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World Customs Journal

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Contents

Editorial	v
SECTION 1 – ACADEMIC CONTRIBUTIONS	1
Weaknesses in the supply chain: who packed the box? <i>David Hesketh</i>	3
Implications for Customs of climate change mitigation and adaptation policy options: a preliminary examination <i>Robert Ireland</i>	21
Measuring the effectiveness of border management: designing KPIs for outcomes <i>Stephen Holloway</i>	37
Reforming Customs by measuring performance: a Cameroon case study <i>Thomas Cantens, Gaël Raballand and Samson Bilangna</i>	55
Large traders’ Customs units <i>Leonardo Macedo</i>	75
SECTION 2 – PRACTITIONER CONTRIBUTIONS	77
Jordan electronic transit monitoring and facilitation system <i>Arif A Alftiani</i>	79
Measuring performance of Customs information systems in Malaysia <i>Mohd Afandi Md Amin</i>	89
SECTION 3 – SPECIAL REPORTS	105
WCO has a new Committee for Capacity Building! <i>Capacity Building Directorate, World Customs Organization</i>	107
World Customs Forum 2010: Executive Summary and Conference Outcomes <i>Christopher Dallimore</i>	109
SECTION 4 – REFERENCE MATERIAL	113
Guidelines for Contributors	115
Editorial Board	116

Editorial



A number of the articles that appear in this issue of the Journal will be presented at the forthcoming PICARD (Partnership in Customs Academic Research and Development, a joint initiative of the World Customs Organization and the International Network of Customs Universities) conference to be held in Abu Dhabi from 23 to 25 November. These include Robert Ireland's comprehensive article on potential implications of climate change policy options on the role of Customs, in which he explores ways the customs community may be able to contribute to such policy. Leonardo Macedo's article on the use of dedicated compliance teams for large traders, and Arif Alfitiani's discussion of Jordan's electronic transit

monitoring and facilitation system will also be presented.

Other papers to be presented at the conference focus on performance measurement. These include Stephen Holloway's insightful article in which he examines existing methods of measuring the effectiveness of border management from a variety of perspectives. He argues that an integrated performance measurement framework for border management that is meaningful for both business and government can be developed on the basis of existing metrics. In a second article on the general theme, Thomas Cantens, Gaël Raballand and Samson Bilangna present a Cameroon case study that examines the introduction of staff performance measures and discusses how this has served to facilitate administrative reform.

In his article *Weaknesses in the supply chain: who packed the box?*, David Hesketh presents a cogent analysis of significant weaknesses in international trade supply chain practices, and also provides a clear vision for the future which is already being further explored by a number of key players in both government and the international trading community. The article represents an excellent example of an academic dissertation that has helped to inform policy decision making.

In closing, on behalf of the Editorial Board I would like to take this opportunity to thank Lars Karlsson for his exceptional contribution to the development of customs and academic partnerships through the WCO PICARD program as the World Customs Organization's inaugural Director of Capacity Building. The special report in Section 3 which outlines the accomplishments of the Capacity Building Directorate is testament to the dedication, commitment and passion that Lars has shown throughout his five-year term. We wish him every success for the future.

A handwritten signature in blue ink, appearing to read 'D. Widdowson'.

David Widdowson
Editor-in-Chief



Section 1

Academic Contributions

Weaknesses in the supply chain: who packed the box?

David Hesketh

Abstract

The international trade supply chain has grown in complexity to a point where clear visibility is masked from those who need to know what is going on. International conventions cover the transport of goods between seller and buyer but concentrate more on limiting liabilities than they do on ensuring the accurate description of the goods. The person who knows what is being sent into the supply chain is the person who packed the box or consigned the goods. If the packing list is wrong, not used or hidden from view then the transport documents such as way bills and the manifest are likely to be inaccurate. This poses safety, security, legal compliance and commercial risks. Information required by border enforcement agencies is being asked for further upstream in the supply chain, prior to the goods being loaded. But the consignor, who holds the key to the majority of that information is outside the jurisdiction of the importing country's authorities so they turn to the carrier and the importer instead. Unfortunately, information held by the carrier is not always accurate and Customs hold the importer accountable for goods they have probably never seen. In these days of information management rather than the physical control of the goods, the role of export data is increasingly important. A multilateral, international legal framework with enforceable jurisdiction is needed with more emphasis placed on the point at which the international movement of the goods begins. The consignor and the true packing list play a key role. A new key performance indicator and critical way-point must be created called the Consignment Completion Point. A web-based, seamless, electronic data 'pipeline' needs to link the seller/consignor and the buyer/consignee and the interested economic operators in between. Real-time, accurate data must be assured from the beginning, updated as the goods move, and shared in a risk based, layered approach.

1. Introduction

Imagine arriving at an airport to board a flight. You approach the check-in desk. You are asked the normal questions about your baggage. But consider the consequences of giving some not-so-normal answers. You have never seen the bag you are carrying; you did not pack it and you have only been told what is in it. It is unlikely you would be allowed on a flight. There are strong similarities between this and how we manage information about cargo moving along the international trade supply chain. Historically, Customs in the country of importation have required the importer to make declarations often about goods they have never seen.

The changes to the security surrounding people travelling by air and sea after Lockerbie in 1988 and the attacks of 2001 and since, provide important parallel lessons for the movement of cargo by sea and air. The questions now posed to air travellers seek to assess the safety and security of people and their baggage before being loaded on the aircraft. Key to this assessment is to identify who packed the bag and to determine what is in it. In this respect the cargo consignor is the primary source of data needed to meet many of the regulatory requirements of the international trade supply chain.

Supply chain management is overly complex and in need of improvement. Data deficiencies and gaps together with an outdated paper trail are resulting in financial, safety, visibility and planning risks. Costs are ambiguous thereby clouding overheads and profit margins. The consignor has limited legal accountability for properly describing and despatching goods into the supply chain. Existing transport conventions place too much emphasis on limiting carrier liability. A new multilateral, international convention may be the best way to ensure global best practice across the supply chain and to create a genuine legal obligation on the consignor to provide the data required.

2. Background

From its beginnings the international trade process was relatively straightforward. The buyer would board a ship and travel to another country, identify the goods they wanted, pay for them, return to the ship, load the goods, return to their own country aboard the ship with their goods, unload them, pay the customs duty and sell them at the market. However, when the buyer stopped travelling to buy the goods and stopped the face-to-face transaction, international commerce and transport became more complicated. Communication became more difficult. Trust and agreements were replaced by contracts, jurisdictions, different currencies and systems of payment and different languages, ships, containers and people. These continually change.

The one certainty that has remained is that goods are bought and sold and transported. But it seems to have been the international transport that has unduly complicated this relatively straightforward process. The buyers and sellers simply want to keep manufacturing, selling, buying and making a profit. However, the middle parties in the supply chain have created an industry so complex that the buyers and sellers often have no other reasonable choice but to place the transport and logistics part of their transaction in the hands of 'experts'.

3. Understanding the supply chain

The Council of Supply Chain Management Professionals defines supply chain management as:

encompassing the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers.¹

Rather than being simplistic, as described above in the early days of international commerce, present day supply chain management is a broad and complex subject. It is a blend of commercial practice, documentary and electronic message handling and risk management within international and national legislation relating to, for example, trade, Customs, health, safety, security, transport, contracts and liability.

Elements of supply chain management include planning, estimating, sourcing, manufacturing and delivering, relationship building, contract negotiation, finance, risk management, data management, commercial and regulatory compliance and systems development.

Identifying and managing the data requires a sound understanding of not only the commercial aspects of

the business but also of the logistics process between buyer and seller. For many companies a total grasp of this entire supply chain is unrealistic so they leave the international movement of goods to others such as Freight Forwarders and third party logistics providers. Of course, this has its own inherent risks.

Jay Wright Forrester,² in his consideration of supply chain dynamics, concluded that uncertainty and a lack of clarity could be avoided and delays reduced or eliminated by building in real-time data management or feedback loops. In essence, this is the basis of modern day demand for supply chain visibility.³ A white paper by Professors Alan Braithwaite and Richard Wilding estimates that data inaccuracy among the United Kingdom (UK) top five retailers and their suppliers is costing as much as £1.4 billion per year – 1 per cent of total revenue.⁴

While the information required by the many players in the chain is different, the source of the information centres on the seller (or shipper or consignor) and is added to as the goods move on their journey to the buyer or consignee.

