitting a Post Entry Amendment (PEA) or Post Summary Correction (PSC), prior to CBP taking any formal action (Hoffman, 2015).
- **CBP Form 19 Protest:** According to CBP, after the importer has received a formal response via CBP Form 29 but disagrees with action taken or proposed, the importer can challenge this by filing CBP Form 19 -- Protest. The protest is mainly used to challenge a decision of Customs after liquidation of an entry (liquidation normally happens 10 months after the shipment is released; Gould, 2013). The protest is also used to request a refund after an entry is liquidated.

  According to Maricich (2013), importers benefit from the CEE process because the Form 19 only needs to be submitted once to the CEE and not to various ports of entry.

Chapter 5, Section 5. Participating Government Agencies (PGAs) and the Electronics CEE

There are four PGAs that currently work with the Electronics CEE:

- The Federal Communications Commission (FCC),
- Food and Drug Administration (FDA),
- Consumer Product Safety Commission (CPSC),
- Environmental Protection Agency (EPA).

The bulk of the work is done with the FCC and the CPSC (Hoffman, 2013).

1. **Federal Communications Commission:** To process imports, the FCC uses form FCC-740 (Statement Regarding the Importation of Radio Frequency Devices Capable of Causing Harmful Interference).

    - "If the merchandise contains radio frequency devices, the filer must transmit FCC Form-740 data to ACS" (CBP, 2011).

    Two classifications of devices covered by the FCC (Bureau Veritas, 2009):[25]

    a. Intentional Radiator: a device that broadcasts radio energy (not infrared or ultrasonic energy) to perform its function.

        - Examples: cell phones, CB radios, walkie-talkies, wireless connections, Bluetooth connections, and short range broadcast equipment, wireless key-access systems. These devices intentionally use the radio spectrum and therefore always require FCC equipment authorization.

    b. Unintentional Radiator: an electronic device that produces radio signals that are broadcast through space, or conducted along power lines. Devices that receive radio waves can also unintentionally radiate radio waves.

        - Very common everyday electronic devices. Examples: televisions, computers, electronic games, digital cameras, and other devices with a chip/digital circuit in it.

    Common electric products that get exempted from the FCC import process are:

    - Some basic digital battery operated devices that don't connect to the power grid, e.g., some exercise pedometers, stop watches, wall clocks, some basic sound-making toys/novelties. These are exempted by the less than 1.705 MHz rule.
    - White good appliances like washing machines, refrigerators, dishwashers and other digital 'smart' appliances may be exempt under the appliance exemption.
    - 'Under the hood' automotive parts are covered by the vehicle exemption.

[25] FCC regulations also apply to anything that connects to the telephone grid, such as phones, modems, faxes, etc.

2. **Consumer Products Safety Commission:** Information taken from a presentation on the CPSC import process:
    - CSPC uses CBP Form 3461 to process imports.
    - *ITDS/ACE Systems and Process integration with CBP*: In the Fall of 2011, CPSC became the only agency to receive a live data feed from CBP. This web services tool gives qualified CPSC staff access to much better information for targeting "high risk" consumer products.
    - *CPSC Detentions – Time Frames*: Detention notices to be issued as soon as possible after sampling/examination. Recipient of Notice has 5 business days to provide information to help resolve the detention; extensions can be granted. Policy is to try to resolve detentions within 30 days. Detentions of shipments come under both CBP and CPSC authority. Detention notifications will be issued by both agencies. If CBP seizes, that will resolve the CPSC detention but not final CPSC action (Letter of Advice could be issued). If CBP resolves its detention in favor of the importer, it will not release the merchandise without resolution of the CPSC detention.
    - *Certification at the Ports*: There is currently no requirement to file a certificate with CBP or any government agency as part of the entry process or otherwise. CPSC may, by rule, provide for electronic filing of certificates up to 24 hours before arrival. Electronic filing is currently being evaluated with Customs for submission at entry.

Chapter 5, Section 6. CEE Activities (Day-to-day Work Processes, Life-cycle of Projects).

According to official CBP documents (CBP, 2014), each Center will perform certain entry and post summary functions for their participating accounts in accordance with the selection criteria outlined in the respective Federal Register notice (see Appendix C)[26] . The transition of all revenue-related functions will occur incrementally over time until they reside entirely within the Centers.

Entry summaries for participating accounts will continue to be submitted through the Automated Commercial System (ACS) or the Automated Commercial Environment (ACE) and will not be required to change the respective port of entry. Upon acceptance as a participating account, the Centers will process applicable entry summaries, regardless of the port of entry or commodity.

Upon receipt of "docs required" message for an ACS or ACE entry summary, the participating account or its filer will transmit the necessary documentation to the Center electronically via the ACE portal, the DIS or the Center's e-mail address. The date and time of this out-going

[26] The organizational structure for the Electronics CEE is provided in Appendix B below.

message from the filer to CBP whether by portal, DIS or email, will serve as the functional equivalent of the physical date and time stamp at the port office. The required documents and the regulatory or statutory timeframes for submission have not been changed. Due to the 10MB size limitation of attachments, the document may need to be sent using multiple transmissions.

Chapter 5, Section 7. CEE Strategies (e.g., Removing Form 28s, and Other Bottlenecks, Enforcement, etc.)

The Electronics CEE has implemented a number of strategies to achieve their goals (Hoffman, 2013), which relate to general CBP practices, PGAs, and the CBP Priority Trade Issues (PTIs):

1. General CBP practices
    a. CBP Forms 3461/7501

        "The Electronics CEE is processing the entry summary (CBP Forms 3461 and 7501) for the participating accounts. These accounts no longer submit the documents to the ports of entry and the documents are submitted electronically to the center. The Electronics CEE worked with CBP HQ to reduce the number of random reviews that the participating accounts receive which equates to an overall reduction in the number of document submissions" (Hoffman, 2013).

    b. Post-entry amendments, post-summary corrections, protests and prior disclosures

        "The Electronics CEE has influenced the 520(d), protests, and prior disclosure processes by allowing participating accounts to file a single claim (520(d), protest or prior disclosure) at the center rather than multiple ports of entry. The center allows for consolidation of the claim by account. When a submission is incomplete, the center may request additional documentation from the account" (Hoffman, 2013).

    c. CBP Forms 28/29

        "The center interacts with the accounts telephonically, via email and meetings. We do not have any estimates on the time spent uses these other methods of communication to gain information from the accounts" (Hoffman, 2013).

    d. Communication strategies

        "The Electronics CEE interacts with the accounts telephonically, via email and meetings" (Hoffman, 2013).

    e. Audits

        The Electronics CEE handles the entire electronics industry, regardless of whether they are participating in the CEE program. This means that the CEE is engaged in the audit process for non-participating accounts as well as new applicants for the ISA program (Hoffman, 2015). "Participating accounts that are ISA are excluded from the audit process" (Hoffman, 2013).

f. Eliminating unnecessary duplicative work from compliant imports.

"As noted above, the Electronics Center has worked with CBP Headquarters to reduce the number of random reviews required for participating ISA accounts. The center will review the random generated reviews and consolidate the document requests that are issued for the random reviews (i.e., not every entry subject to review will require document submissions). Additionally, the participating accounts need submit protests to only the center and can consolidate multiple entries for multiple ports on that single protest. The accounts can submit the prior disclosure to the center rather than multiple ports…. There is a distinction between 'dwell time' and 'holds'. Our work and the work of CEEs ultimately have to do with holds. Dwell time could be reduced indirectly by the reduction of holds, exams, and other duplicative interventions by CBP" (Hoffman, 2013).

2. PGAs

a. Holds

"The cargo release process remains at the ports of entry. The Center will contact the ports when participating accounts are experiencing delays. Additionally, the center will ensure that accounts are not unnecessarily included in national operations" (Hoffman, 2013).

b. Exams

"The cargo release process remains at the ports of entry. The Center will contact the ports when participating accounts are experiencing delays. Additionally, the center will ensure that accounts are not unnecessarily included in national operations. This pertains to PGA examinations as well" (Hoffman, 2013).

c. Customs laboratory analysis

"In general, the center would not intervene if a laboratory analysis was required by a port of entry or PGA for a participating account's shipment" (Hoffman, 2013).

3. PTIs

a. Intellectual Property Rights enforcement, such as counterfeit seizures.

"FY 2013 Intellectual Property Rights (IPR) Seizure Stats compared to FY 2012 results (30% increase for nationwide seizures of electronics). For enforcement operations run by the Electronic CEE, we had 30 seizures in FY 2012, compared to 1,007 seizures in FY 2013. Much of the increase in the national seizure statistics for consumer electronics can be attributed to the Electronic CEE" (Hoffman, 2013).

b. Anti-dumping cases, or other examples of unfair trade practices. What are the other unfair trade practices that you have dealt with?

"Exclusion Orders are enforced by the Electronics Center. An exclusion order forbids the unlawful importation of articles that infringe a valid and enforceable United States patent" (Hoffman, 2013).

Chapter 5, Section 8. Development of CEEs Since Establishment: Further Insights

The Electronic CEE reached its goal of covering the entire electronics industry in April of 2015 (Maricich, 2016).

One other future strategy change indicated to us relates to PGAs: "The FCC requirements are the most impactful to the participating accounts. At this time no changes have resulted, but the Electronics CEE intends to collaborate with the FCC on import requirements that may be duplicative."

In terms of staffing, the eCEE no longer uses a matrix employee structure wherein staff split their time between various divisions of CBP and the CEE. All eCEE employees are now full-time, core employees of the eCEE (Hoffman, 2015).

Chapter 5, Section 9. References

Bureau Veritas (2009). "Frequently Asked Questions...Federal Communications Commission (FCC)." *Bureau Veritas Group* (a global testing, inspection and certification services company), July 17, 2009. Available online: http://www.bureauveritas.com/wps/wcm/connect/bv_com/group/home/news/business-news/fcc_faqs.

CBP (2014). "Centers of Excellence and Expertise Test Guidelines: Responsibilities and Procedures for Participating Accounts and Their Brokers, Agents, or Filers." U.S. Customs and Border Protection, March, 2014. Available online: http://www.cbp.gov/sites/default/files/documents/Updated%20CEE%20Trade%20Process%20Document%20032614.pdf.

CBP (2011). "Other Government Agencies." U.S. Customs and Border Protection, April, 2011. www.cbp.gov/sites/default/files/documents/other_gov_agencies_3.doc.

Federal Register. Vol. 77, No. 167. Tuesday, August 28, 2012. Available online: http://www.gpo.gov/fdsys/pkg/FR-2012-08-28/html/2012-21217.htm.

Federal Register. Vol. 78, No. 65. Thursday, April 4, 2013. Available online: http://www.gpo.gov/fdsys/pkg/FR-2013-04-04/html/2013-07840.htm.

Gould, T. Interview with Tom Gould, Senior Director, Customs and International Trade, for Sandler, Travis & Rosenberg, P.A. (November 26, 2013). Conducted by Fynn Prager and Nat Heatwole.

Hoffman, S. L. Interview with Sherri Lee Hoffman, Deputy Director, Electronics CEE (November 12, 2013).

Hoffman, S. L. Correspondence with Sherri Lee Hoffman, Former Deputy Director, Electronics CEE (August, 2015).

Lord, B. Interview with Brandon Lord, Branch Chief, Validation & Compliance

Commercial Targeting & Enforcement Division, Customs & Border Protection, Office of International Trade (2014).

Maricich, A. Interview with Anne Maricich, Director, Electronics CEE (December 31, 2013).

Maricich, A. Correspondence with Ann Maricich, Former Director, Electronics CEE (February 8, 2016).

USA Trade Online (2015). *US Census Bureau* https://usatrade.census.gov/.

Chapter 5, Appendix A. Harmonized Tariff Schedule Commodities Covered by the Electronics CEE

Table Error! No text of specified style in document.**-1: Commodities Covered by the Electronics CEE**

HTS 4	Description
3818	CHEMICAL ELEMENTS DOPED FOR USE IN ELECTRONICS, IN THE FORM OF DISCS, WAFERS OR SIMILAR FORMS; CHEMI
8471	AUTOMATIC DATA PROCESSING MACHINES AND UNITS THEREOF; MAGNETIC OR OPTICAL READERS, MACHINES FOR TRAN
8473	PARTS AND ACCESSORIES NESOI FOR TYPEWRITERS AND OTHER OFFICE MACHINES OF HEADINGS 8469 TO 8472
8501	ELECTRIC MOTORS AND GENERATORS (EXCLUDING GENERATING SETS)
8502	ELECTRIC GENERATING SETS AND ROTARY CONVERTERS
8503	PARTS OF ELECTRIC MOTORS, GENERATORS, GENERATING SETS AND ROTAARY CONVERTERS
8504	ELECTRICAL TRANSFORMERS, STATIC CONVERTERS OR INDUCTORS; POWER SUPPLIES FOR ADP MACHINES OR UNITS; P
8517	ELECTRICAL APPARATUS FOR LINE TELEPHONY OR LINE TELEGRAPHY, INCLUDING SUCH APPARATUS FOR CARRIER-CUR
8518	MICROPHONES AND STANDS THEREFOR; LOUDSPEAKERS; HEADPHONES, EARPHONES ETC.; AUDIO-FREQUENCY ELECTRIC
8519	TURNTABLES, RECORD PLAYERS, CASSETTE PLAYERS AND OTHER SOUND REPRODUCING APPARATUS, NOT INCORPORATIN
8521	VIDEO RECORDING OR REPRODUCING APPARATUS, WHETHER OR NOT INCORPORATING A VIDEO TUNER
8522	PARTS AND ACCESSORIES SUITABLE FOR USE SOLELY OR PRINCIPALLY WITH THE APPARATUS OF 8519 TO 8521
8523	PREPARED UNRECORDED MEDIA (OTHER THAN MOTION-PICTURE FILM) FOR SOUND RECORDING OR SIMILAR RECORDING
8525	TRANSMISSION APPARATUS FOR RADIOTELEPHONY, RADIOTELEGRAPHY, RADIOBROADCASTING OR TV; TV CAMERAS; STI
8526	RADAR APPARATUS, RADIO NAVIGATIONAL AID APPARATUS AND RADIO REMOTE CONTROL APPARATUS
8527	RECEPTION APPARATUS FOR RADIOTELEPHONY, RADIOTELEGRAPHY OR RADIOBROADCASTING, WHETHER OR NOT COMBINE
8528	TELEVISION RECEIVERS, INCLUDING VIDEO MONITORS AND VIDEO PROJECTORS
8529	PARTS FOR TELEVISION, RADIO AND RADAR APPARATUS (OF HEADINGS 8525 TO 8528)
8530	ELECTRICAL SIGNALING, SAFETY OR TRAFFIC CONTROL EQUIPMENT FOR RAILWAYS, ROADS, INLAND WATERWAYS, PAR
8531	ELECTRIC SOUND OR VISUAL SIGNALING APPARATUS (BELLS, SIRENS, BURGLAR OR FIRE ALARMS ETC.), NESOI; AN
8532	ELECTRICAL CAPACITORS, FIXED, VARIABLE OR ADJUSTABLE (PRE-SET); PARTS THEREOF
8533	ELECTRICAL RESISTORS (INCLUDING RHEOSTATS AND POTENTIOMETERS), OTHER THAN HEATING RESISTORS; PARTS T
8534	PRINTED CIRCUITS
8535	ELECTRICAL APPARATUS FOR SWITCHING OR PROTECTING ELECTRICAL CIRCUITS, OR FOR MAKING CONNECTIONS TO O
8536	ELECTRICAL APPARATUS FOR SWITCHING OR PROTECTING ELECTRICAL CIRCUITS, OR FOR MAKING CONNECTIONS TO O