The physical movement of goods along the supply chain is associated with a series of contracts of carriage between the carrier and the buyer and/or seller (depending on their agreed roles and liabilities under International Chamber of Commerce (ICC) Incoterms 2000⁵) or their representatives. Some documents, such as a bill of lading for sea cargo, are deeds of title meaning that the carrier takes the goods from the consignor (in an agreed condition) and will only pass on those goods to the person named by the consignor and who holds the bill of lading.

A 'clean' bill of lading accepts the condition of the goods as described by the shipper. The document or electronic messaging trail associated with the physical movement of the goods can run with, in parallel, in advance or behind the goods. Pieces of that information will be restricted to certain parties while in some cases most, if not all of it, must be revealed when required by different laws such as Customs.

The manifest is a list of all the cargo carried on an aeroplane, vessel, train or road vehicle and is made up from the bills of lading, the air way bills or other bills issued by the carrier to the shipper acknowledging receipt and condition. Manifest level information is currently significant for Customs purposes.

While there are many definitions of the international trade supply chain most give the impression that it takes a linear form. It is often described as 'only being as strong as its weakest link'. However, in *Organisations and flows in the network*, Marcel van Oosterhout (2008)⁶ makes the distinction between physical, information, and financial flows along the supply chain and describes the Logistics Layer, the Transaction Layer, and the Governance Layer (Figure 1).

Without understanding this distinction Customs have, historically, used data in the Logistics Layer, such as way bill or manifest data, for pre-arrival or pre-departure risk assessment in the Governance Layer instead of drawing on the comprehensive commercial data in the Transaction Layer which more accurately describes the goods and the people involved.

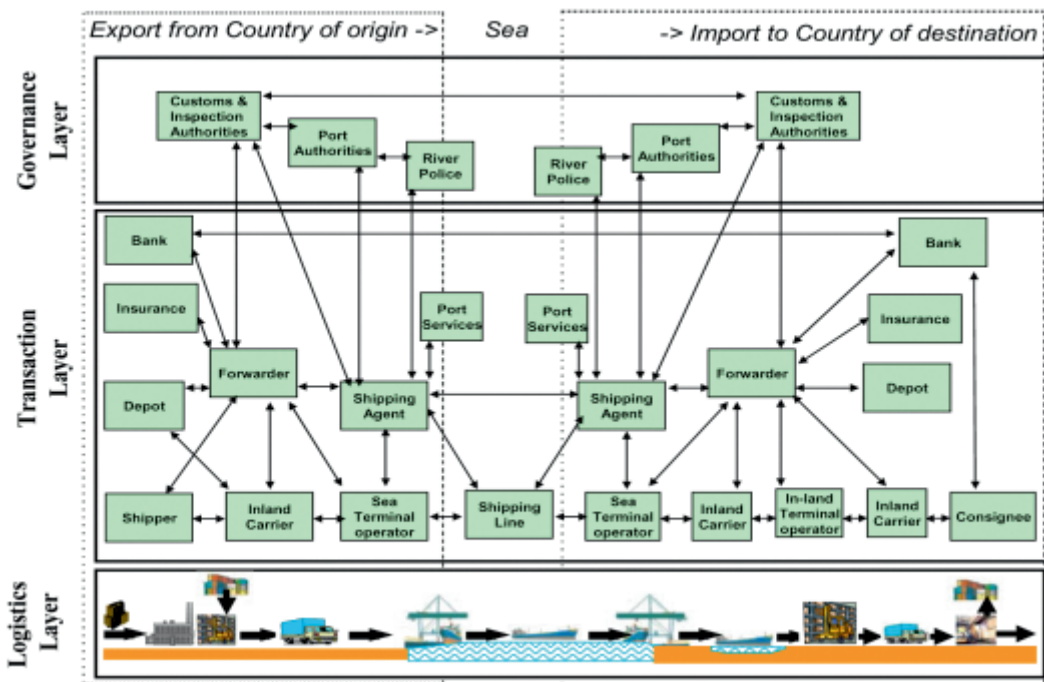
4. The role of the consignor

The consignor is the person sending a shipment to be delivered whether by land, sea or air. Some carriers, such as national postal entities, use the term 'sender' or 'shipper' but in the event of a legal dispute the proper and technical term 'consignor' will generally be used.⁷

It is difficult to divorce the many different aspects of the supply chain from each other, however, the consignor (or shipper or exporter) knows more about the goods being sent into the supply chain than any other player.

The seller puts the consignment together to meet the order placed by the buyer. When the consignment is complete the consignor has all the information available about the goods and the people, in the Transaction Layer. This applies to full container loads (FCLs). For less container loads (LCLs) or

Figure 1: Logistics, Transaction and Governance Layers



Source: Marcel van Oosterhout 2008.

groupage consignments the consolidator plays an equally important role in consignment completion. After the consignment completion point only transport data from the Logistics Layer will be added. Other players contribute to that data with information about the movement of the goods.

The consignor is responsible for making a legal export declaration to Customs before the goods leave the country. At the stage of consignment completion most of the data that Customs need to know for both export and import control is available. Delays and complications still arise, sometimes caused by a slow paper trail or unforeseen circumstances, but the potential for a full set of data to be available at the point of ‘stuffing’ or consignment completion is very real. The consignor needs to ensure the order matches the packing list that matches the invoice. The packing list should match the shipping note that matches the contract of carriage that matches the way bill that feeds the manifest. If the packing list is wrong then they are all wrong.

The Customs requirement for information about goods and people should be met mainly from the Transaction Layer with additional carrier, location, consignment status and even stowage data being updated from the Logistics Layer.

5. International law

Public international law provides an international legal framework that spans different places of business, countries and jurisdictions. International law is not statute law but a series of conventions, agreements and rules adopted by nations through consensus and overseen by bodies such as the United Nations (UN). International law is supported by a country becoming a signatory to a convention then adopting it through translation into national law.

In the main, cargo related jurisprudence and national and international law, such as UN transport conventions, relate to the relationship between the parties in terms of contracts of sale, contracts of carriage and liability in the event of loss or damage. They pay particular attention to how the initial information relating to the goods is captured and how the description of the goods influences liability.

The UN Convention on Contracts for the International Sale of Goods (CISG) provides an international legal framework for agreeing terms and conditions between the buyer and seller when they are in different countries and subject to different laws. The aim is to remove ambiguity in the transaction and help each party 'estimate' the costs of the many different elements of an international sale and movement, thereby clarifying the true price. The ICC provides a model⁸ contract through which the buyer and seller can apply CISG principles and assists further through the internationally recognised Incoterms 2000⁹ which clarifies liability and who pays for what and when.

This clarification of terms between buyer and seller is critical to the argument that the seller (or consignor or shipper) knows everything there is to know about the goods and their description at the point of fulfilling the order placed by the buyer. According to CISG the goods can be described using international terms such as the Commodity Code under the WCO Harmonized System and all costs and means of carriage can be estimated to ensure, as far as possible, the agreed delivered price. The packing list should show what has been consigned in accordance with the order. This is the process within the Transaction Layer of van Oosterhout's model.

International transport conventions such as Warsaw and Montreal for air, Hague-Visby, Hamburg and Rotterdam Rules for sea, the Carriage of Goods by Road (CMR) and the Carriage of Goods by Rail (COTIF) provide further international legal frameworks for the carriage of goods. These conventions were designed primarily to provide assurance to the shipper (seller or consignor) that the means of carriage for their goods is safe and that the carrier will hand over the goods to the person nominated by the consignor at the point of destination. In reality the conventions concentrate on who is liable in the event of damage or loss.

When the goods to be carried are delivered by the consignor to the carrier and they can both see the quantity, description, condition, marks, numbers and delivery details then the contract of carriage and liability as provided for in the conventions is more straightforward. But with the advent of the cargo container, especially by sea, the position has changed dramatically. Without regularly opening the doors of a sea container the carrier is unable to verify its contents. And with vessels carrying over 10,000 twenty foot equivalent (TEU) containers and port arrival, delivery and inventory systems being designed for speed and security, this has become virtually impossible. Only the consignor or the person who packed the container can possibly know what is inside it.