HTS 4	Description
8537	BOARDS, PANELS ETC. WITH TWO OR MORE APPAR FOR SWITCHING ETC. ELEC CIRCUITS (HEADING 8535, 8536) OR
8538	PARTS FOR ELECTRICAL APPARATUS FOR SWITCHING ETC. ELECTRIC CIRCUITS (OF HEADING 8535 OR 8536) AND PA
8540	THERMIONIC, COLD CATHODE OR PHOTOCATHODE TUBES (VACUUM, VAPOR OR GAS FILLED TUBES, CATHODE-RAY TUBES
8541	DIODES, TRANSISTORS AND SIMILAR DEVICES; PHOTOSENSITIVE SEMICONDUCTOR DEVICES; LIGHT-EMITTING DIODES
8542	ELECTRONIC INTEGRATED CIRCUITS AND MICROASSEMBLIES; PARTS THEREOF
8543	ELECTRICAL MACHINES AND APPARATUS, HAVING INDIVIDUAL FUNCTIONS, NESOI; PARTS THEREOF
8544	INSULATED WIRE, CABLE AND OTHER INSULATED ELECTRICAL CONDUCTORS; OPTICAL FIBER CABLES, OF INDIVIDUAL
8545	CARBON ELECTRODES, CARBON BRUSHES, LAMP CARBONS, BATTERY CARBONS AND OTHER ARTICLES OF GRAPHITE OR O
8546	ELECTRICAL INSULATORS OF ANY MATERIAL
8547	INSULATING FITTINGS FOR ELECTRICAL MACHINES ETC., PRIMARILY OF INSULATING MATERIALS; CONDUIT TUBING
8548	WASTE & SCRAP OF PRIMARY CELLS AND BATTERIES; SPENT PRIMARY CELLS AND BATTERIES; ELECTRICAL PARTS OF

(HTS is the Harmonic Tariff Schedule of commodity coding)

Table Error! No text of specified style in document.**-2: Imports for Electronics CEE HS Commodities, 2003-12 ($m)**

HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
3818	1,119	1,255	1,386	1,609	1,817	1,601	1,013	1,388	1,542	1,347
8471	51,997	59,678	63,448	67,519	57,778	56,463	53,417	70,284	79,620	84,238
8473	24,474	29,354	30,374	34,224	22,281	18,911	18,697	23,016	16,420	15,149
8501	4,195	4,551	5,040	5,658	6,339	6,669	4,885	6,027	7,170	8,135
8502	832	714	1,377	2,314	3,191	3,621	3,213	2,235	2,356	2,306
8503	1,133	1,064	1,399	1,684	1,997	1,856	1,370	1,294	1,530	1,700
8504	6,428	7,386	8,041	9,375	10,534	11,400	9,575	11,452	12,271	12,760
8517	12,822	14,897	20,562	21,911	52,571	60,385	58,733	71,061	76,663	80,450
8518	2,719	3,111	3,431	3,651	3,677	3,511	2,878	3,707	4,162	5,124
8519	1,476	1,288	1,079	810	2,592	1,372	870	959	748	876
8521	4,428	4,996	4,231	4,563	3,572	2,511	3,116	2,666	2,182	1,778
8522	295	382	291	339	384	399	342	323	278	245
8523	3,039	3,786	4,177	4,400	5,994	5,285	4,102	4,090	4,462	4,610
8525	24,958	31,131	35,234	37,787	14,517	13,393	10,658	11,927	11,094	11,532
8526	1,172	1,471	1,846	2,547	4,184	4,300	3,989	3,723	3,645	4,476
8527	6,157	6,279	6,184	6,165	5,223	4,047	3,159	4,504	4,523	5,169
8528	11,898	16,096	21,141	27,590	38,946	39,968	33,193	35,443	31,192	30,670
8529	4,372	6,238	6,432	6,508	4,130	3,301	2,456	2,993	3,466	3,525
8530	125	172	190	215	244	296	277	283	276	293
8531	1,761	2,018	2,258	2,447	2,562	2,449	2,191	2,576	2,779	2,696
8532	1,292	1,288	1,413	1,656	1,538	1,387	975	1,408	1,401	1,332

HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
8533	665	732	751	881	889	877	599	866	891	958
8534	1,815	2,144	2,158	2,245	2,264	2,093	1,491	1,870	1,913	1,894
8535	273	310	401	443	461	565	466	527	688	754
8536	5,233	6,337	6,926	7,472	7,897	7,902	5,799	8,019	8,600	9,375
8537	2,961	3,386	4,002	4,545	5,148	5,529	4,404	5,716	6,544	7,840
8538	1,530	1,806	1,774	2,026	2,154	1,932	1,433	2,047	2,424	2,715
8540	807	873	772	567	381	413	272	293	349	343
8541	3,323	3,896	3,893	4,551	5,014	5,549	4,679	7,513	10,286	10,091
8542	21,281	22,853	21,867	22,824	21,090	19,644	16,418	21,720	27,448	27,426
8543	2,592	3,233	3,357	3,967	3,665	3,909	3,655	5,600	6,989	6,402
8544	8,571	9,496	10,691	12,441	13,479	12,328	8,713	12,255	14,386	16,091
8545	234	250	276	329	409	584	352	550	586	603
8546	109	143	162	198	194	230	206	238	285	310
8547	85	99	123	122	127	158	116	138	160	191
8548	178	222	198	189	201	194	147	203	245	266
Total	216,351	252,936	276,885	305,772	307,444	305,031	267,856	328,915	349,575	363,669

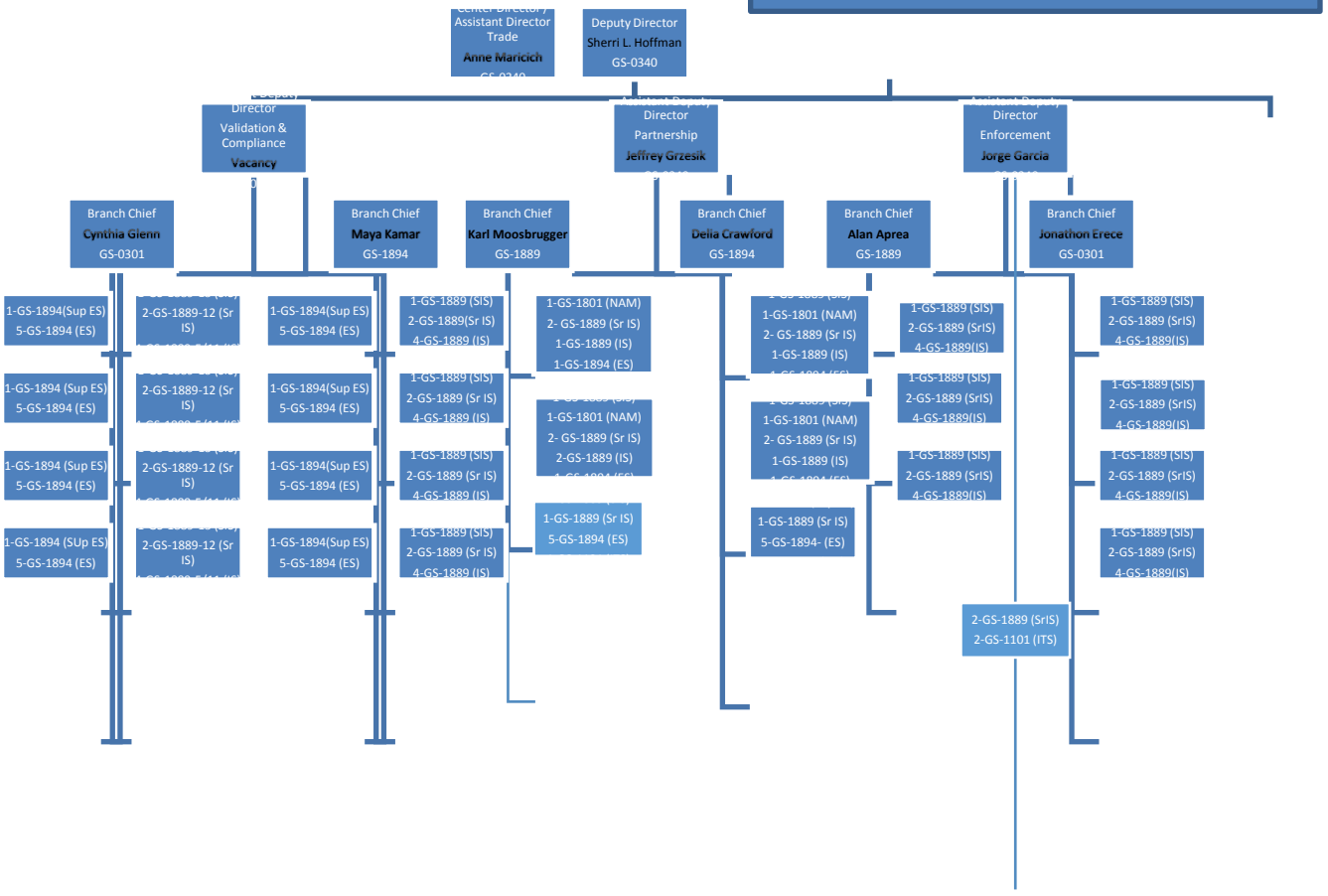
USA Trade Online data. (For 2012: Top 5 highlighted yellow; Next 5 highlight green)

Chapter 5, Appendix B. Electronics CEE organizational charts

Field Office Los Angeles Electronics CEE
Proposed Org Chart
05/2013

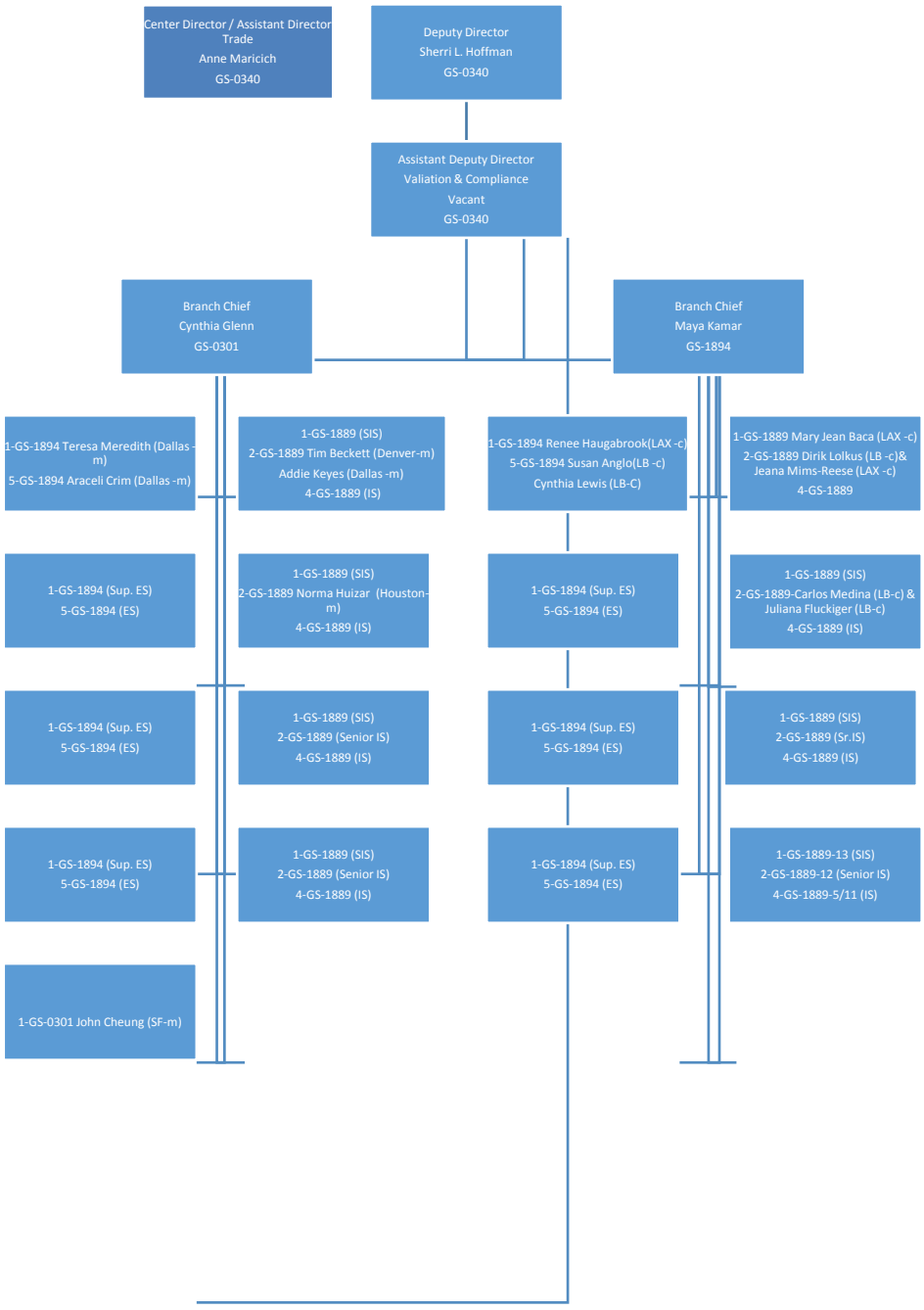
Current Staffing	
Managers (GS-0340):	4
Branch Chiefs (GS-1889/1894/0340)	6
National Account Managers (GS-1801):	4
International Trade Specialist (GS-1101):	6
Import Specialists (GS-1889):	38
Entry Specialists (GS-1894):	9

Final Core Staffing	
Managers (GS-0340):	5
Branch Chiefs (GS-1889/1894/0340)	6
National Account Managers (GS-1801):	5
International Trade Specialist (GS-1101):	5
Import Specialists (GS-1889):	121
Entry Specialists (GS-1894):	63



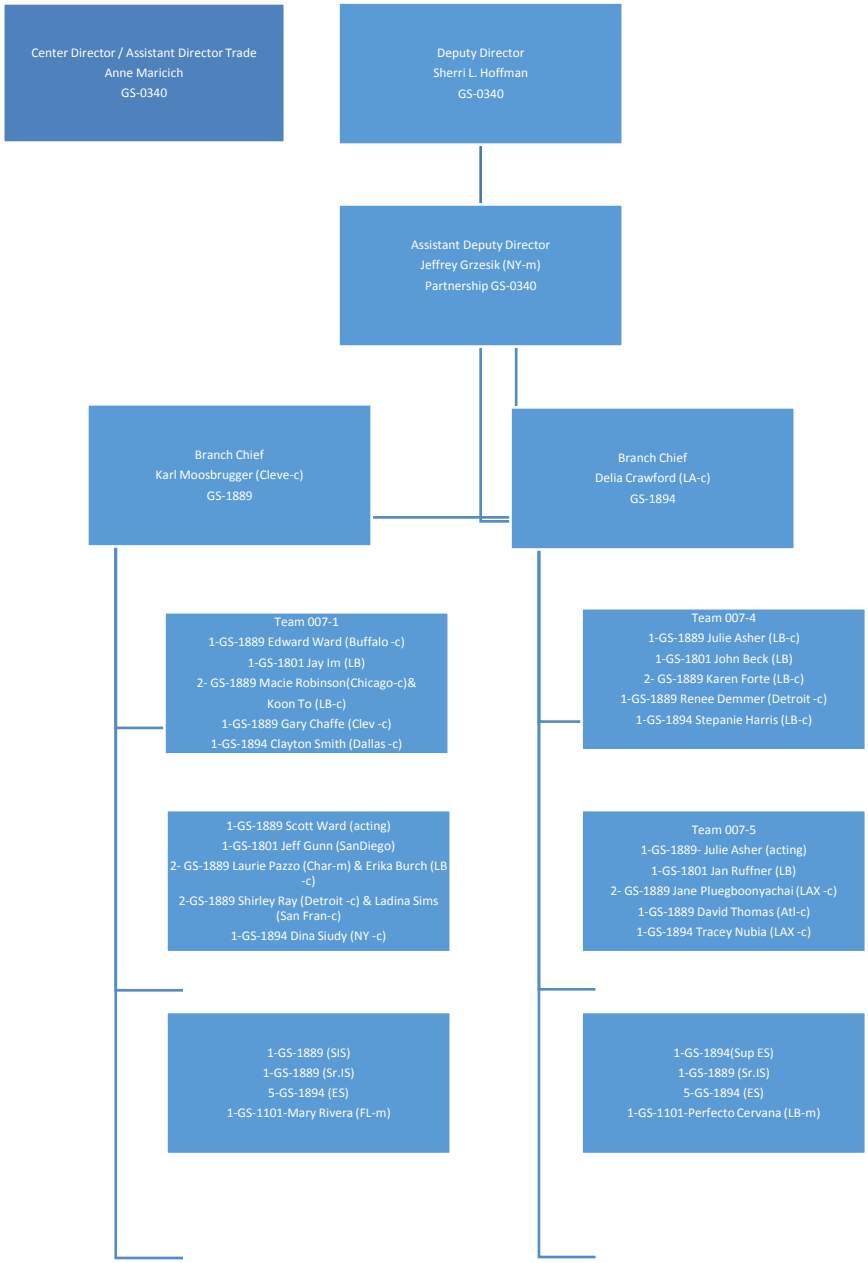
Validation & Compliance Current Staffing	
Assist. Deputy Director (GS-0340):	0
Branch Chiefs (GS-1894 0301)	2
International Trade Specialist (GS-1101)/FAS/Ops	1
Import Specialists (GS-1889):	8
Entry Specialists (GS-1894):	5

Validation & Compliance Final Staffing	
Assist. Deputy Director (GS-0340):	1
Branch Chiefs (GS-1894 0301)	2
International Trade Specialist (GS-1101)	2
Import Specialists (GS-1889):	56
Entry Specialists (GS-1894):	48



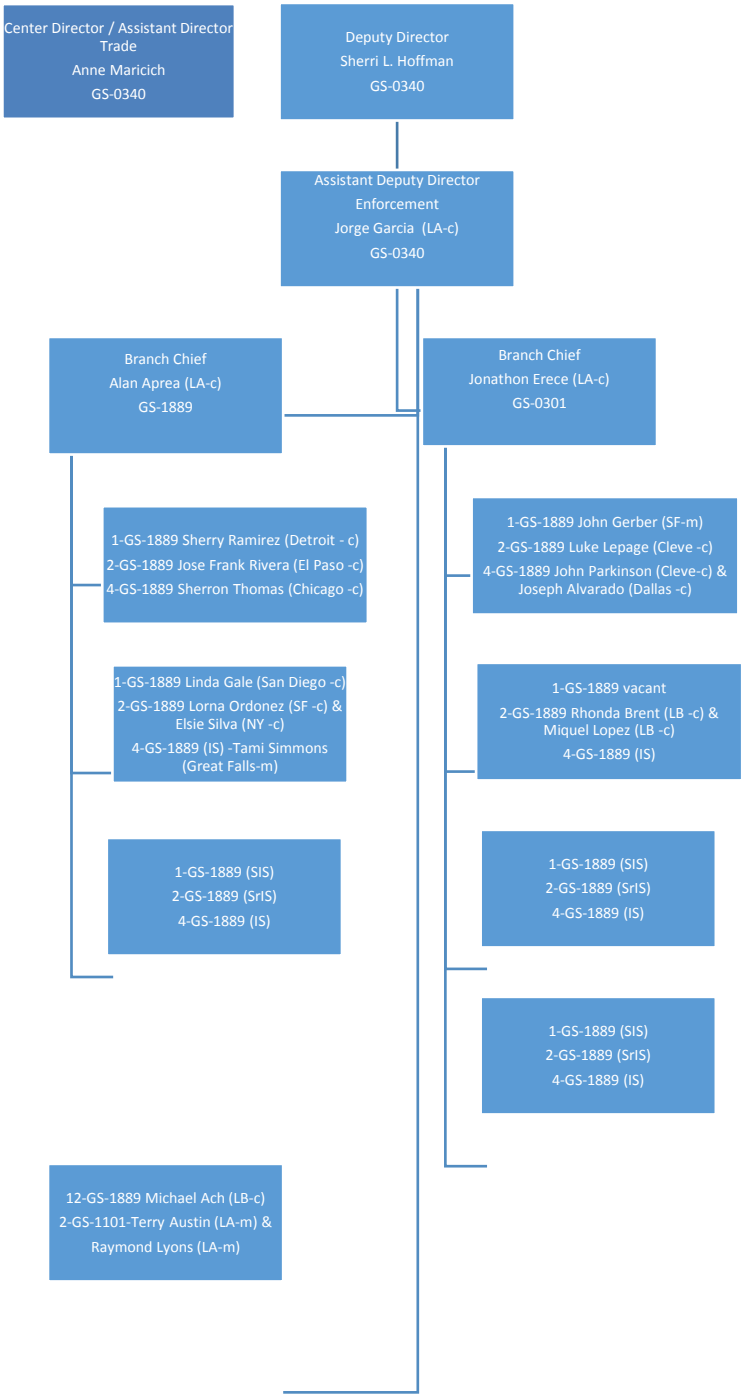
Partnership Current Staffing	
Assistant Deputy Director (GS-0340):	1
Branch Chiefs (GS-0301 / 1894)	2
National Account Managers (GS-1801):	4
International Trade Specialist (GS-1101):	2
Import Specialists (GS-1889):	13
Entry Specialists (GS-1894):	4

Partnership Final Staffing	
Assistant Deputy Director (GS-0340):	1
Branch Chiefs (GS-0301 / 1894)	2
National Account Managers (GS-1801):	5
International Trade Specialist (GS-1101):	2
Import Specialists (GS-1889):	20
Entry Specialists (GS-1894):	15



Enforcement Current Staffing:	
Assistant Deputy Director (GS-0340):	1
Branch Chiefs (GS-1889 / 0301)	2
International Trade Specialist (GS-1101):	2
Import Specialists (GS-1889):	14

Enforcement Final Staffing:	
Assistant Deputy Director (GS-0340):	1
Branch Chiefs (GS-1889 / 0301)	2
International Trade Specialist (GS-1101):	2
Import Specialists (GS-1889):	51


Center Director / Assistant Director Trade
Anne Maricich
GS-0340
Deputy Director
Sherri L. Hoffman
GS-0340
Assistant Deputy Director
Enforcement
Jorge Garcia (LA-c)
GS-0340
Branch Chief
Alan Aprea (LA-c)
GS-1889
Branch Chief
Jonathon Erece (LA-c)
GS-0301
1-GS-1889 Sherry Ramirez (Detroit - c)
2-GS-1889 Jose Frank Rivera (El Paso -c)
4-GS-1889 Sherron Thomas (Chicago -c)
1-GS-1889 Linda Gale (San Diego -c)
2-GS-1889 Lorna Ordonez (SF -c) & Elsie Silva (NY -c)
4-GS-1889 (IS) -Tami Simmons (Great Falls-m)
1-GS-1889 (SIS)
2-GS-1889 (SrIS)
4-GS-1889 (IS)
12-GS-1889 Michael Ach (LB-c)
2-GS-1101-Terry Austin (LA-m) & Raymond Lyons (LA-m)
1-GS-1889 John Gerber (SF-m)
2-GS-1889 Luke Lepage (Cleve -c)
4-GS-1889 John Parkinson (Cleve-c) & Joseph Alvarado (Dallas -c)
1-GS-1889 vacant
2-GS-1889 Rhonda Brent (LB -c) & Miquel Lopez (LB -c)
4-GS-1889 (IS)
1-GS-1889 (SIS)
2-GS-1889 (SrIS)
4-GS-1889 (IS)
1-GS-1889 (SIS)
2-GS-1889 (SrIS)
4-GS-1889 (IS)

Part III, Chapter 6. Electronics Industry and Trade Data

Fynn Prager, Katherine Lu, Dan Wei and Adam Rose

Chapter 6, Section 1. Introduction

To provide context to the broader study and in particular, the economic impact analysis, this chapter describes the electronics industry, recent technological trends, import trends, and issues related to import processes and trade practices.

Chapter 6, Section 2. Electronics Industry Definitions

This chapter discusses the electronics industry in general, as well as the specific sub-sectors covered by the Electronics CEE – which are presented in Table 1. The Electronics CEE covers companies importing goods in both the electronics and electrical manufacturing sectors. The electronics manufacturing sector produces goods in which charges flow through non-metal conductors such as semiconductors, while the electrical manufacturing sector produces goods in which charges flow through metal conductors (QFinance, 2010). Within electronics, there is a wide variety of sub-industries, including information technology, mobile phones, video game consoles, television sets, specialist control-systems, aviation, automobiles, and medical devices.

Chapter 6, Section 3. Electronics Industry Trends

Despite the recent economic downturn, U.S. factory sales of consumer electronics increased 4.7% from 2011 to $204 billion in 2012 (Consumer Electronics Association [CEA], 2013). Sales are predicted to rise to a record $206.9 billion for 2013 (Atradius, 2013).

1. **Recent Technological Trends:** According to Moore's Law, the "computing power of semiconductors will double every 18 months" (Belt et al., 2005). While it has been predicted that Moore's Law would no longer apply due to circuits becoming increasingly small, with quantum effects leading to instability in current flow and chip overheating, new technologies have permitted Moore's Law to continue (QFinance, 2010). In practical terms, these technological changes have allowed electronic goods to become cheaper and smaller, leading to increased sales and lowered transportation costs respectively, which in turn fueled investment and decreased prices.

   These changes have permitted a transition in consumption from stationary desktop computers to mobile computing through laptops, tablets, e-readers, and smartphones. In 2012, mobile computing device sales exceeded 105 million units at $47 billion, bolstered by increasing demand for laptops, tablets, and smartphones (CEA, 2013). Complementary improvements in wireless communications technologies have allowed consumers to increase usage rates. Two-thirds of wireless phone sales consist of smartphones, with 111 million units sold in 2012 at $33 billion (CEA, 2013). Recent technological changes have also improved the resolution of television sets and impacted the video game market, which has been transitioning to a new generation of consoles and is facing competition from gaming on smartphones and tablets (CEA, 2013). A further consequence of technological change is that manufacturers are producing new

goods with “only marginal improvements,” resulting in a “short consumer product life cycle within the industry” (Atradius, 2013).

2. **Recent and Projected Trends in Imports:** As shown in Table 2 below, the imports for sectors covered by the Electronics CEE have increased from $216 billion in 2003 to $363 billion in 2012. Most top-tier U.S. original equipment manufacturers and contract manufacturers have moved production offshore, while smaller, second-tier manufacturers have continued to produce in the U.S. (Jorgensen, 2006). Consumer electronics are more likely to be produced offshore than industrial or infrastructure equipment, because the former are “usually small, light, and churned out in huge volumes”, making them easier and cheaper to ship to the U.S. from Asia (Jorgensen, 2006). Almost all of the consumer electronics consumption came from imported products (MergeGlobal Forecast Team, 2006).