As described earlier, the bill of lading is a receipt from the sea carrier to the consignor or shipper that the goods have been received and will be transported on a seaworthy vessel. However, the Hague-Visby Rules promote far greater bargaining power by the carrier over the shipper. To reflect this, and limit the carrier's liability, Article 3 only requires the shipper to provide to the carrier leading marks necessary for the identification of the goods (marks, numbers, quantity or weight) in order for a bill of lading to be issued. Article 4(5)(a) says that unless the value and full description of the goods have been declared by the shipper and inserted in the bill of lading, then liability will be limited to 666.67 units of account (about £500) per package. Hamburg and Rotterdam rules vary.

If the shipper declares the true value of the goods to the carrier then the freight rates increase significantly because the carrier is then liable for the entire cost in the event of damage or loss. So the shipper reduces the description of the goods and omits the true value on the bill of lading then takes out separate insurance to cover the risk.

Because of this ‘dance’ around the description, value and liability, the carrier of sea containers cannot be sure of their contents. Without opening the doors the carrier can only say that the container is ‘said to contain’ or ‘said to weigh’ or the number of packages is to ‘shipper’s load and count’ and endorse the bill of lading accordingly.

The case of *United States v. Ocean Bulk Ships, Inc.*¹⁰ established that a ‘clean’ bill of lading is one that contains no description of some defect or problem with the goods. When issued by the carrier it is *prima facie* evidence that the carrier received the cargo in an undamaged condition.

However, in *Daewoo Int’l (Am.) Corp. v. Sea-Land Orient Ltd.*, the United States (US) court found that where a container is pre-sealed at the consignor’s premises a clean bill of lading issued by the carrier using the language ‘said to contain’ is not *prima facie* evidence of the contents of the container because the contents are not discoverable from an external examination.¹¹ The inference is that the carrier can open the container to establish its contents.

So, does the carrier have an obligation to identify the goods they are to carry for liability, regulatory and safety and security purposes?

The Convention for the Unification of Certain Rules for International Carriage by Air, the Montreal Convention, Articles 4 to 9 require the consignor to furnish an air way bill or cargo receipt identifying the cargo, including the proper packing and good condition, specifying the carriage to be performed, indicating the place of departure and the place of destination and indicating the proper weight.

The safe means of carriage of the goods by the carrier can be dependent on this information.

Article 16 requires the consignor to provide information and documents necessary to meet Customs, police and other public authorities’ formalities before the cargo can be delivered to the consignee.

Whereas the Hague-Visby Rules seem to concentrate on the liability of the carrier and the provision of a limited amount of information by the consignor, the Montreal Convention, supported by increased security requirements, promotes a more responsible role for the consignor in providing data, in particular to Customs.

6. International organisations

Ministers at the United Nations International Symposium on Trade Efficiency held at Columbus, Ohio in October 1994, chaired by the Secretary of Commerce of the United States of America, identified a range of problems in international trade. They set recommendations and guidelines that addressed six areas they believed were likely to generate tangible improvements for international trade within what they then called the ‘door-to-door logistics chain’. These areas were:

- Customs
- transport
- banking and insurance
- information for trade
- business practices
- telecommunications.

UNCTAD¹² was appointed as the focal point in the implementing Declaration.

This approach formed the basis for many of the UN’s capacity building and technical support activities in the area of trade efficiency and facilitation.¹³ When linked with the growing initiative in the World Customs Organization (WCO), at the time, to improve Customs administrations, the Symposium, and its subsequent Columbus Declaration¹⁴ was a significant milestone in increasing the efficiency of importing and exporting cargo around the world.

The Group of Seven (G7)¹⁵ Heads of Government, at their meeting in Lyon, France in 1996, at their Summit in Denver, Colorado, USA in 1997 then again in their Summit in Birmingham, England in 1998 agreed to build an International Trade Prototype between pilot G7 countries where export data became import data using standard data sets and electronic transmission. This led later to the WCO Common Customs Data Model but the work of standardising the international movement of goods rather than treating imports separately from exports did not fully succeed.¹⁶

The WCO SAFE Framework of Standards, published in 2007, promotes the seamless movement of goods through secure international trade supply chains and the harmonisation of advance electronic cargo information requirements on inbound, outbound and transit shipments.¹⁷

Within the Customs-to-Business pillar of the SAFE Framework, the WCO advocates partnerships between Customs and the private sector to ensure the safety and security of the international trade supply chain. The SAFE Framework advocates pushing assessments on the security of cargo and containers further back into the supply chain by involving the private sector and by requiring increased security at the point of origin, such as the point of ‘stuffing’ a container at a foreign manufacturer’s loading docks, and as the container is moved from point to point through the supply chain.¹⁸ This places the onus on the consignor and those in the Logistics Layer to provide accurate data relating to the goods.

The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Symposium on Single Window Standards and Interoperability in May 2006 in Geneva was of the view that building seamless, electronic processes between trade and government and between the relevant governmental agencies could eliminate costly redundancies and duplication in the submission of data.¹⁹ They were of the view that in the future, administrations will seek to obtain data in electronic format directly from the originator of the information that will often be a combination of the seller, consignor, Freight Forwarder and carrier.

7. Sea cargo

Total trade in the UK was valued at about £600 billion in 2008.²⁰ About 95 per cent by volume of goods consumed or produced in the UK come and go by sea and about 90 per cent by weight of world trade is carried by the international shipping industry.²¹ Hague-Visby, Hamburg and the more recent Rotterdam Rules, translated into national law through Acts such as the Carriage of Goods by Sea (COGSA), drive the way goods are described by the consignor on transport documents and the way carriers can reduce their liability. One of the key legal documents for sea cargo is the ship’s manifest which is made up from the bills of lading, described earlier.

The complexity of the contracts of carriage and the systems and procedures required to transport goods internationally almost encourage the consignor to employ a Freight Forwarder, or ‘agent’, to manage the door-to-door or container consolidation to de-consolidation process. The Freight Forwarder in one country consigning goods to another Freight Forwarder in the country of destination traverses the Logistics and the Transaction Layers to manage the documentary and transport complexities. So, in addition to the limited data contained in transport documents, the manifest will show consignor to consignee as ‘agent to agent’ rather than the true buyer and seller.

In everyday practice, despite the legal requirement to provide accurate data about the goods being carried, about 60 per cent of vessel manifest information is described as ‘agent to agent’ making the data unfit for regulatory pre-arrival risk assessment purposes. Well established commercial practices within the Logistics Layer are masking the accuracy of data thereby increasing the risks posed by a lack of visibility.

Annual losses in international trade caused by maritime fraud are estimated to be as high as USD31 billion. Documentary maritime frauds involving the letter of credit and traditional ocean bills of lading account for nearly two-thirds of these losses.²²

The grounding of the vessel *MSC Napoli* in January 2007 off the UK South Devon Coast highlighted the problem of mis-declaration and led to growing pressure for ship's manifests to contain more detailed cargo information to enable risks to be more adequately assessed. The incident offered a unique opportunity for the UK Maritime and Coastguard Agency to examine the stowage, segregation and securing of the cargo on a container vessel. The salvors and insurer's representatives examined the containers and their contents after they were recovered and as they were processed. The examination of the cargo provided a useful insight into the issues facing the container shipping sector.²³

In some instances it was clear that the Carrier had no reasonable means of ascertaining who was responsible for the containers and their contents. Dangerous goods are thought to account for between 5 per cent and 10 per cent of total containerised cargoes but it is clear that some are carried un-declared. The report by the UK Marine Accident Investigation Branch said the following:

All *MSC Napoli's* containers were weighed when they were removed from the vessel including about 660 containers stowed on deck, which had remained dry. The weights of 137 (20%) of these containers were more than 3 tonnes different from their declared weights. The largest single difference was 20 tonnes, and the total weight of the 137 containers was 312 tonnes heavier than on the cargo manifest.