   Asia is considered the leader of printed circuit board and memory-chip manufacturing, and this is reflected in U.S. imports; Table 3 shows that 6 of the top 10 countries producing goods covered by the Electronics CEE are in Asia (QFinance, 2010). These 6 countries account for 65% of all imports covered by the Electronics CEE; China alone accounts for 44%. This is due to technological discoveries in Japan, as well as U.S. companies outsourcing to Asia for its cheaper labor rates and more favorable business conditions. In terms of general trends, country shares have shifted from Japan to the Asian Tigers of Hong Kong, Singapore, South Korea, and Taiwan in the 1990s and now to China (MergeGlobal Forecast Team, 2006). More specifically, as shown in Table 4, China and Thailand have increased exports to the U.S. of goods covered by the Electronics CEE by 258.3% and 105.7%, respectively. In contrast, Japan, Malaysia, and South Korea have all reduced relevant exports to the U.S. between 2003 and 2012. There is also notable growth in Mexico and Costa Rica, reflecting increasingly globalized production and assembly practices and favorable tariff rates from the North American Free Trade Agreement (NAFTA) and the Central America Free Trade Agreement (CAFTA).

   Since the late 1990s, trans-Pacific transport of consumer electronics has changed “from air to ocean as large retailers, laser-focused on squeezing costs from the system, have increasingly downgraded the service level of their freight” (MergeGlobal Forecast Team, 2006). The top 3 ports of entry for goods covered by the Electronics CEE (Port of LA, Chicago Port, Anchorage Port) are shipping ports, accounting for 30% of relevant imports. 4 of the top 10 ports of entry for Electronics CEE-covered goods are airports (Dallas-Fort Worth; LAX; SFO; JFK), accounting for 22% of relevant imports. The primary route for importing consumer electronics is through West Coast ports, with Los Angeles ports alone accounting for 22% of all imported goods covered by the Electronics CEE. It is notable that Texas – 15% of imports covered by the Electronics CEE for El Paso and Laredo alone – is the second largest entry state. This is indicative of the large consumer markets in the two most populous states of California and Texas.

Chapter 6, Section 4. Issues Related to Import Processing

Electronics trade organizations support tariff liberalization with the reduction or elimination of import-related fees or any duty-like fees (Bell, 2013). One example of such a fee is the U.S. merchandise processing fee on all imports, which has become an "increasingly significant import tax on semiconductor products, especially with the increase in the fee's ad valorem rate from .21% to ~.34% in 2011" (Bell, 2013). Organizations like the Semiconductor Industry Association support the elimination of all levies, especially tariffs upon entry, as they claim levies "decrease consumer cost savings, lower productivity gains…, and directly inhibit the transatlantic economy from reaching its full innovation potential" (Bell, 2013).

Complex customs and trade procedures, obligations, and practices can interrupt supply chains and raise costs for both companies and consumers. These include "undue requirements for customs entry documents and data; non-automated processes for the import/export/transit of goods; unclear or inconsistently applied customs obligations; and rules that do not take account of risk management or reasonable penalty mitigation procedures" (Bell, 2013). Trade organizations support increasing trade facilitation that will lead to "free and open markets," diminish trade barriers, and otherwise improve business conditions (Bell, 2013).

Bell (2013) makes the following recommendations to improve processing:

- A "single window" to electronically send data to the government;
- "Submission and processing of import-related information to enable pre-clearance of goods before their arrival at a port of entry";
- "Separating the release of goods in customs custody from the payment of duties or other import charges";
- Unitary import clearance processes, where the inspection requirements are met during a single cargo release;
- "Automated systems and procedures that expedite the release of goods and processing of customs information."

Chapter 6, Section 5. Issues Related to Trade Practices

Electronics is highly affected by trade practices. After all, it "has enabled the globalization of business, and the electronics sector has itself, in turn, been shaped by globalization" (QFinance, 2010). The government's role should be to "promote competitiveness without erecting artificial barriers to free and fair trade" in order to support a stable international trade system (Bell et al., 2006).

There is substantial trade in counterfeit electronic products, especially from China, the main source of counterfeit and pirated products (Charles, 2013). For semiconductors, there is "significant trade" in counterfeits that can detrimentally affect the economy, health and safety, national security, and legitimate manufacturers, who would suffer the loss of intellectual property and sales (Atradius, 2013; Bell, 2013).

The Electronic Industries Alliance, a trade organization representing electronics manufacturers, supports removing barriers to trade and opposes protectionist policies that would dampen innovation (QFinance, 2010). For example, government export regulations that are outdated and impede free trade should be revised and simplified (Bell et al., 2006). Moreover, U.S. export license regulations restrict the export of certain equipment and materials used to manufacture semiconductors to potentially hostile nations. However, these products are available from competing nations, and thus the restrictions negatively affect U.S. competitive advantage (Bell et al., 2006).

Chapter 6, Section 6. Trade Data

We can gain insight into the electronics import market by examining the supply chain, which consists of three key links:

- **Manufacturers**. This study focuses on the impacts of reductions in non-tariff barriers to the electronics import industry. In the frame of our study, the electronic goods are produced overseas, but U.S. manufacturers may use electronics imports as inputs to production.
    - **Import Data** - USA Trade Online data by Electronics CEE HTS codes (Table 1):
        - Imports, 2003-2012 (Table 2),
        - Import by country of origin: Top 10 in 2012 (Table 3), Top 10 growth 2003-12 (Table 4),
        - By port of entry, Top 10 in 2012 (Table 5),
        - By district of entry, Top 10 in 2012 (Table 6).
    - **Domestic Production Data** – U.S. BEA data on the domestic production of these goods:
        - 2003-2012 (Table 7).
- **Wholesalers**. These companies purchase imports in bulk. The gross output (sales revenue) of this sector is the "trade margin" – the cost of doing business – and does not include the values of electronics goods purchased/sold.
    - **Domestic Output Data** – U.S. BLS data on electronics wholesaler sector output:
        - 2003-2012 (Table 8).
- **Retailers**. These companies purchase electronics goods mainly from wholesalers (though some large companies, such as Costco and Wal-Mart, are vertically integrated wholesale/retail establishments). Note that the gross output (sales revenue) of this sector is also "trade margin," the cost of doing business, and does not include the values of electronics goods purchased/sold.
    - **Domestic Output Data** – U.S. BLS data on electronics retail sector output:
        - 2003-2012 (Table 8).

- Other sectors may be indirectly impacted, and some may use electronics imports as capital inputs. The exact magnitude can be determined with an input-output table and the import table of the U.S.
    - Supply Chains (Input-Output Data):
        - Top 20 sectors selling to CEE-covered sectors (Table 9),
        - Top 20 sectors purchasing from CEE-covered sectors (Table 10),
        - Top 20 importing sectors of CEE-covered commodities (Table 11).

Chapter 6, Section 7. References

Atradius. (2013, May). *Market Monitor: Focus on consumer electronics/ICT performance and outlook.* Retrieved from http://www.atradiuscollections.com/images/stories/publications/market_monitor/MM__May2013_ENG.pdf.

Bell, D. M., (2013, May 10). *RE: Docket number USTR-2013-0019, request for comments for the U.S.-EU transatlantic trade and investment partnership.* Retrieved from http://www.semiconductors.org/clientuploads/directory/DocumentSIA/International%20Trade%20and%20IP/Final%20SIA%20Comments%20on%20the%20TTIP-May%2010.pdf.

Bell, R., Carroll-Garrison, M., Donovan, D., Fisher, J., Guemmer, P., Harms, R., and Woodward, D. (2006). *Spring 2006 industry study electronics industry*. Retrieved from www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA475296.

Belt, D., Fellows, J.R., Kameru, P., Nazaroff, B.A., Pauroso, A., Schulz, F., and Kirkpatrick, S. (2005). *Electronics industry study report*. Retrieved from http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA449468.

Charles, D. (2013, July 31). Fake Blackberrys, Dr Dre's seized in US-China raids. *NBC News.* Retrieved from http://www.nbcnews.com/business/fake-blackberrys-dr-dres-seized-us-china-raids-6C10810434.

Consumer Electronics Association. (2013). *Digital America 2013: State of the U.S. consumer electronics industry.* Retrieved from http://content.ce.org/PDF/2013DigitalAmerica_abridged.pdf.

Jorgensen, B. (2006). David meets Goliath. *Electronic Business, 32*(4), 58-62, 64. Retrieved from http://search.proquest.com/docview/194251078?accountid=14749.

MergeGlobal Forecast Team. (2006, June). *Behind the numbers: Understanding the underlying drivers of containerized air and sea trade.* Retrieved from http://www.americanshipper.com/NewWeb/TF2007/PDF/MGI_BTN_AS_June_2007_lrs.pdf.

Plunkett Research, Ltd. (2013). *Introduction to the outsourcing & offshoring industry*. Retrieved from http://www.plunkettresearch.com/outsourcing-offshoring-bpo-market-research/industry-trends.

QFinance. (2010, February). Electronics. In *QFinance: The ultimate resource* (Country and Sector Profiles). Retrieved from https://libproxy.usc.edu/login?url=http://search.credoreference.com.libproxy.usc.edu/content/entry/qfinance/electronics/0.

Trade Partnership Worldwide, LLC. (2013, May). *Imports work for America.* Retrieved from http://www.uschamber.com/sites/default/files/reports/ImportsWork_FIN.pdf.

Chapter 6, Appendix A. Import Data

Appendix A, Table Error! No text of specified style in document.**-1: Commodities Covered by the Electronics CEE**

HTS 4	Heading Description
3818	Chemical elements doped for use in electronics, in the form of discs, wafers or similar forms; chemical compounds doped for use in electronics
8471	Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing and processing coded data, NESOI
8473	Parts and accessories NESOI suitable for use solely or principally with the machines of headings 8469 to 8472
8501	Electric motors and generators (excluding generating sets)
8502	Electric generating sets and rotary converters
8503	Parts of electric motors, generators, generating sets and rotary converters
8504	Electrical transformers, static converters or inductors; power supplies for adp machines or units; parts thereof
8517	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception
8518	Microphones and stands therefor; loudspeakers; headphones, earphones etc.; audio-frequency electric amplifiers; electric sound amplifier sets; parts
8519	Sound recording or reproducing apparatus
8521	Video recording or reproducing apparatus, whether or not incorporating a video tuner
8522	Parts and accessories suitable for use solely or principally with the apparatus of 8519 to 8521
8523	Discs, tapes, solid-state non-volatile storage devices, "smart cards" and other media for the recording of sound or of other phenomena, whet
8525	Transmission apparatus for radiobroadcasting or TV; TV cameras; still image video cameras and recorders
8526	Radar apparatus, radio navigational aid apparatus and radio remote control apparatus
8527	Reception apparatus for radiobroadcasting, whether or not combined with sound recording or reproducing apparatus
8528	Monitors and projectors, not incorporating television reception apparatus; reception apparatus for television, whether or not incorporating
8529	Parts for television, radio and radar apparatus (of headings 8525 to 8528)
8530	Electrical signaling, safety or traffic control equipment for railways, roads, inland waterways, parking facilities etc.; parts thereof
8531	Electric sound or visual signaling apparatus (bells, sirens, burglar or fire alarms etc.), NESOI; and parts thereof
8532	Electrical capacitors, fixed, variable or adjustable (pre-set); parts thereof
8533	Electrical resistors (including rheostats and potentiometers), other than heating resistors; parts thereof
8534	Printed circuits
8535	Electrical apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits, voltage over 1,000 v
8536	Electrical apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits, voltage not ov
8537	Boards, panels etc. With two or more apparatus for switching etc. Electronic circuits (heading 8535, 8536) or optical etc. Instrument of chapter 90; n/c apparatus.
8538	Parts for electrical apparatus for switching etc. Electric circuits (of heading 8535 or 8536) and panels, boards, consoles etc. (of heading 8537)
8540	Thermionic, cold cathode or photocathode tubes (vacuum, vapor or gas filled tubes, cathode-ray tubes, television camera tubes etc.); parts thereof

HTS 4	Heading Description
8541	Diodes, transistors and similar devices; photosensitive semiconductor devices; light-emitting diodes; mounted piezoelectric crystals; parts thereof
8542	Electronic integrated circuits; parts thereof
8543	Electrical machines and apparatus, having individual functions, NESOI; parts thereof
8544	Insulated wire, cable and other insulated electrical conductors; optical fiber cables, of individually sheathed fibers, with conductors etc. Or not
8545	Carbon electrodes, carbon brushes, lamp carbons, battery carbons and other articles of graphite or other carbon used for electrical purposes
8546	Electrical insulators of any material
8547	Insulating fittings for electrical machines etc., primarily of insulating materials; conduit tubing etc. Of base metal lined with insulating material
8548	Waste & scrap of primary cells and batteries; spent primary cells and batteries; electrical parts of machinery or apparatus, NESOI

(HTS is the Harmonic Tariff Schedule of commodity coding)

Table Error! No text of specified style in document.**-2: Imports for Electronics CEE HTS Commodities, 2003-12 (Current, $m)**

HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
3818	1,119	1,255	1,386	1,609	1,817	1,601	1,013	1,388	1,542	1,347
8471	51,997	59,678	63,448	67,519	57,778	56,463	53,417	70,284	79,620	84,238
8473	24,474	29,354	30,374	34,224	22,281	18,911	18,697	23,016	16,420	15,149
8501	4,195	4,551	5,040	5,658	6,339	6,669	4,885	6,027	7,170	8,135
8502	832	714	1,377	2,314	3,191	3,621	3,213	2,235	2,356	2,306
8503	1,133	1,064	1,399	1,684	1,997	1,856	1,370	1,294	1,530	1,700
8504	6,428	7,386	8,041	9,375	10,534	11,400	9,575	11,452	12,271	12,760
8517	12,822	14,897	20,562	21,911	52,571	60,385	58,733	71,061	76,663	80,450
8518	2,719	3,111	3,431	3,651	3,677	3,511	2,878	3,707	4,162	5,124
8519	1,476	1,288	1,079	810	2,592	1,372	870	959	748	876
8521	4,428	4,996	4,231	4,563	3,572	2,511	3,116	2,666	2,182	1,778
8522	295	382	291	339	384	399	342	323	278	245
8523	3,039	3,786	4,177	4,400	5,994	5,285	4,102	4,090	4,462	4,610
8525	24,958	31,131	35,234	37,787	14,517	13,393	10,658	11,927	11,094	11,532
8526	1,172	1,471	1,846	2,547	4,184	4,300	3,989	3,723	3,645	4,476
8527	6,157	6,279	6,184	6,165	5,223	4,047	3,159	4,504	4,523	5,169
8528	11,898	16,096	21,141	27,590	38,946	39,968	33,193	35,443	31,192	30,670
8529	4,372	6,238	6,432	6,508	4,130	3,301	2,456	2,993	3,466	3,525
8530	125	172	190	215	244	296	277	283	276	293
8531	1,761	2,018	2,258	2,447	2,562	2,449	2,191	2,576	2,779	2,696
8532	1,292	1,288	1,413	1,656	1,538	1,387	975	1,408	1,401	1,332
8533	665	732	751	881	889	877	599	866	891	958
8534	1,815	2,144	2,158	2,245	2,264	2,093	1,491	1,870	1,913	1,894
8535	273	310	401	443	461	565	466	527	688	754
8536	5,233	6,337	6,926	7,472	7,897	7,902	5,799	8,019	8,600	9,375

HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
8537	2,961	3,386	4,002	4,545	5,148	5,529	4,404	5,716	6,544	7,840
8538	1,530	1,806	1,774	2,026	2,154	1,932	1,433	2,047	2,424	2,715
8540	807	873	772	567	381	413	272	293	349	343
8541	3,323	3,896	3,893	4,551	5,014	5,549	4,679	7,513	10,286	10,091
8542	21,281	22,853	21,867	22,824	21,090	19,644	16,418	21,720	27,448	27,426
8543	2,592	3,233	3,357	3,967	3,665	3,909	3,655	5,600	6,989	6,402
8544	8,571	9,496	10,691	12,441	13,479	12,328	8,713	12,255	14,386	16,091
8545	234	250	276	329	409	584	352	550	586	603
8546	109	143	162	198	194	230	206	238	285	310
8547	85	99	123	122	127	158	116	138	160	191
8548	178	222	198	189	201	194	147	203	245	266
Total	216,351	252,936	276,885	305,772	307,444	305,031	267,856	328,915	349,575	363,669

USA Trade Online data. (For 2012: Top 5 highlighted gray; Next 5 highlight blue)

Table Error! No text of specified style in document.**-3: Top 10 County of Origin for Electronics CEE HTS Commodities Imports, 2012 ($m)**

HTS	World Total	China	Mexico	Japan	Taiwan	Malay.	Korea, South	Thai.	Canada	Costa Rica	Germany
3818	1,347	67	0	692	94	54	125	0	3	0	142
8471	84,238	54,725	15,313	947	1,571	1,521	1,218	4,208	384	21	348
8473	15,149	8,825	306	316	1,350	1,067	1,166	252	370	111	130
8501	8,135	1,737	2,650	873	173	9	229	58	149	1	512
8502	2,306	544	16	566	1	0	2	0	103	0	165
8503	1,700	385	351	204	33	1	14	14	134	9	128
8504	12,760	4,682	2,255	878	447	164	385	260	722	4	492
8517	80,450	47,994	9,774	1,027	3,321	4,299	5,525	2,201	1,039	9	724
8518	5,124	3,360	823	107	83	111	45	103	47	0	85
8519	876	684	34	37	20	41	8	14	3	0	4
8521	1,778	1,031	78	83	58	209	86	19	19	0	19
8522	245	107	72	31	7	3	5	3	1	0	2
8523	4,610	1,406	355	647	871	196	337	43	149	0	120
8525	11,532	4,636	493	2,439	721	538	223	654	598	1	194
8526	4,476	805	702	531	1,402	117	59	28	239	0	192
8527	5,169	2,574	1,024	252	11	463	145	475	3	0	12
8528	30,670	10,743	15,402	832	1,110	19	310	1,037	122	0	41
8529	3,525	969	438	377	221	192	115	25	325	3	115
8530	293	37	137	1	20	5	3	0	29	0	14
8531	2,696	952	452	110	192	119	90	8	204	1	78
8532	1,332	226	207	412	40	56	33	14	7	1	19
8533	958	211	195	159	30	14	9	18	20	27	67
8534	1,894	763	31	212	355	37	98	44	106	0	43
8535	754	140	254	27	11	2	31	1	52	0	56
8536	9,375	1,937	2,453	954	350	145	192	65	193	119	673
8537	7,840	1,159	2,967	555	84	265	110	61	556	4	644
8538	2,715	512	675	303	52	43	19	16	189	3	298

HTS	World Total	China	Mexico	Japan	Taiwan	Malay.	Korea, South	Thai.	Canada	Costa Rica	Germany
8540	343	22	0	137	0	6	1	2	6	0	59
8541	10,091	2,882	935	1,277	612	1,975	405	101	113	9	456
8542	27,426	1,827	188	1,778	3,150	3,659	2,723	663	1,140	7,685	280
8543	6,402	2,277	890	964	161	82	266	32	448	7	509
8544	16,091	3,268	8,060	265	211	27	195	149	606	130	283
8545	603	129	45	156	8	0	14	0	88	0	39
8546	310	111	27	27	6	1	5	4	12	0	25
8547	191	51	27	40	2	0	4	1	17	0	15
8548	266	31	91	29	3	1	3	6	34	0	12
Total	363,669	161,810	67,722	18,244	16,784	15,437	14,198	10,579	8,230	8,145	6,997

Table Error! No text of specified style in document.**-4: Top 10 Country of Origin for Electronics CEE HTS Commodities Imports, % Change Between 2003 and 2012**

HTS	World Total	China	Mexico	Japan	Taiwan	Malay.	Korea, South	Thai.	Canada	Costa Rica	Germany
3818	20.3	88.6	-5.5	6.5	168.5	99.3	39.9	0.0	184.4	0.0	-0.4
8471	62.0	258.5	149.6	-72.3	-65.7	-80.5	-42.9	153.0	-51.2	246.8	-11.6
8473	-38.1	36.3	-76.5	-92.9	-41.8	-50.7	-22.5	-3.2	-37.0	10.0	-48.5
8501	93.9	234.1	58.7	105.7	147.2	-20.9	29.8	71.6	-36.7	21,494	86.1
8502	177.1	4,578.1	-14.4	152.6	325.7	-92.5	507.7	50.0	162.4	0.0	163.0
8503	50.0	363.3	-3.2	63.1	110.7	-26.0	-21.3	329.7	8.3	292.6	8.0
8504	98.5	169.7	48.5	135.7	53.3	57.1	348.4	17.0	48.1	-68.4	107.8
8517	527.4	1,670.6	239.3	85.8	585.1	103.1	3,757.9	252.5	-31.3	97.0	479.6
8518	88.4	190.2	57.1	27.1	-37.8	69.6	-71.5	184.2	-41.4	-93.6	3.3
8519	-40.6	-17.8	-7.7	-79.6	-1.8	-67.1	-71.2	-84.5	-22.5	0.0	-50.2
8521	-59.8	-61.5	-26.8	-79.0	122.2	-5.6	-73.4	-92.2	8.1	0.0	260.1
8522	-17.1	-8.0	1,524.3	-75.8	24.3	-33.5	8.7	137.4	-45.4	-100.0	-48.2
8523	51.7	286.0	97.7	-43.3	-7.7	1,113.5	130.1	121.4	520.0	0.0	323.5
8525	-53.8	2.4	-82.9	-42.9	-0.6	-70.9	-96.3	894.1	-30.0	-37.5	-49.5
8526	281.8	775.6	279.0	95.5	359.1	3,883.3	1,068.6	142.4	247.5	0.0	126.9
8527	-16.0	12.3	-37.8	-22.1	-79.5	-42.8	-36.7	182.3	-79.1	0.0	-78.0
8528	157.8	641.5	193.1	-56.4	108.1	-98.1	-60.8	57.1	2,113.2	0.0	279.9
8529	-19.4	51.7	-41.2	-39.0	-25.2	4.4	-50.1	-71.3	-34.2	-81.3	30.3
8530	134.2	520.7	553.2	-69.7	930.5	105.4	92.6	0.0	-29.1	0.0	7.2
8531	53.1	95.8	82.6	-51.5	-21.0	373.8	49.5	-46.2	42.5	576.1	83.5
8532	3.1	435.0	-30.3	8.2	-11.0	138.1	55.4	4.1	-54.5	921.6	18.4
8533	44.2	562.6	8.7	14.9	-25.0	-33.2	13.6	65.1	21.2	-46.1	238.6
8534	4.4	138.5	-66.4	26.2	-1.5	38.8	-13.1	-4.1	-65.7	-70.9	-34.2
8535	176.6	594.5	261.6	74.1	1.8	-66.4	144.1	25.6	30.0	-66.0	154.1
8536	79.1	185.8	49.7	29.5	55.3	211.9	175.2	265.7	-14.1	390.9	51.8
8537	164.8	527.0	105.3	141.2	317.9	312.0	267.8	292.0	81.8	129,439	254.3
8538	77.4	637.5	82.4	25.5	113.8	652.3	89.2	283.9	55.7	869.8	-32.8

HTS	World Total	China	Mexico	Japan	Taiwan	Malay.	Korea, South	Thai.	Canada	Costa Rica	Germany
8540	-57.5	-55.6	-100.0	-11.8	-98.8	76.3	-95.9	-72.2	-26.1	-100.0	141.4
8541	203.6	833.8	108.1	66.2	262.5	324.2	462.0	1.4	118.4	96.1	169.3
8542	28.9	238.2	-54.6	-5.4	10.2	17.4	-17.8	29.4	13.0	1,134.1	-57.4
8543	147.0	387.1	100.0	174.3	83.5	90.5	295.8	20.7	34.9	73.5	163.6
8544	87.7	253.5	47.0	35.9	39.8	5.1	335.3	-13.1	25.4	1,236.8	128.2
8545	157.5	530.9	-30.1	359.3	93.6	0.0	1,566.9	-53.2	185.3	-100.0	214.1
8546	183.2	1,217.7	88.3	145.0	35.1	188.1	821.4	45.2	18.8	-85.1	67.6
8547	124.0	1,011.0	92.0	94.1	178.8	1,309.0	1,552.0	32,221	78.3	0.0	-20.3
8548	49.7	136.0	33.1	75.3	-60.6	-41.1	-80.5	-6.6	242.4	-84.8	525.6
Total	68.1	258.3	82.3	-27.3	11.0	-24.2	-10.9	105.7	-3.1	838.9	45.1

Table Error! No text of specified style in document.**-5: Top 10 Ports of Entry for Electronics CEE HTS Commodities Imports, 2012 ($m)**

HTS	All Ports	Port of LA	Chicago Port	Anchorage Port	Dallas-Fort Worth	LAX	El Paso Port	New Orleans Port	Laredo Port	SFO	JFK
3818	1,347	6	51	27	121	63	0	74	0	456	95
8471	84,238	7,421	11,814	9,579	3,119	10,721	3,331	3,932	1,610	2,051	5,635
8473	15,149	1,858	652	1,736	697	1,708	210	1,731	156	1,715	515
8501	8,135	1,288	316	37	16	63	440	110	1,454	19	105
8502	2,306	233	14	10	0	1	0	17	10	0	2
8503	1,700	208	131	6	6	6	23	26	97	5	31
8504	12,760	2,278	627	337	259	373	340	319	903	256	312
8517	80,450	3,837	17,818	4,281	17,831	3,329	1,766	3,285	6,725	1,767	4,247
8518	5,124	1,756	192	85	49	260	195	41	62	24	74
8519	876	340	51	54	14	39	0	11	0	4	29
8521	1,778	821	55	45	70	66	0	36	23	35	65
8522	245	74	9	8	0	12	2	4	6	8	4
8523	4,610	468	156	671	40	613	69	731	215	177	197
8525	11,532	2,598	2,336	437	108	813	244	470	61	554	532
8526	4,476	397	552	138	196	103	39	171	232	25	52
8527	5,169	2,257	198	244	58	146	55	51	166	22	64
8528	30,670	6,988	310	181	66	339	4,370	115	19	307	143
8529	3,525	509	193	234	91	238	125	203	84	103	183
8530	293	19	10	4	2	6	0	10	9	2	7
8531	2,696	414	173	151	79	183	243	95	24	75	92
8532	1,332	145	44	42	27	113	79	26	34	6	62
8533	958	121	75	51	16	32	49	46	29	14	65
8534	1,894	192	220	405	59	133	8	200	5	132	59
8535	754	91	30	8	6	6	134	15	111	2	14
8536	9,375	1,051	691	293	105	260	533	375	525	200	244

HTS	All Ports	Port of LA	Chicago Port	Anchorage Port	Dallas-Fort Worth	LAX	El Paso Port	New Orleans Port	Laredo Port	SFO	JFK
8537	7,840	690	553	404	105	161	586	262	1,161	99	87
8538	2,715	229	253	85	32	101	204	150	175	29	74
8540	343	15	26	7	1	22	0	37	0	29	122
8541	10,091	3,196	298	682	53	773	142	515	34	714	244
8542	27,426	102	338	3,996	457	2,434	80	3,026	105	5,746	305
8543	6,402	917	361	471	40	418	291	226	310	373	357
8544	16,091	1,922	304	175	95	169	3,451	463	2,363	121	157
8545	603	65	15	11	0	0	0	22	45	0	3
8546	310	37	6	4	0	3	11	8	7	4	3
8547	191	20	5	4	2	3	10	5	9	7	3
8548	266	15	5	5	2	7	12	7	3	2	6
Total	363,669	42,576	38,879	24,909	23,824	23,719	17,042	16,815	16,774	15,082	14,188

Table Error! No text of specified style in document.**-6. Top 10 Ports of Entry by District for Electronics CEE HTS Commodities Imports, 2012 ($m)**