Overweight container discrepancy is widespread within the container ship industry and is due to many shippers deliberately under-declaring containers' weights in order to minimise import taxes calculated on cargo weight, allow the over-loading of containers and to keep the declared weight within limits imposed by road or rail transportation. Container shipping is the only sector of the industry in which the weight of a cargo is not known.²⁴

8. Air cargo

After the destruction of Pan Am flight 103 over Lockerbie in December 1988, the International Civil Aviation Organisation (ICAO) adopted an eight-point aviation security plan that became the basis for improvements in aviation security throughout the world. This plan included the screening and reconciliation of checked passengers' baggage and the screening of cargo and mail. The *Civil Aviation and Maritime Security Act 1990* brought the ICAO Montreal Protocol 1988 into UK law. This Act created new offences relating to air security. Certain acts prejudicial to aviation security became offences such as giving false information in answer to questions relating to baggage, cargo or stores. Some Customs and Immigration services went further and now require Advance Passenger Information to be provided by the passenger online or certainly prior to departure.²⁵

Within the international trade supply chain air cargo typically travels from a seller (or shipper) through a regulated agent to an airline. The seller prepares the consignment so is also the consignor. The UK Aviation Security (Air Cargo Agents) Regulations 1993 required the security standards and operations of cargo agents to be approved.

Until 2003 the regulated agent²⁶ assessed their customers' security arrangements and could award the status of 'known' consignor. Cargo from known consignors would then be considered as secure and could be placed on an aircraft without further checks. From 2003 the UK Department for Transport introduced a new scheme that removed the validation role from the regulated agents to independent validators with experience of air cargo security.

In 2008 the UK's air cargo security regime included over 400 regulated agents at 850 sites and 1,400 known consignors, inspected annually by independent validators.²⁷ That approval includes the point at which the consignment is completed and the cargo becomes air cargo; the air cargo preparation and

packing procedures and the storage and transport of secure cargo from the seller or consignor to security approved air cargo agents or airlines.

An air way bill for cargo being carried by air is a receipt from the carrier to the consignor (or shipper) and is evidence of a contract of carriage between the shipper and carrier. An air way bill is not a document of title and cannot be endorsed 'said to contain'.

If cargo is sent on a direct basis and not grouped with other cargo, or consolidated, a master air way bill is issued. If cargo is to be grouped together with other cargo, the consolidator issues their own house way bill for each shipment and each customer receives a copy to identify their consignment.

In air cargo, as with sea cargo, the consignor (or seller, or exporter) often employs a Freight Forwarder, consolidator or third party logistics provider. The Freight Forwarder can issue a house air way bill to the consignor who is their customer and the airline will issue a master air way bill to the Freight Forwarder. Where a Forwarder is a consolidator, they become the consignor as far as the carrier is concerned. The air way bill will be completed with the consolidator's name and address in the 'shipper's name and address' section of the air way bill, the true shipper details being provided on the house air way bills.

The house way bills are attached to the master way bill accompanied by a manifest itemising all the shipments by house way bill number for identification purposes at destination. Cargo identification labels will show both air way bill numbers.

The air way bill has a tracking number which can be used to check the status of delivery and current position of the shipment. The number consists of a three digit airline prefix issued by IATA²⁸ and an eight digit number.

The added emphasis on air security post Lockerbie and 9/11 makes the accuracy and timeliness of consignment data in the air cargo environment imperative. It also raises questions about why these standards of security and data management do not apply to sea cargo.

9. Customs and border protection

Customs is responsible for protecting society and facilitating international trade through the management of external borders and by:

- ensuring overall supply chain security
- ensuring the safety and security of citizens
- protecting national and regional financial interests
- combating unfair and illegal trade while supporting legitimate business activity
- increasing the competitiveness of national and regional businesses through modern working methods supported by an easily accessible electronic Customs environment.²⁹

For many years Customs have concentrated mainly on goods arriving into a country. They collect import duty, protect society by stopping illegal goods and facilitate the fair treatment of businesses. Traditionally Customs have used the ship or aircraft manifest as the basis for control, admissibility and assessing pre-arrival risk, and used the Customs declaration as the basis for regulation and collecting revenue and statistics. More emphasis has been placed by Customs on imports than on exports. Export data can lack accuracy and assurance and can be provided too late to allow proper risk assessment.

Customs use data from the Transaction Layer to provide information about the goods, the people and the customs procedure to be adopted. This is supplemented by the manifest information from the Logistics Layer to reconcile and ensure all the goods imported and which remain on board have been properly accounted for. The goods declared need to match the manifest and discrepancies should be investigated.

For sea cargo, Customs accept the inwards (import) manifest as an import summary declaration. However, as already explained, the manifest usually contains minimum data and ‘agent to agent’ details so is often not fit for border related pre-arrival risk analysis purposes.

In addressing the 2007 Customs and Border Protection Trade Symposium, US Customs and Border Protection (CBP) Commissioner, W Ralph Basham, said:

We have long recognized that we were not receiving sufficient data on the origins of a shipment, the so-called point of stuffing. We also lack information on all the various parties that handle a shipment during its transit to the United States.³⁰

In the US under the *Security and Accountability for Every (SAFE) Port Act, 2006*, carriers are required to transmit information to CBP about the cargo they are carrying to the US before the cargo is loaded at a foreign port.³¹ Carriers are required to submit advance cargo manifest information to CBP via the Automated Manifest System as well as an additional fourteen pieces of data often known as ‘10+2’. The ‘10’ data elements, to be filed by importers 24 hours prior to loading onto the vessel are:

- Manufacturer name and address
- Seller name and address
- Container stuffing location
- Consolidator name and address
- Buyer name and address
- Ship to name and address
- Importer of record number
- Consignee number
- Country of origin of the goods
- Six digit classification (HS) code.

The ‘10’ data elements are ultimately the responsibility of the importer to provide to CBP but, as already described, this information is known to the consignor on consignment completion, but outside US jurisdiction. The importer has probably never seen the goods and certainly did not pack them.

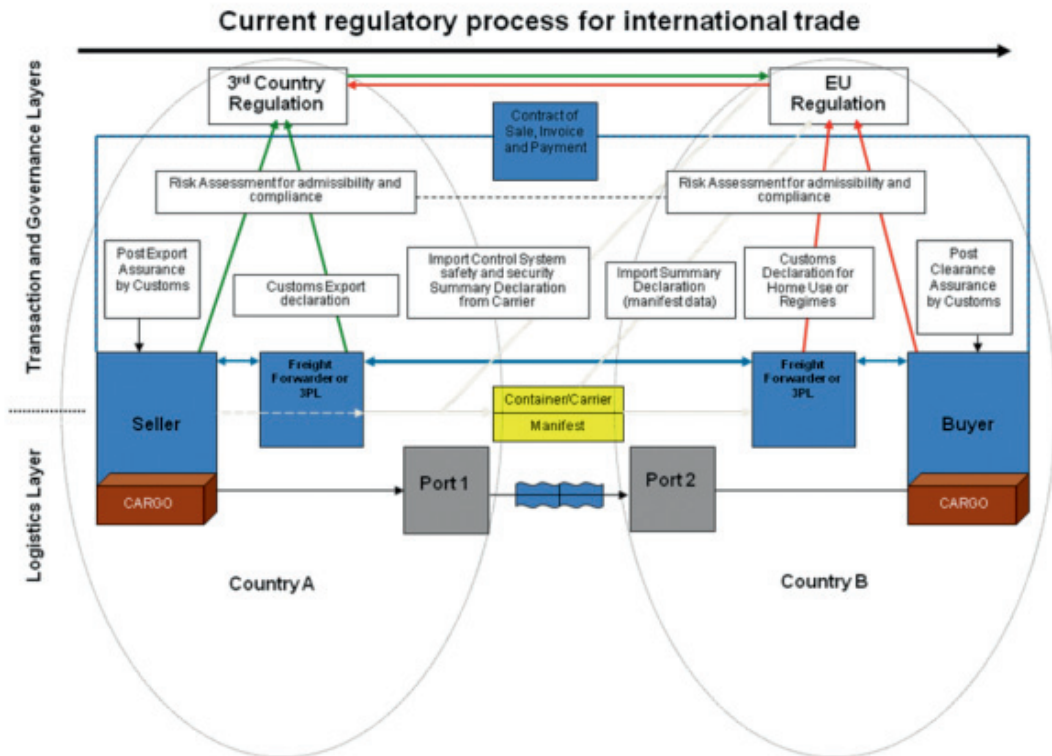
The two additional data elements to be sent to CBP by the carrier after loading are the vessel stowage plan and the container status messages. However, as seen from the MSC *Napoli* incident, ‘It is generally agreed within the container industry that up to 10% of containers loaded onto a vessel might not be in their planned positions’.³² Nevertheless, this requirement has the potential to provide the link between consignor data and import data and hold the consignor more accountable.