HTS	All Ports	LA	Chicago	El Paso	Laredo	Anchorage	Dallas-Fort Worth	NYC	SF	New Orleans	San Diego
3818	1,347	70	51	0	0	27	121	126	462	74	0
8471	84,238	21,333	11,816	13,135	1,921	9,580	3,127	6,163	3,889	3,984	166
8473	15,149	4,462	652	271	200	1,736	702	698	2,318	1,740	53
8501	8,135	1,888	326	446	2,132	37	16	607	93	159	58
8502	2,306	323	14	0	10	10	0	74	82	17	26
8503	1,700	281	131	106	183	6	6	166	54	27	45
8504	12,760	3,482	690	342	1,374	338	260	1,227	738	328	489
8517	80,450	8,343	17,824	1,785	7,795	4,281	17,838	4,899	2,477	3,319	1,255
8518	5,124	2,491	192	195	196	85	49	304	106	59	311
8519	876	481	51	0	32	54	14	82	21	12	43
8521	1,778	1,169	55	0	24	45	70	105	59	40	2
8522	245	96	9	2	8	8	0	11	16	4	1
8523	4,610	1,208	156	69	217	671	41	279	262	742	138
8525	11,532	3,760	2,336	245	212	437	108	980	733	484	18
8526	4,476	712	552	39	521	138	198	115	28	175	23
8527	5,169	2,684	198	55	800	244	58	118	108	56	1
8528	30,670	8,910	310	4,705	2,288	181	66	695	753	120	8,616
8529	3,525	869	193	128	231	235	91	373	132	208	54
8530	293	30	10	0	40	4	2	19	17	11	78
8531	2,696	698	173	243	136	151	79	232	138	110	23
8532	1,332	300	44	79	152	42	27	123	9	28	12
8533	958	183	77	49	59	51	16	106	20	47	90
8534	1,894	402	220	8	8	405	59	77	142	201	15
8535	754	118	30	134	119	8	6	76	8	15	4
8536	9,375	1,668	724	564	1,068	293	106	760	331	386	459

8537	7,840	1,038	570	590	1,876	404	105	395	175	265	298
8538	2,715	422	254	204	215	85	33	254	32	150	80
8540	343	38	26	0	0	7	1	134	30	37	2
8541	10,091	4,174	299	142	43	682	61	968	1,214	518	778
8542	27,426	2,567	338	80	122	3,996	458	400	5,772	3,029	154
8543	6,402	1,597	361	294	425	471	40	595	489	233	103
8544	16,091	2,873	311	3,456	3,497	175	102	532	276	476	502
8545	603	80	15	0	45	11	0	32	11	28	0
8546	310	63	6	11	21	4	0	61	10	9	0
8547	191	44	6	10	9	4	2	19	14	5	3
8548	266	23	5	12	44	5	2	14	3	7	20
Total	363,669	78,879	39,024	27,399	26,023	24,912	23,868	21,822	21,021	17,105	13,920

Chapter 6, Appendix B. Domestic Production Data

Table Error! No text of specified style in document.**-1: U.S. Electronics Manufacturing, for NAICS 6-Digit Sectors Related to Electronics CEE, 2003-2012 (Current $m)**

NAICS	NAICS Description	Related CEE Sectors in HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
326199	Other plastics product manufacturing	8546, 8547	78237	80918	86370	90529	86973	81143	68103	75383	78561	82690
327113	Clay product and refractory manufacturing	8504, 8546, 8547	8200	8560	9134	9507	8653	7970	6149	7027	7169	7391
327212	Glass and glass product manufacturing	8546	22078	22595	23291	23779	23310	23297	20173	20678	21825	22501
331319	Alumina refining and primary aluminum production	8544	5553	6577	6500	8009	7836	8164	4415	5755	6998	8433
331422	Copper rolling, drawing, extruding and alloying	8544	10130	13235	15602	20698	25562	23120	13993	21071	24408	29376
333295	Other industrial machinery manufacturing	8543	17125	17197	18688	19910	21910	21631	17408	18219	20225	22765
333313	Office machinery manufacturing	8473, 8519, 8522	1987	2237	2272	2607	2229	2092	1489	1662	1706	1671
333611	Turbine and turbine generator set units manufacturing	8502	13142	6576	7054	6651	8900	9620	11649	10347	11475	10175
333612	Speed changer, industrial high-speed drive, and gear manufacturing	8501	1978	1999	2171	2483	3450	3709	2803	3023	3646	3918
334111	Electronic computer manufacturing	8471	45899	42476	43476	45556	48013	49273	39786	23304	12842	12236
334112	Computer storage device manufacturing	8471	9296	7736	9336	9405	9546	9234	7349	9906	10687	11885
334119	Computer terminals and other computer peripheral equipment manufacturing	8471, 8473, 8528	14988	15662	16617	18775	15574	16087	12799	13122	13673	12741
334210	Telephone apparatus manufacturing	8517, 8518, 8519, 8522, 8543	23159	20050	20480	26935	20895	9813	9914	10756	10623	10707

NAICS	NAICS Description	Related CEE Sectors in HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
334220	Broadcast and wireless communications equipment	8517, 8525, 8527, 8528, 8529	37754	40679	38696	42201	44085	44959	35182	31990	33914	33823
334290	Other communications equipment manufacturing	8527, 8530, 8531	5853	4961	4908	6060	5991	5480	5146	6277	6224	6260
334310	Audio and video equipment manufacturing	8518, 8519, 8521, 8525, 8527, 8528, 8529	8131	10215	9750	9027	7641	5392	4048	4304	4505	4638
334411	Other electronic component manufacturing	8540	27248	26807	27575	28401	31715	31147	24470	26989	28650	29362
334412	Other electronic component manufacturing	8534	27248	26807	27575	28401	31715	31147	24470	26989	28650	29362
334413	Semiconductor and related device manufacturing	3818, 8523, 8541, 8542	71654	77548	81160	75311	78496	77399	63255	79905	87454	93894
334414	Other electronic component manufacturing	8532	27248	26807	27575	28401	31715	31147	24470	26989	28650	29362
334415	Other electronic component manufacturing	8533	27248	26807	27575	28401	31715	31147	24470	26989	28650	29362
334416	Other electronic component manufacturing	8504, 8529	27248	26807	27575	28401	31715	31147	24470	26989	28650	29362
334417	Other electronic component manufacturing	8535, 8536, 8538	27248	26807	27575	28401	31715	31147	24470	26989	28650	29362
334418	Printed circuit assembly (electronic assembly) manufacturing	8473, 8504, 8517, 8518, 8522, 8529, 8531, 8538, 8543	24339	22607	23353	23247	24251	23846	18228	21408	21587	21675
334419	Other electronic component manufacturing	8504, 8522, 8529, 8531, 8541	27248	26807	27575	28401	31715	31147	24470	26989	28650	29362

NAICS	NAICS Description	Related CEE Sectors in HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
334510	Electromedical and electrotherapeutic apparatus manufacturing	8543	17507	18582	20659	21583	26073	25836	23592	25635	25784	24477
334511	Search, detection, and navigation instruments manufacturing	8526, 8529, 8543	36396	42949	40495	42791	48766	52422	52303	53358	54403	54677
334515	Electricity and signal testing instruments manufacturing	8543	11275	12458	12312	12762	13790	11989	9060	10111	11211	10688
334612	Manufacturing and reproducing magnetic and optical media	8523	8258	8385	8285	7038	7017	6945	5054	4691	4404	4882
334613	Manufacturing and reproducing magnetic and optical media	8523	8258	8385	8285	7038	7017	6945	5054	4691	4404	4882
335129	Lighting fixture manufacturing	8543	8751	9203	9930	10675	11231	11337	8621	8803	9746	8631
335311	Power, distribution, and specialty transformer manufacturing	8504	3883	3594	4131	5061	7363	7326	5818	5536	5994	6268
335312	Motor and generator manufacturing	8501, 8502, 8503	9350	10253	11413	12113	12411	13732	10349	10353	11587	12113
335313	Switchgear and switchboard apparatus manufacturing	8535, 8536, 8537, 8538	7782	7908	8077	9162	10371	10946	9993	9784	10576	11063
335314	Relay and industrial control manufacturing	8535, 8536, 8537, 8538	8435	9224	9275	9872	10775	10530	8794	9177	10008	10458
335921	Communication and energy wire and cable manufacturing	8544	10282	11295	13015	15877	16030	15490	11149	13359	15853	16438
335929	Communication and energy wire and cable manufacturing	8544	10282	11295	13015	15877	16030	15490	11149	13359	15853	16438
335931	Wiring device manufacturing	8533, 8536	10070	10968	11140	11800	12554	13167	9663	10111	10733	11124
335932	Wiring device manufacturing	8536, 8547	10070	10968	11140	11800	12554	13167	9663	10111	10733	11124
335991	Carbon and graphite product manufacturing	8545	1719	1751	1973	2360	2667	2877	1843	2637	2979	3085

NAICS	NAICS Description	Related CEE Sectors in HTS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
335999	All other miscellaneous electrical equipment and component manufacturing	8531, 8532, 8543, 8548	6742	6996	7558	7575	9443	8942	7267	9006	10192	10562
336321	Motor vehicle electrical and electronic equipment manufacturing	8536	23950	20452	22335	22338	19709	18897	14972	16723	16372	16667
336322	Motor vehicle electrical and electronic equipment manufacturing	8544	23950	20452	22335	22338	19709	18897	14972	16723	16372	16667
339992	All other miscellaneous manufacturing	8543	25335	26853	28576	29814	28913	29316	26294	28088	30570	31377
511210	Software publishers	8523	108807	118935	125571	134478	143824	152569	148674	153842	163634	170827

Sources: U.S. Bureau of Economic Analysis, Gross Output by NAICS Industry: http://www.bea.gov/industry/gdpbyind_data.htm; U.S. International Trade Commission for HTS-NAICS translation http://dataweb.usitc.gov/classification_systems.asp

Table Error! No text of specified style in document.**-2: U.S. Electronics Wholesale and Retail Sectors, 2003-2012**

	Electrical and Electronic Goods Merchant Wholesalers (4236)		Radio, Television, and Other Electronics Stores (443112)		Household Appliance Stores (443111)	
Year	Trade Margin ($m)	Employees ('000s)	Trade Margin ($m)	Employees ('000s)	Trade Margin ($m)	Employees ('000s)
2003	238,442	357	51,834	266	14,464	90
2004	266,785	352	57,095	292	15,608	81
2005	280,568	349	61,461	313	16,792	80
2006	302,819	354	66,662	324	17,745	81
2007	326,799	363	68,404	343	17,799	77
2008	328,371	359	67,661	343	16,773	71
2009	287,792	329	60,827	321	14,880	67
2010	323,135	318	58,674	337	14,872	64
2011	336,859	314	58,918	342	15,080	65
2012	337,479	324	57,119	333	15,045	62

Source: U.S. BLS Productivity Data (http://www.bls.gov/lpc/).

Chapter 6, Appendix C. Supply Chains (Input-Output Data)

Table Error! No text of specified style in document.**-1: Top 20 IMPLAN Sectors Selling to Electronics CEE-Related Sectors, 2011**

IMPLAN Sector Code	IMPLAN Sector Description	Sector Outputs Purchased by Electronics CEE-related Sectors ($m)
243	**Semiconductor and related device manufacturing**	**89,777**
381	Management of companies and enterprises	59,748
319	Wholesale trade businesses	58,706
345	**Software publishers**	**31,043**
234	**Electronic computer manufacturing**	**27,068**
376	Scientific research and development services	23,691
120	Petrochemical manufacturing	18,449
283	**Motor vehicle parts manufacturing**	**16,646**
177	**Copper rolling, drawing, extruding and alloying**	**16,236**
235	**Computer storage device manufacturing**	**13,690**
170	Iron and steel mills and ferroalloy manufacturing	13,082
127	Plastics material and resin manufacturing	11,099
382	Employment services	10,569
246	**Printed circuit assembly (electronic assembly) manufacturing**	**9,896**
31	Electric power generation, transmission, and distribution	9,291
195	Machine shops	9,024
360	Real estate establishments	8,855
335	Transport by truck	8,697
354	Monetary authorities and depository credit intermediation	8,638
351	Telecommunications	8,516

Source: Minnesota IMPLAN Group, U.S. Input-Output Data, 2011.
Sectors in **bold** represent Electronics CEE-related sectors.

Table Error! No text of specified style in document.**-2: Top 20 IMPLAN Sectors Purchasing from Electronics CEE-Related Sectors, 2011**

IMPLAN Sector Code	IMPLAN Sector Description	Sector Inputs Purchased from Electronics CEE-related Sectors ($m)
234	**Electronic computer manufacturing**	**105,899**
276	Automobile manufacturing	61,207
277	Light truck and utility vehicle manufacturing	32,841
283	**Motor vehicle parts manufacturing**	**27,052**
243	**Semiconductor and related device manufacturing**	**24,331**
284	Aircraft manufacturing	21,821
351	Telecommunications	13,758
238	**Broadcast and wireless communications equipment manufacturing**	**11,691**
319	Wholesale trade businesses	9,840
249	**Search, detection, and navigation instruments manufacturing**	**9,576**

IMPLAN Sector Code	IMPLAN Sector Description	Sector Inputs Purchased from Electronics CEE-related Sectors ($m)
177	**Copper rolling, drawing, extruding and alloying**	**9,432**
70	Soft drink and ice manufacturing	8,627
414	Automotive repair and maintenance, except car washes	7,532
246	**Printed circuit assembly (electronic assembly) manufacturing**	**7,300**
278	Heavy duty truck manufacturing	7,102
237	**Telephone apparatus manufacturing**	**6,673**
38	Construction of other new residential structures	6,117
236	**Computer terminals and other computer peripheral equipment manufacturing**	**5,969**
235	**Computer storage device manufacturing**	**5,875**
397	Private hospitals	5,862

Source: Minnesota IMPLAN Group, U.S. Input-Output Data, 2011.
Sectors in **bold** represent Electronics CEE-related sectors.

Table Error! No text of specified style in document.**-3. Top 20 IMPLAN Importing Sectors of Electronics CEE-Related Sector Products, 2011**

IMPLAN Sector Code	IMPLAN Sector Description	Sector Import of CEE-covered Electronics ($m)
234	Electronic computer manufacturing	40,271
276	Automobile manufacturing	34,725
277	Light truck and utility vehicle manufacturing	18,004
283	Motor vehicle parts manufacturing	13,112
284	Aircraft manufacturing	4,552
414	Automotive repair and maintenance, except car washes	4,165
238	Broadcast and wireless communications equipment manufacturing	3,962
278	Heavy duty truck manufacturing	3,902
243	Semiconductor and related device manufacturing	3,814
249	Search, detection, and navigation instruments manufacturing	2,923
177	Copper rolling, drawing, extruding and alloying	2,822
351	Telecommunications	2,559
205	Construction machinery manufacturing	2,350
38	Construction of other new residential structures	2,320
319	Wholesale trade businesses	2,305
237	Telephone apparatus manufacturing	2,280
36	Construction of other new nonresidential structures	2,261
335	Transport by truck	2,197
235	Computer storage device manufacturing	2,127
248	Electromedical and electrotherapeutic apparatus manufacturing	2,058

Source: Minnesota IMPLAN Group, U.S. Import Matrix, 2011.