The European Union (EU) Import Control System (ICS) requires advance safety and security information prior to loading. For deep sea voyages, the law requires the carrier to make this declaration 24 hours prior to the goods being loaded in the foreign port of export. The security amendment, Annex 30A to regulation 2913/92, describes the data required under the pre-arrival, pre-departure systems.

The model shown at Figure 2 describes the current regulatory process for international trade.

Commercial data between buyer and seller as well as the logistics operations performed by a third party on behalf of the buyer and seller are separate from the Customs systems. Data provided by the consignor to the exporting Customs is generally divorced from the data provided to the importing Customs, so there is no assurance that the data is the same.

Figure 2: Current regulatory process for international trade



Source: David Hesketh 2010.

10. Summary

Data in the supply chain is not administered, managed or operated in a uniform way, can be inaccurate and is the subject of varying degrees of integrity. In many cases, the movement of their goods is not visible to the buyer and seller. Specific transport and other peripheral costs are often not clear to the international buyer and seller, making profit margins and the price to the final consumer ambiguous.

There is ample evidence that goods are not described or despatched properly for transport and regulatory purposes, creating risks to letters of credit, risks to the buyer, risks to carriers from overweight and hazardous goods and risks to society at the frontier from prohibited and restricted goods and the non-payment of much needed revenue. Established practices in the carriage of goods by sea such as 'said to contain', challenged by legal precedent but not helped by Hague-Visby or Rotterdam Rules, mean that the Master of a vessel will not know what the vessel is carrying thereby risking life at sea and on land. Goods can move along the supply chain as part of contracts and sub-contracts and with varying degrees of transport or carrier integrity. Criminals and untrustworthy operators exploit these deficiencies and defraud about USD20 billion annually.

There is currently no dedicated trade organisation which routinely provides guidance on best practice for the container industry. Loading, transportation and discharge of containers are largely unregulated. The safety of ships, crews and the environment is being compromised by the overriding desire to limit liability, maintain established schedules or optimise port turn round times.³³

However, these conditions are not standard across all modes of transport or across all players in the supply chain and there are marked differences between air cargo and sea cargo.

Cataclysmic events such as Lockerbie and 9/11 have led to stringent safety measures in passenger and air cargo safety and security. No such tragic milestone has been reached in sea cargo but the grounding of the MSC *Napoli* came close in signposting serious lessons that need to be learnt.

It is possible that if the undeclared hazardous cargo had exploded and the overweight containers had turned the vessel over in the entrance to the Port of Felixstowe or Rotterdam or New York, questions would have been asked as to why sea cargo is handled so differently to air cargo and the system would be changed.

Transport conventions, systems, procedures and data in the Logistics Layer dominate the management of the supply chain. But the data relating to the goods to be bought, sold and moved needs to be known to the buyer and seller in the Transaction Layer to ensure the order is properly met and paid for. If that information was clarified and verified at the point of consignment completion and captured in a data system running parallel to the Logistics Layer then many of the risks associated with poor data would be reduced.

Modern legislation in the European Community and in the US attempts to capture data about cargo upstream, prior to loading for export, but is restricted in legal jurisdiction. The consignor who holds the critical data is out of the legal reach of the importing authorities. The legal requirement therefore focuses on the bodies that do fall within enforceable jurisdiction, namely, the importer and the carrier. However, the transport systems are designed to limit carrier liability and do not always service that information requirement. And asking an importer about goods they have never seen lacks assurance, confidence and proper accountability.

At an airport check-in counter the responsibility for goods being carried rests with the person who packs the bag or completes the consignment ready for transport. An Advanced Passenger Information system requires the passenger to provide data in advance of departure allowing upstream risk assessment.

The consignor has the information relating to the goods being sent into the supply chain. It can be recorded, without fully revealing commercial sensitivities, on the packing list, shipping note and way bills and the information can be added to with carrier and location data as the goods move. The consignor can tell the carriers and the export and import regulatory authorities, including Customs, about the goods as they enter the supply chain.

This principle is endorsed by the World Customs Organization in the SAFE Framework which, in itself, was the product of extensive consultation with international traders.³⁴ Clarifying the full contractual details between buyer and seller, including the harmonised description of the goods, is advocated by the CISG convention in order to remove ambiguity and manage risk.

Ultimately, businesses and governments need a fair and effective regulatory environment for those engaged in international trade. They need streamlined, efficient regulation and procedures for exports and imports – cutting out avoidable costs and delays for business.³⁵

11. Conclusions

The way the international trade supply chain is managed needs to change. The needs of the seller/consignor and buyer/consignee have been overtaken and minimised through a complex and inefficient paper document trail and information flow and a preponderance of 'deals' aimed at minimising liability. True costs are unknown so estimates and contingencies are inflated then ultimately passed on to the consumers. Shaving cost to increase competitiveness is difficult when the costs are unknown. Managing risk is difficult when the true picture is unclear.

Export systems have been the poor relation despite the importance of 'strategic' exports, high value VAT and excise goods and the export of stolen goods such as expensive vehicles in order to finance organised crime and terrorism.

The current practices of mis-describing overweight, hazardous, prohibited, restricted and revenue goods mean that industry self regulation is unlikely to work. Commercial and criminal pressures are obviously too great even when the consequences threaten society and safety of life at sea.

The answer rests in national legislation with enforceable jurisdiction but within a multilateral, international legal framework. Real-time, accurate data must be assured from the beginning, updated as the goods move and shared in a risk based, layered approach.

Only the data needed for a particular purpose will be provided to those who need it within the Governance, Transaction and Logistics Layers. The entire description, movement and location of the goods as well as the entities involved will be visible to buyer and seller, or their preferred agents, as well as the regulatory agencies that will be held legally accountable for their integrity and data management. The consignor and carriers hold the data and modern technology unlocks the potential for this to be properly managed.

Based on commercial data, Customs will use automated targeting tools to identify shipments that are high-risk as early as possible in the supply chain, at or before the port of departure.

The primary aim is to increase the efficiency and security of international trade using parallel logistics and data pipelines that are secure, credible and well managed. The objective is to eliminate redundancies and duplication in the submission of data, provide real-time supply chain visibility and create a simplified process with a standard set of data and messages that traders will use to meet government, financial and commercial requirements for the admissibility and control of trade and conveyances.³⁶

Various estimates suggest that the cost of trade procedures may range from 2 per cent to 15 per cent of the value of traded goods. It is also estimated that 77 per cent of the administrative burden on businesses from international trade related regulation is attributed to Customs. Data inaccuracy among retailers and their suppliers can cost as much as 1 per cent of total revenue. A 1 per cent saving in the value of goods traded across UK borders would be worth almost £6 billion annually and a 50 per cent reduction in the administrative burden from HM Revenue and Customs could be worth around £370 million.³⁷

Ultimately, the emphasis has to shift from limiting carrier liability and an outdated paper trail to supply chain visibility and predictability through accurate data provision and management. While UN conventions provide the preferred international legal framework, the process of negotiation, compromise and weighty political lobbying by those with most to lose from fair, regulatory control frustrates the process.

Nevertheless, the value of international law is that it provides a uniform, global approach along with the opportunity for constructive international contribution and commitment. While trade and security initiatives such as those from the WCO offer a framework, they are often open to interpretation and optional adoption. The role of the consignor is critical within the supply chain so we need to create an international legal obligation that reflects that responsibility along with the need to provide the timely and accurate data required.

12. Key issues

- Supply chain management is complex, inconsistent and lacks uniform integrity resulting in financial and safety risks. Buyers and sellers are often disengaged other than through their Freight Forwarders. The movement of their goods is not visible to the buyer and seller.
- The complexity of the supply chain translates into information deficiencies and gaps where data is not managed effectively.
- Complete costs are not clear to the international buyer and seller making profit margins and the price to the final consumer ambiguous.
- Goods are not always described or despatched properly for transport and regulatory purposes.
- The Master of a container vessel will not know what the vessel is carrying thereby risking life at sea and on land.
- Goods can move along the supply chain as part of contracts and sub-contracts and with varying degrees of transport or carrier integrity.
- Criminals and untrustworthy operators exploit deficiencies in the supply chain.
- Commercial and regulatory data at export are generally divorced from the data required at importation. There is no assurance that the data are the same.
- Customs fail to recognise the strategic importance of accurate data at the point of consignment completion and export. An importer is not best placed to make a legal declaration about goods packed by the consignor.
- There is currently no single organisation providing guidance on best practice across the supply chain.

13. Recommendations

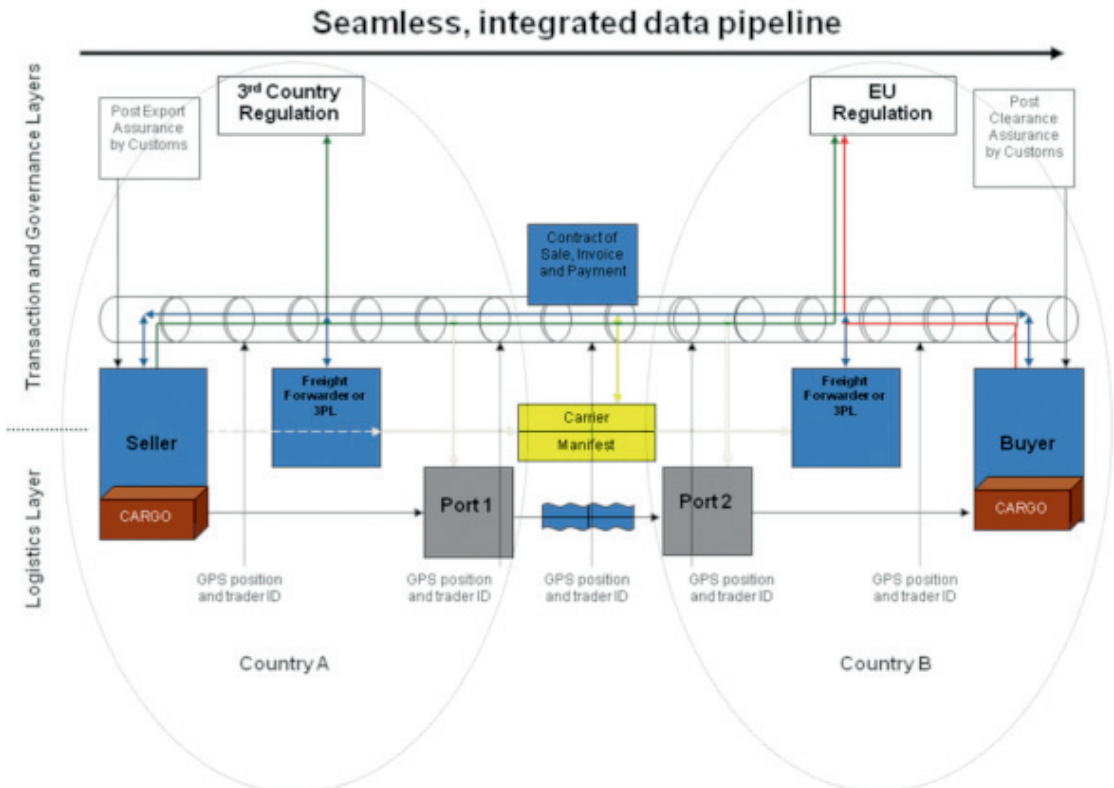
The Columbus Ministerial Declaration and the G7 International Trade Prototype recognised the need for a strategic, innovative, coordinated approach to supply chain management. The events of 9/11 brought that need into sharp focus including a global response to greater supply chain security and data integrity. International transport conventions have failed to integrate roles, modes of transport, data, technology and even international organisations despite calls by Ministers from the Columbus Symposium as early as 1994. This needs to be addressed by a new multilateral, international convention reflecting the principles of Columbus and the G7 Prototype but brought up-to-date by embracing and integrating many of the valuable initiatives that have since taken place.

Within that legal framework more emphasis must be placed on the point at which the international movement of the goods begins. The consignor and the true packing list play a key role. A new key performance indicator and critical way-point must be created called the Consignment Completion Point (CCP).

The upstream elements such as purchase order, the accurate description of the actual consignment, the contractual terms including transport, Incoterms, insurance, will all come together at the CCP and be verified between the seller/consignor and the buyer/consignee. At that point, everything relevant to the consignment entering the international trade supply chain for export, transport then import takes on a legal status. The full amount of data relating to the goods and the buyer and seller required by Customs and other regulatory agencies for an export declaration will be provided electronically, at the CCP, to the Customs in the exporting country and, at the same time, to Customs in any transiting or importing countries and the country of final destination.

This will require the construction of a web-based, seamless, electronic data ‘pipeline’ linking the seller/consignor and the buyer/consignee and the interested economic operators in between. The suggested future model, shown at Figure 3, promotes the WCO, UN Economic Commission for Europe (UNECE), EU and Trade call for seamless, electronic processes between Customs administrations and between Customs and business in facilitating legitimate trade.³⁸

Figure 3: Seamless, integrated data pipeline



Source: David Hesketh 2010.

While the technology to achieve this exists and a few software programs are capable of delivering part of it, there has yet to be taken a strategic initiative to join together the technology and the commercial opportunities. The advantages, however, are clear:

- reduced inventory
- better logistics, purchase and sales planning
- identification of costs
- choices of service provider
- better risk management and reduction of risk and fraud
- reduced losses and insurance premiums
- reduction in error, re-work and returns
- regulatory control of higher quality and possibly less costly to trade
- overall supply chain visibility
- information to protect profit and capture more market share.³⁹

Much of the existing transport and logistics procedures remain understandably complex. Maintaining a high level of Customs and logistics knowledge and experience in a trading company may not be cost effective. So the role of the Freight Forwarder who can manage the complexity on behalf of the buyer and seller will remain highly valuable. Indeed, the electronic data management between seller/consignor

from the CCP onwards throughout the Governance, Transaction and Logistics Layers, especially for small and medium sized enterprises, may well best be handled by a suitably competent Freight Forwarder.

The data 'pipeline' concept draws upon radio frequency identification (RFID) technology for localised tracking of goods at unit, pallet, consignment and container levels. It also draws upon global positioning systems (GPS) to track consignments and containers, where appropriate and cost effective, as well as the tracking of vessels carrying containers through the coastal Automated Identification System⁴⁰ and the Long Range Identification and Tracking system⁴¹.

This means that the location of the consignment from completion point (CCP) onwards can be known. The next critical way-point will be prior to export. Currently the US and later this year, the European Community will require, by law, specific information relating to the goods and entities as well as transport and stowage details. Under this recommendation the 'pipeline' concept will already have provided much of this information from the consignor, a source more reliable than the current manifest and carrier. The 'pipeline' will have been updated with carrier and location data between CCP and the point of export. Details about air and sea carrier as well as stowage and time of departure can update the 'pipeline' data through the port/airport inventory systems, through RFID and GPS, and through Port and Airport Community Service Providers. The seller/consignor will know the goods have been exported and the buyer/consignee will know the goods are on their way.

The importing Customs will have been advised of the same data that was sent to the exporting Customs. They will be able to work together. Both Customs will also have access to the 'pipeline' to proactively monitor the movements. Risk can be managed using real-time data.

Prior to arrival at the place of importation, the buyer/consignee can make the legal declaration to Customs confirming the original consignor data and advising Customs of the procedure to be adopted at importation. The possibility exists for clearance or selection to be advised to the consignee prior to arrival where risk and procedures permit. At this point all the information needed for all the players in the Governance, Transaction and Logistics Layers will be known from the 'pipeline' including official trade statistics, location, transit, transport and end-use data.

This is a vision and solution that confronts and builds on demonstrable problems. It has examined the basic and simple premise of international trade and described a plethora of industry led complexities. It has focused on the primary source of the key data needed to buy, sell and move goods – the seller/consignor. It suggests a new and innovative system to address clear commercial, regulatory and safety problems using modern technology and international law. The need to change is clear – as are the benefits and challenges.