Part III, Chapter 7. Import Logistics

Nat Heatwole, Bryan Roberts, Adam Rose

Chapter 7, Section 1. Introduction

1. **Basic Goals of Border Inspections:** The goals of CBP and the border processes are to inspect incoming persons and cargo (and their related documentation) for hazardous, non-compliant, and illicit entries, while also facilitating the free flow of commerce and people to the maximum extent possible. As such, the goals are twofold: inspection/compliance and trade facilitation, where the latter goal (trade facilitation) is conditional on the adequate fulfillment of the first goal (inspection/compliance). In other words, facilitating trade and inspection/compliance are opposing objectives, and CBP aims to facilitate trade in such a way that its enforcement missions are still sufficiently maintained (Jones & Rosenblum, 2013).
2. **Different Transport Modes:** Goods can enter the U.S. through a variety of different transportation modes, including by land (truck, rail, or pipeline), ship, or plane. In this chapter, the focus is on import shipments arriving into the U.S. by truck. Although many goods (including many electronics goods) come to the U.S. through other means (namely, by air), the basic processes of the border crossing are the same across all transport modes. However, some of the specifics can vary by transport mode. For example, while goods arriving by truck typically must submit electronic manifests and other shipping data (see next section) to CBP only one hour prior to the arrival of the goods at the border, submissions for goods arriving by boat must occur at least 24 hours before the vessel arrives at a U.S. port (Jones & Rosenblum, 2013).

Chapter 7, Section 2. Border Flow Logistics

1. **Transfer of Documents:** Prior to the goods physically arriving at the border, the importer of record must submit electronic cargo manifests and other shipment data to CBP. This typically involves submitting the data elements from CBP Form 3461, Entry/Immediate Delivery, and/or CBP Form 7501, Entry Summary, to CBP through either the Automated Customs System (ACS) or the Automated Customs Environment (ACE). For truck shipments, this transmission must occur at least one hour prior to arrival at the port (or 30 minutes prior to arrival for C-TPAT members).

   Form 3461 is a basic entry form that is submitted when cargo arrives at the port, and is not very detailed. CBP Form 7501 is the primary customs entry document for each shipment that represents a final statement of what goods are imported. It includes all of the information contained on the CBP Form 3461 (e.g., importer of record, contents of shipment), as well as additional information (e.g., estimated duties). Form 7501 can be filed in lieu of or in addition to Form 3461, although the 3461 is usually filed before the 7501. Entry summaries vary considerably; one 7501 might have a single line while the next might have 75 lines or more (Jones & Rosenblum, 2013; Gould, 2014; CBP, not dated).

Based on the information submitted to ACS or ACE, CBP computers perform an automated review of the entry. Based on this, the system will either issue a "paperless release" – in which case the shipment is released for entry into the U.S. and customs duties are paid according to what it given on the 7501. Alternatively, a further review will be conducted by an Import Specialist, who can then request additional information or documents (e.g., product invoice). These additional materials are typically sent to the port(s) of entry using a runner service (CBP, not dated; Gould, 2014).

The various requirements for importing goods into the U.S. can be complex, and importers often employ experts to assist with customs matters, including attorneys, consultants, and customs brokers. Customs brokers may assist importers with filing documents with CBP and responding to CBP follow up requests for information. By statute, only a licensed customs broker may transact "customs business" on behalf of another (CBP, 2005). For truck traffic, customs broker fees are generally $20–$30 per truck trip on the southern border (where the process is more repetitive and organized than on the northern border), and possibly as low as only $5/truck for extremely organized broker customs broker firms, and $50–$150 per truck trip for the northern border (Roberts et al., 2013).

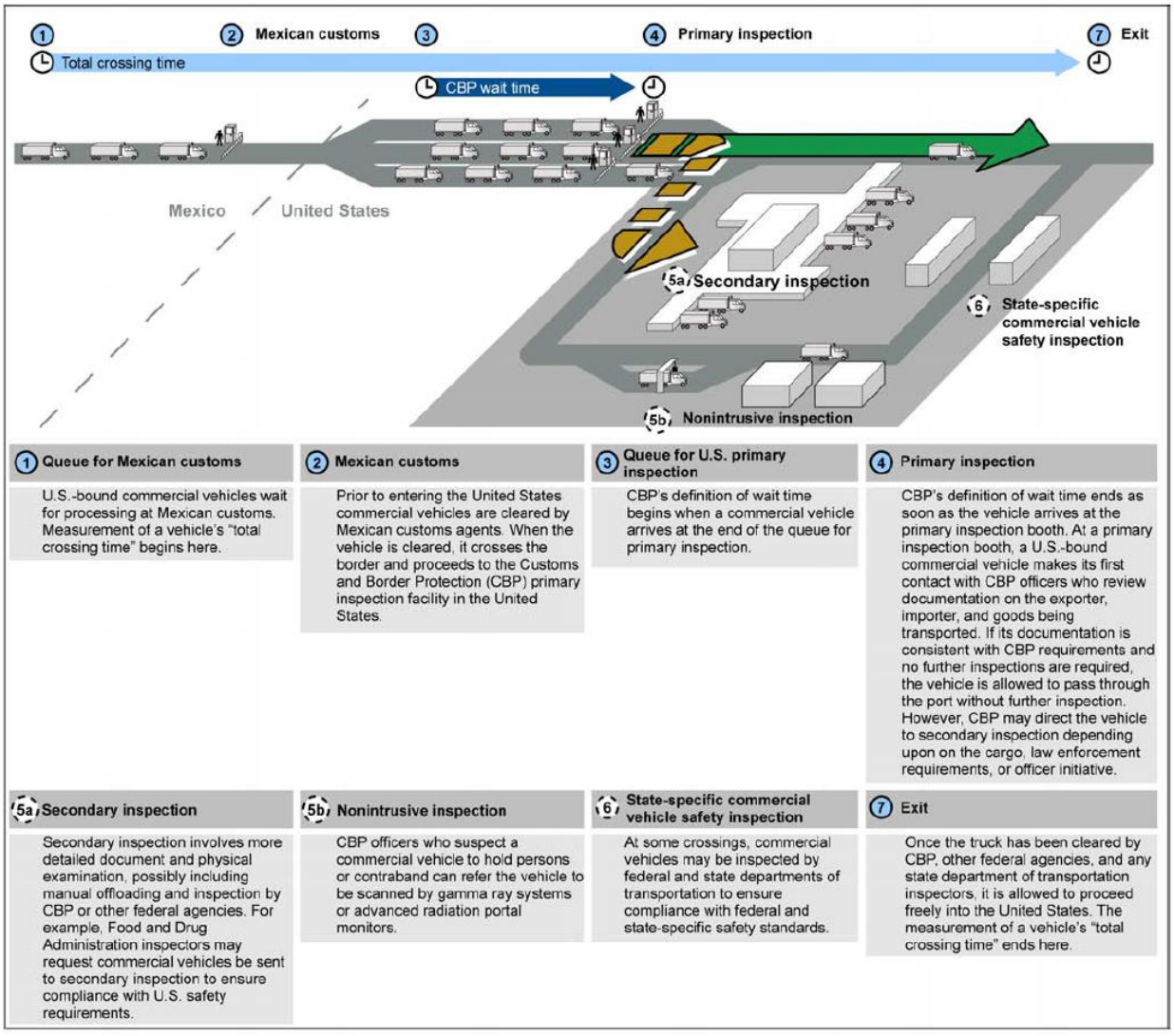
2. **Physical Movement of Cargo:** Before goods actually arrive at the U.S. border by truck, they may be inspected and/or cleared by Mexican or Canadian customs agents (outbound inspections). On the southern border, there is also a drayage operation, wherein the goods are shipped through inland Mexico by one trucker, offloaded onto another truck for the border crossing itself, before finally being handed over to another trucker for transport within the U.S. Based on interviews conducted with trucking carriers, Haralambides & Londono-Kent (2004) suggest a total loading and unloading cost of $75–$150 per truck trip (2004$) associated with the drayage operation at the U.S.-Mexico border, or around $92–$185 in 2013$ (inflation adjustment made using the CPI).

   The truck then proceeds to enter the queue of vehicles waiting at the border (see also wait time in next section). After working its way through the queue, the truck reaches the border inspection station and undergoes the *primary inspection*, which is a short (1–2 minute) review of the truck, the driver, and all documentation associated with the shipment. If the truck is selected for secondary inspection, it will then undergo a more extensive review of the documents and the cargo. Around one third of all trucks passing through the border undergo *secondary inspection*, of which around two thirds of these trucks receive a non-intrusive inspection (average duration 10 minutes), such as x-ray or radiation portal monitor. The remaining one third of trucks in secondary undergo an intrusive inspection (average duration 40 minutes), wherein some or all of the cargo is physically offloaded and inspected (GAO, 2013; Roberts et al., 2013).

   Various flow diagrams of the border crossing process for trucks are given in Figures 1 to 3. Figure 1 gives a visual representation of the border crossing and inspection process for trucks, with descriptions for the various steps involved. Figure 2 depicts both the physical movement of cargo and the transfer of documents through the border. Finally,

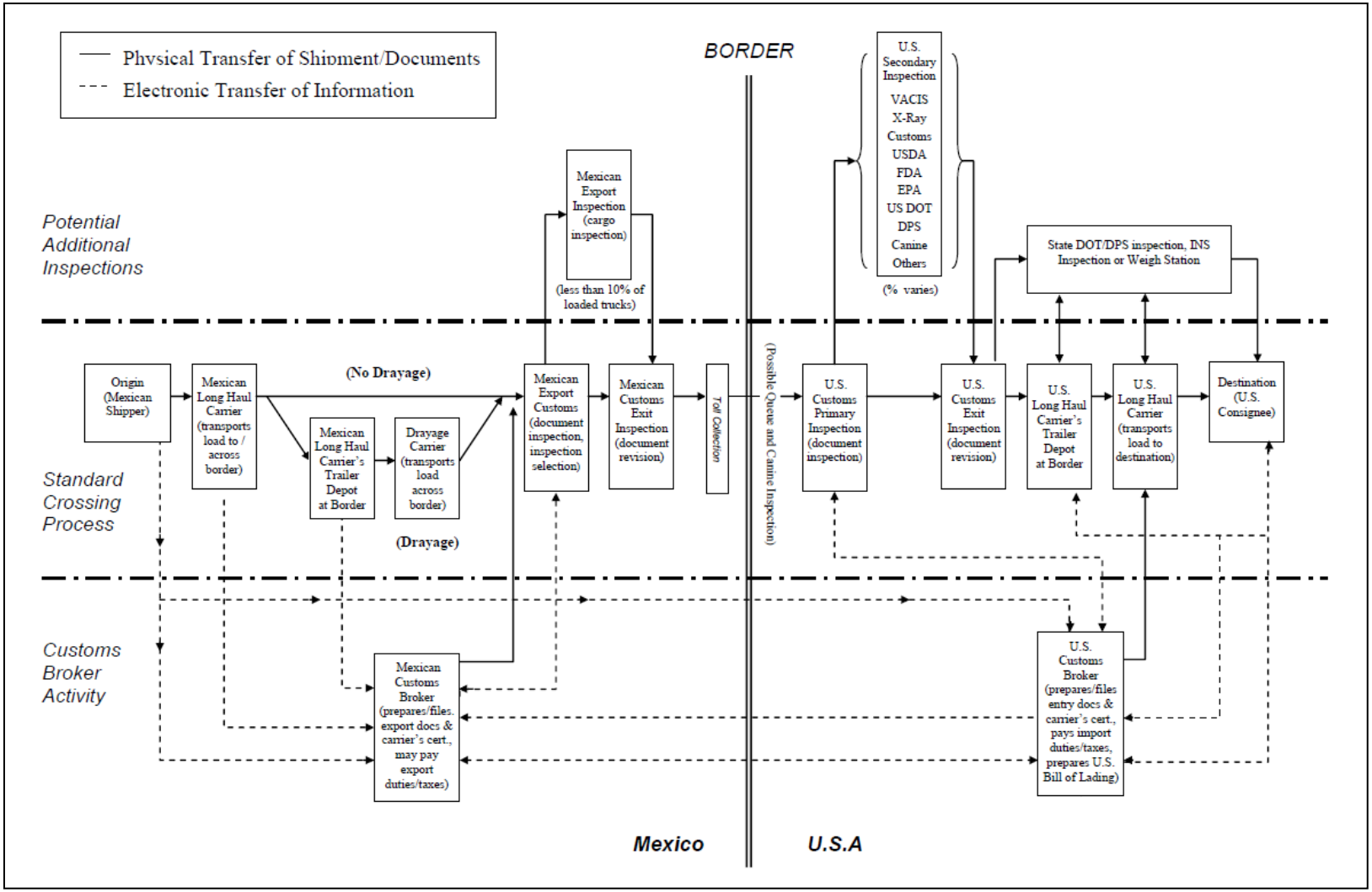
Figure 3 shows explicitly where the various physical and paperwork queues building up, and also where the decision points occur.