Endnotes

- 1 Council of Supply Chain Management Professionals, <http://cscmp.org/aboutcscmp/definitions.asp>.
- 2 Jay Forrester 1961, *Industrial dynamics*, Pegasus Communications, Waltham, MA.
- 3 Hesketh, D 2009, 'Seamless electronic data and logistics pipelines shift focus from import declarations to start of commercial transaction', *World Customs Journal*, vol. 3, no. 1, p. 30. www.worldcustomsjournal.org/media/wcj/-2009/1/Hesketh.pdf.
- 4 SupplyChainStandard.com, 'Data inaccuracy costs retail £1.4bn', viewed 2 July 2010, www.supplychainstandard.com/liChannelID/20/Articles/3048/Data+inaccuracy+costs+retail+14+bn.html.
- 5 International Chamber of Commerce Incoterms 2000 described clearly by Pohjola, Finland, at www.tradev.net/Downloads/Tools/incotermscolorchart.pdf.
- 6 Van Oosterhout, M 2008, 'Appendix A: Organizations and flows in the network', in Peter van Baalen, Rob Zuidwijk and Jo van Nunen, Port inter-organizational information systems: capabilities to service global supply chains', *Foundations and Trends in Technology, Information and Operations Management*, vol. 2, nos 2-3, pp. 81-241.
- 7 Various sources including <http://en.wikipedia.org/wiki/Consignor>; Customs and Freight Guide, p. 5, www.fep.pt/media/pdf/WEG%20Freight%20Guide.pdf; Answers.com www.answers.com/topic/consignor.

- 8 Web based example of ICC Model Contract at Walker Customs Broker LLC, International Logistics and Compliance Consulting Services, New York, USA, www.walkerchb.com/WCB%20ISC%20Master.pdf.
- 9 International Chamber of Commerce explanation of Incoterms at www.iccwbo.org/incoterms/id3045/index.html.
- 10 *United States v. Ocean Bulk Ships, Inc.*, 248 F.3d 331, 336, 2001 AMC 1487 (5th Cir. 2001).
- 11 *Daewoo Int'l (Am.) Corp. v. Sea-Land Orient Ltd.*, 196 F.3d 481, 485, 2000 AMC 197 (3d Cir. 1999). Shipper failed to establish prima facie case where carrier had no independent duty, absent sufficient notice, to break the seal of a container from which goods were stolen.
- 12 United Nations Conference on Trade and Development, www.unctad.org/Templates/StartPage.asp?intItemID=2068.
- 13 UNESCAP, Trade Facilitation Programmes of International Organisations, www.unescap.org/tid/publication/chap2_2224.pdf.
- 14 Columbus Ministerial Declaration of Trade Efficiency, www.un.org/Conferences/trade94/columbus.html.
- 15 Canada, France, Germany, Italy, Japan, United Kingdom and United States.
- 16 37th meeting of the WCO Information Management Sub-Committee, December 1998, www.customs.gov.au/webdata/resources/files/wcog7har1.pdf.
- 17 WCO SAFE Framework of Standards, June 2007, p. 6.
- 18 WCO SAFE Framework of Standards, June 2007, p. 32.
- 19 Background paper: UNECE/TRADE/CEFACT/2006/15, p. 2, para. 9, www.unece.org/trade/workshop/sw_2006/bk_doc.pdf.
- 20 HM Revenue and Customs, Trade Statistics.
- 21 Shipping Facts, www.marisec.org/shippingfacts/.
- 22 Joseph A Walsh II 1989, 'Documentary maritime fraud: redefining the standard', 6 *Ariz. J. Int'l & Comp. L.* 223.
- 23 Report of the MSC *Napoli* incident, UK Maritime and Coastguard Agency, p. 32, www.mcga.gov.uk/c4mca/197-299_napoli_report_final-redux.pdf.
- 24 Report No. 9/2008, on the investigation of the MSC *Napoli*, by the UK Marine Accident Investigation Branch, April, p. 29, www.maib.gov.uk/cms_resources.cfm?file=/MSC%20Napoli.pdf.
- 25 International Civil Aviation Organisation, www.icao.int/icao/en/atb/fal/api.htm.
- 26 UK Department for Transport, www.dft.gov.uk/pgr/security/aviation/aircargo/changestotheukaircargosecure4871.
- 27 UK Department for Transport, TRANSEC Annual Report 2007/08, www.dft.gov.uk/pgr/security/about/transecannualreports/annualreport?page=2.
- 28 International Air Transport Association, www.iata.org/ps/publications/Pages/acd.aspx.
- 29 Adaptation of a mission statement adopted in 1995 by the Directors General of the EU's Customs Administrations, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31997D0210:EN:HTML>.
- 30 www.cbp.gov/xp/cgov/newsroom/commissioner/speeches_statements/basham_remarks.xml.
- 31 US DHS Privacy Impact Assessment for the ACS and ACE – Importer Security Filing Data, 2 December 2008, www.dhs.gov/xlibrary/assets/privacy/privacy_pia_cbp_acs10plus2.pdf.
- 32 Report No. 9/2008, on the investigation of the MSC *Napoli*, by the UK Marine Accident Investigation Branch, April, p. 29, www.maib.gov.uk/cms_resources.cfm?file=/MSC%20Napoli.pdf.
- 33 Report No. 9/2008, on the investigation of the MSC *Napoli*, by the UK Marine Accident Investigation Branch, April, p. 43, www.maib.gov.uk/cms_resources.cfm?file=/MSC%20Napoli.pdf.
- 34 World Customs Organization, High Level Strategic Group, www.ifcba.org/UserFiles/File/hlsgresolutionoct2006.pdf.
- 35 Lord Davies of Abersoch, Minister of Trade, Investment and Small Business and the Rt Hon. Stephen Timms MP, Financial Secretary to the Treasury, Forward to *Simplifying Trade Across UK Borders*, BIS, December 2009.
- 36 UNECE background paper, UNECE/TRADE/CEFACT/2006/15, p. 5, para. 15, www.unece.org/trade/workshop/sw_2006/bk_doc.pdf.
- 37 *Simplifying Trade Across UK Borders*, BIS, December 2009, p. 25, HMRC = 77% of the admin burden = £769 million.
- 38 UNECE and WCO, *Customs in the 21st century*, p. 6, para. 14, 'Globally networked Customs', www.wcoomd.org/files/1.%20Public%20files/PDFandDocuments/Annex%20II%20-%20Customs%20in%20the%2021st%20Century.pdf.
- 39 Aberdeen Group, *Supply chain visibility roadmap*, www.aberdeen.com/aberdeen-library/3609/RA_Visibility_BE_3609.aspx.
- 40 www.shipais.com/.
- 41 https://extranet.emsa.europa.eu/index.php?option=com_content&task=view&id=52&Itemid=91.

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Implications for Customs of climate change mitigation and adaptation policy options: a preliminary examination

Robert Ireland¹

Abstract

This paper offers a preliminary examination of the theoretical and practical implications of climate change mitigation and adaptation policy options on the role of Customs. The policy options covered are carbon import tariffs (especially border tax adjustments [BTAs]), trade facilitation of low-carbon energy technology (including the salience of the Harmonized Commodity Description and Coding System), enforcement against emission permit trading irregularities, customs clearance of humanitarian relief consignments, trade recovery, and Customs' responses to the potential of climate change driven international trade contraction. The paper contends that further research on such topics using positive and normative criteria will promote rational consideration, formulation and implementation of Customs-relevant climate policies. An interdisciplinary approach is used for the paper's sourcing and analysis, and expanded use of this methodology is encouraged to further enrich research on Customs matters.

1. Introduction

Climate change (or global warming) is widely recognised by most scientists as a potentially severe environmental threat to the planet Earth. In public policy circles, climate change policy options are generally divided into two types, *mitigation* (targeting the causes) and *adaptation* (targeting the impacts). Intriguingly, both mitigation and adaptation climate change policies have implications for Customs administrations. This paper provides an identification and introductory analysis of the essential customs subjects under a framework of climate change mitigation and adaptation policy options. Academic literature and other research that directly or indirectly relate to this multifaceted topic are surveyed.

Customs administrations may be called upon by their political masters to implement climate change mitigation policies in the form of border procedures or customs enforcement, such as carbon import tariffs (especially border tax adjustments [BTAs]), trade facilitation of low-carbon energy technology (especially the use of commodity classification), and enforcement against emission permit trading irregularities.

In addition, Customs administrations may be directed to deal with climate change impacts by developing adaptation policies, such as customs clearance of humanitarian relief consignments, trade recovery, and customs best practices to deal with the potential of international trade contraction caused by climate change welfare losses.

The paper begins by discussing the science of climate change, as the overarching inquiry (the implications for Customs) cannot be seen in isolation. The scientific consensus that human activities are contributing

to climate change and that there is a likelihood of mid- to long-term adverse consequences suggest the need for productive negotiations leading to implementation of robust action. National and international politics have, however, thus far deferred adequate policy responses to this global crisis. Moreover, the entanglement of climate change policy and pure free trade principles have surprisingly produced quarrels about which takes precedence.