Figure 1: Flow Diagram of Truck Movements Though a Port of Entry along the U.S.-Mexico Border



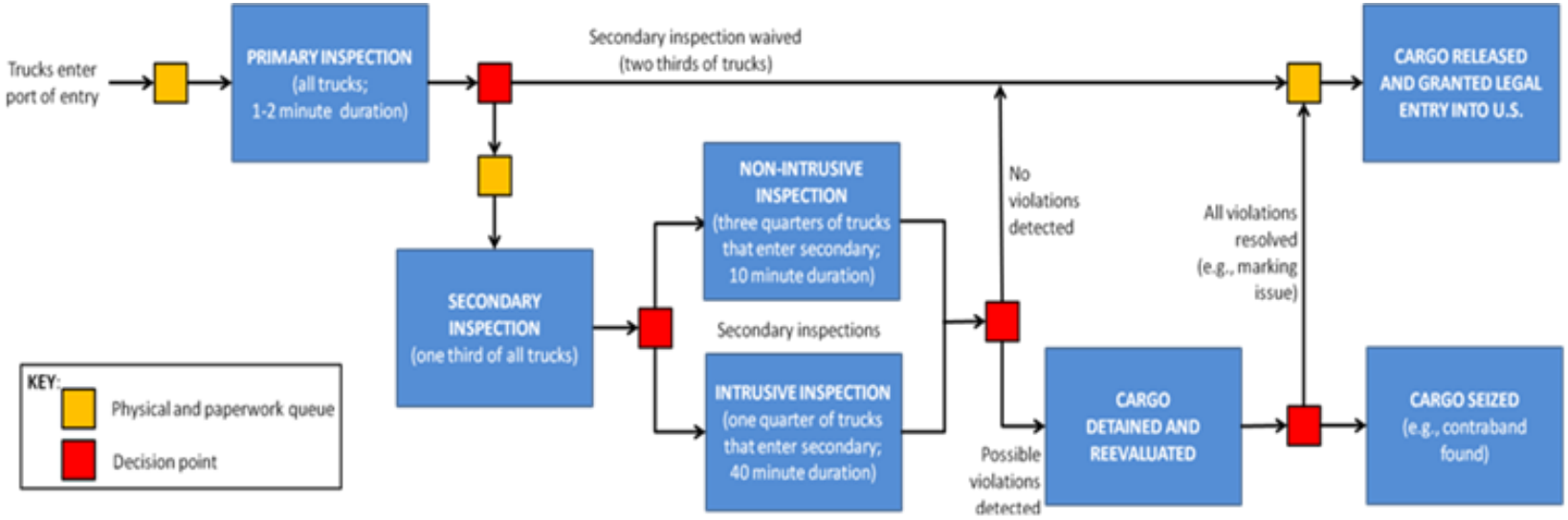
Source: Image from GAO, 2013.

Figure 2: Flow Diagram of the Transfer of Cargo and of Information through a Port of Entry along the U.S.-Mexico Border



Source: Image from Ojah et al., 2002.

Figure 3: Flow Diagram of Border Crossing Process for Trucks, Including Physical and Paperwork Queues and Decision Points



3. **Wait Time and Dwell Time:** We distinguish between wait time and dwell time. *Wait time* occurs before an inspection at the border begins, when the truck is waiting in the queue. *Dwell time* begins at the start of the border crossing process, and ends when the goods are released into the U.S. As such, wait time is one component of dwell time. The wait time can be potentially be zero – in the event that the volume of trucks arriving at the border at a particular time is sufficiently small relative to the number of CBP resources that are available to inspect them. Dwell time, by contrast, is always non-zero (although it can still be very short), because no inspection/entry process can occur in zero time. The dwell time does not cease until the goods have legally entered the U.S., which occurs after the entry has been authorized by CBP, all estimated duties have been paid, and the goods have been released from the port (CBP, not dated).

   On the southern border, average wait times for trucks are usually at least 10 minutes, with many waits being more than 20 minutes. Conversely, on the northern border, average wait times for trucks are typically less than 10 minutes, and often less than 5 minutes (Roberts et al., 2013). Although dwell time can be only a matter of hours, the supermajority of the time, it can last several days (five or more) (COAC, 2013). Wait time occurs only when the traffic volume arriving at the border is (or was recently) in excess of the CBP inspection capacity that is (or was) available. Dwell time can result from a variety of things, including: CBP inspections, concerns about product safety, intellectual property violations or counterfeit goods, labeling violations (including country of origin marking), or anti-dumping and countervailing duty circumvention (Jones & Rosenblum, 2013). Shipments tend to take longer moving through the border in cases of incorrect duty classifications, improper markings, poor or unclear invoicing, and when the contents and values differ from package to package (CBP, not dated).

   The economic impact of wait and dwell time at the border for commercial firms can be considerable, as they result in delays in getting products to market, tie up resources that could be used for something else, and add variability/uncertainty to the transport process. This is potentially very problematic in the case of "just-in-time" business models and perishable items, as well as intermediate goods. Intermediate goods are used by other firms as inputs to other goods and services, rather than being sold directly to end consumers. When an intermediate good is delayed at the border, the effect throughout the supply chain can be quite pronounced and, in the extreme case, can result in a firm having to temporarily cease production (see also Roberts et al., 2013). More generally, the longer the period in which cargo "dwells" at the border, the greater the risk of damage, tampering, or theft of the goods.

Chapter 7, Section 3. Post-Entry Activities

Even after the goods have physically moved through and been released from the port, the entry may still not be truly finalized. In the event that an importer recognizes errors in entry documents that they previously submitted that are largely clerical in nature (e.g., classification and valuation errors), they can file a Post Entry Amendment (PEA, or quarterly PEA) to be able to request corrections to entry summaries through a Post Summary Correction (PSC). Any party who may have violated U.S. trade laws can also file a Prior Disclosure of the violation (with or

without knowledge of a formal CBP investigation), and may be eligible for reduced penalties as a result (Jones & Rosenblum, 2013).

In the event that CBP wants to obtain more information or materials related to a past entry (e.g., product samples, invoices), they can file a CF 28, Request for Information, which is a binding legal request. In cases where CBP makes a determination regarding an entry (e.g., that the incorrect duty rate was assessed on the goods), they can issue formal notice of this through the CF 29, Notice of Action (Gould, 2014). CBP also conducts two main types of regulatory audits of importers: 1) focused assessments (FA), or risk-based evaluations of a company's customs transactions; and 2) quick response audits (QRA), which are narrowly focused to address a specific objective within a short period of time (Jones & Rosenblum, 2013). If an importer disagrees with a CBP action, it can choose to file a grievance using CBP Form 19, Protest.

Chapter 7, Section 4. CEE Impact on Import Logistics Processes

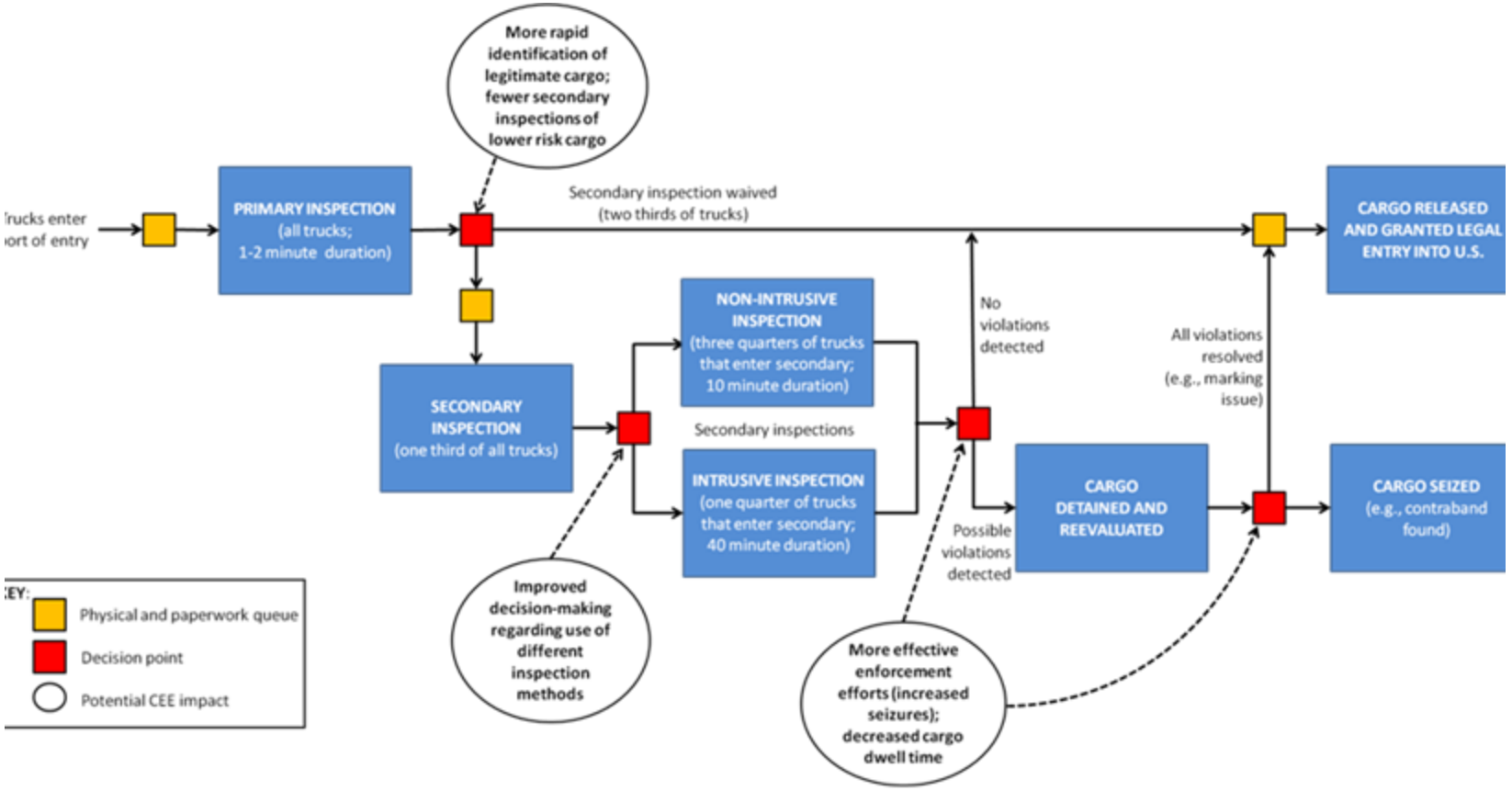
Membership in a CBP Center of Excellence and Expertise (CEE) can be mutually beneficial to both members of the trade community, and to CBP.

From CBP's perspective, the CEEs help centralize and improve their domain knowledge regarding a particular importing industry (e.g., electronics). This allows for more streamlined, complex, and effective enforcement activities, through risk segmentation and fewer secondary inspections of low-risk cargo, more rapid identification of legitimate/compliant cargo, and increased seizures of counterfeit, harmful, or otherwise non-compliant goods (CBP, 2012, 2013, 2014).

For importers, the most significant benefit of CEE membership is the ability to deal with a single processing location (account-based principles), rather than many (scattered) ports of entry, possibly with very disparate policies, procedures, and preferences. For example, rather than receiving multiple CF 28s (Request for Information) and CF 29s (Notice of Action) from multiple ports regarding the same issue, for CEE members, these documents now come through only the CEE. Similarly, rather than having to file a CBP Form 19 (Protest) at many different ports of entry, CEE members need only file a single Protest, with the CEE. The CEE can also "preempt" many secondary inspections, CF 28s and CF 29s, and even CBP Forms 19 through informal consultative processes, and its extensive knowledge of the firm (account-based practices) and its industry (domain specific awareness). Many CEE communications are also conducted electronically, rather than by paper and the mail or courier services. CEE members also have a direct line to CBP (beyond at just the port level), making it easier for them to direct queries to CBP (e.g., regarding new products), leading to quicker resolution of problems. All of this translates into greater consistency, predictability, and transparency in the importing process, and a lower cost of doing business for importers through fewer inspections and documents, earlier cargo release decisions, and decreased cargo "dwell" time (CBP, 2012, 2013, 2014; Gould, 2014).

A modified version of the border flow diagram from Figure 3-3, showing the potential impacts of the CEEs on the processes, is given in Figure 3-4.

Figure 4: Amended Flow Diagram of Border Crossing Process (see Figure 3), Showing Potential CEE Impacts



Chapter 7, Section 5. References

(CBP) U.S. Customs and Border Protection (not dated). *Importing into the United States: A Guide for Commercial Importers*. http://www.cbp.gov/linkhandler/cgov/newsroom/publications/trade/ iius.ctt/iius.pdf.

(CBP) U.S. Customs and Border Protection (2014). *Centers of Excellence and Expertise Trade Process Document: Responsibilities and Procedures for Participating Accounts and Their Brokers, Agents, or Filers*. http://www.cbp.gov/sites/default/files/documents/Updated%20CEE%20Trade%20Process%20Document%20032114.pdf.

(CBP) U.S. Customs and Border Protection (2013). *Centers of Excellence and Expertise: Overview*. PowerPoint Presentation.

(CBP) U.S. Customs and Border Protection (2012). *Fact Sheet: Centers of Excellence and Expertise*. http://www.cbp.gov/sites/default/files/documents/ceefs_2.pdf.

(CBP) U.S. Customs and Border Protection (2005). *What Every Member of the Trade Community Should Know About: Customs Brokers*. http://www.cbp.gov/sites/default/files/documents/icp048_3.pdf.

(COAC) Advisory Committee on the Commercial Operations of Customs and Border Protection (2013). *Trade Efficiency Survey: A Review of Trade Satisfaction, Priorities, Costs, and Risks*.

(GAO) U.S. Government Accountability Office (2013). *CBP Action Needed to Improve Wait Time Data and Measure Outcomes of Trade Facilitation Efforts*. GAO-13-603.

Gould T. (2014). Personal communications. Senior Director, Customs and International Trade, and Licensed Customs Broker. Sandler, Travis & Rosenberg, P.A. Los Angeles, CA.

Haralambides H.E., Londono-Kent M.P. (2004). "Supply Chain Bottlenecks: Border Crossing Inefficiencies Between Mexico and the United States." *International Journal of Transport Economics*; 31(2):171-183.

Jones V.C., and M.R. Rosenblum (2013). U.S. Customs and Border Protection – Trade Facilitation, Enforcement, and Security. CRS Report R43014. Washington, DC: Congressional Research Service.

Ojah M.I., J.C. Villa, W.R. Stockton, D.M. Luskin, R. Harrison (2002). *Truck Transportation Through Border Ports of Entry: Analysis of Coordination Systems*. Report to Texas Department of Transportation, U.S. Department of Transportation, Federal Highway Administration, and the Joint U.S.-Mexico Working Committee. Texas Transportation Institute, Texas A&M University.

Roberts B., N. Heatwole, D. Wei, M. Avetisyan, O. Chan, A. Rose, I. Maya (2013). *The Impact on the U.S. Economy of Changes in Wait Times at Ports of Entry*. Report to U.S. Customs and Border Protection. National Center for Risk and Economic Analysis of Terrorism Events (CREATE), University of Southern California.