2. Climate change science

While the details of climate change science are outside the scope of this paper, examining whether there is a need for national and global climate policies, and whether Customs has a participative role, require reflection on four key scientific inquiries. First, whether carbon dioxide (CO₂) concentrations are increasing in the atmosphere. Second, if yes, whether this trend is anthropogenic (attributable to human activities). Third, how sensitive the Earth's climate is to increased CO₂ atmospheric concentrations. And fourth, whether climate change poses serious implications for the Earth.

Most of what is known about climate change is summarised in scientific assessments, which synthesise the leading scientific knowledge to make it accessible to non-experts, especially policymakers (Dessler & Parson 2006, pp. 43-45).² As presented in scientific assessments based on empirical evidence and peer-reviewed literature, it is well established that climate change is occurring and is predominantly anthropogenic. Fossil fuel (especially coal and oil) burning and deforestation augment the concentration of CO₂ and other greenhouse gases (GHGs)³ in the atmosphere. The CO₂ in the atmosphere absorbs energy from the sun and emits less radiation back into space, thus warming the planet. In other words, atmospheric CO₂ functions as a heat-trapping blanket for the surface below. Indeed, without any atmospheric CO₂ the Earth would be so cold it would be uninhabitable for humans. Too much CO₂ would turn the Earth into a blazing inferno.

The story of anthropogenic climate change began with the emergence of the industrial revolution in the eighteenth century. Industrial processes brought forth fossil fuel combustion and deforestation; these activities cause CO₂ emissions which settle in the oceans, land sinks, and the atmosphere, and led some scientists to worry that it would upset the fragility of the Earth's climate balance. In 1957, oceanographer Roger Revelle and chemist Hans Suess published a paper where they famously wrote that 'within a few centuries we are returning to the atmosphere and oceans the concentrated organic carbon stored in sedimentary rocks over hundreds of millions of years' (Revelle & Suess 1957).

Revelle advocated for a data collection initiative to measure CO₂ concentration in the atmosphere and his employer, the Scripps Institution of Oceanography in California, hired chemist Charles Keeling for this project. Beginning in 1958 and over the coming decades, Keeling and his colleagues collected data on CO₂ concentration in the atmosphere from the Mauna Loa Observatory in Hawaii and other sites (Weart 2008, pp. 34-37).

The Scripps data, known as the *Keeling curve*, has become an icon of climate change, and shows conclusively an inexorable increase in atmospheric CO₂ concentration. Carbon parts per million (ppm) in the atmosphere have grown from **280** ppm in the pre-industrial era, to **315** ppm in 1958, and reached **392** ppm in April 2010 (IPCC 2007b; Scripps 2009; NOAA 2010). The current CO₂ ppm concentration is the highest in at least 650,000 years and possibly 20 million years; moreover, the average annual growth rate of global atmospheric CO₂ for 2000 to 2006 was 1.93 ppm, which is the highest growth rate since the Keeling curve measurements began (Canadell et al. 2007).

Concomitant to CO₂ atmospheric accumulation, the IPCC has concluded that 'warming of the climate system is unequivocal' (IPCC 2007a). Scientific analysis of the surface thermometer history, glacier retreat, rising sea levels, decline in sea ice, rise in sub-surface ocean temperatures, and climate proxies (analysis of climate variation on such physical items as tree rings, ice cores, corals, and ocean sediments) conclusively proves that the planet is warming, including a 0.4 °C to 0.8 °C average increase during

the twentieth century (Dessler & Parson 2006, pp. 48-59). Current estimates are that a doubling of CO₂ atmospheric concentration leads to an average warming of 2 °C to 4.5 °C which, depending on emissions trends and other factors, means the planet will be on average 2 °C to 7 °C warmer in 2095 than it was in the pre-industrial era (Archer & Rahmstorf 2010, pp. 8, 129-32). Climate scientists from the US National Aeronautics and Space Administration (NASA) recently reported their conclusion 'that global temperature continued to rise rapidly in the past decade' and projected that 2010 will likely become the hottest or second hottest year at least since temperature record keeping began in the 1880s (Hansen et al. 2010).

Because the Earth's climate system is sensitive to even modest temperature changes, these projections are foreboding for the impacts on nature and human civilization. The 2007 IPCC report suggests that climate change will likely cause harmful effects for planetary life, including but not limited to, increases in heavy precipitation events, rises in sea level which will cause massive flooding (including densely populated areas and seaports), drought-affected areas, coastal erosion, intensity and duration of heatwaves, risks of flora and fauna extinction, acidification of oceans that damages marine life, non-productivity of crops, and melting glaciers leading to reductions in water availability for human consumption (IPCC 2007a). Widespread starvation and forced migration, especially in developing countries, are a likely initial devastation that climate change will cause for humans. While there are uncertainties over climate change impacts, location, and timing, if CO₂ emissions continue at their current or an accelerated pace, it will likely cause acute planetary damage. More ominously, a threshold of irreversible climate change due to CO₂ emissions and amplifying feedback, such as the release of methane due to melting permafrost, has been reached (Solomon et al. 2009).

3. Customs and climate change

The Customs-climate change linkage is not intuitive. Customs regulates cross-border movements of goods and is traditionally associated with responsibilities such as revenue collection, anti-smuggling, supply chain security, trade facilitation, and gathering trade statistics. Customs administrations and the World Customs Organization (WCO), however, have forayed into environmental protection, especially the enforcement provisions of several international conventions.⁴ The WCO Secretary General, Kunio Mikuriya, chose environmental protection in 2009 as the theme of International Customs Day, and has stated that 'protection of the environment is often regarded as a policy matter of other ministries, but the customs community has the effective means to contribute to this increasingly important policy objective' (Mikuriya 2009).

Under the Montreal Protocol ozone depleting substances (ODS) requirements, Customs has gathered trade statistics, collected duties, and investigated smuggling (Benedick 1998, pp. 269-86; Andersen & Sarma 2002). To aid the collection and use of ODS import and export data, the WCO has several times adjusted its Harmonized Commodity Description and Coding System (Harmonized System or HS) by establishing specific commodity subheadings to give separate status to ODS covered by the Montreal Protocol.

The United States (US) Government, as part of its ODS policies, applied BTAs (a tariff on ODS imports) to complement ODS excise taxes (Hoerner 1998, pp. 11-12). The amount of the tax (on each pound of 'any ozone-depleting chemical sold or used by the manufacturer, producer, or importer' and 'any imported taxable product sold or used by the importer') is 'the base tax amount, multiplied by the ozone-depletion factor for such chemical' with 'the base tax amount with respect to any sale or use during any calendar year after 1995 shall be \$5.35 increased by 45 cents for each year after 1995' (26 U.S.C. § 4681). The BTA language from the law is the following: '[T]he amount of the tax imposed on any imported taxable product shall be the amount of tax which would have been imposed on the ozone-depleting chemicals used as materials in the manufacture or production of such product if such ozone-depleting chemicals had been sold in the United States on the date of the sale of such imported taxable product' (26 U.S.C. § 4681).

ODS, in addition to being detrimental to the ozone layer, are also powerful GHGs and contribute to climate change. Thus, while the principal reason for the US ODS tariff was protection of the ozone layer, in practice it was also an import tariff on carbon equivalent GHGs.

The Montreal Protocol's Article 4 obligated parties to impose import and export bans on controlled substances against non-parties, although this became moot because ratification was soon nearly universal (Brack 1996, pp. 44-48; World Bank 2008, p. 16). The chief US negotiator for the Montreal Protocol, Richard Benedick, has contended that the objective of these trade measures 'was to stimulate as many nations as possible to participate in the protocol, by preventing nonparticipating countries from enjoying competitive advantages and by discouraging the movement of CFC [chlorofluorocarbons] production facilities to such countries' (Benedick 1998, p. 91).

Climate policy is linked to international trade and there is a large volume of literature on the relationship.⁵ Moreover, two of the three broad categories of climate change policy responses widely discussed in the literature, *mitigation* and *adaptation*, have implications for Customs. Mitigation policies 'target the causes of climate change, seeking to reduce the emissions of GHGs that are causing the climate to change' while adaptation policies 'target the impacts of climate change, seeking to adjust human society to the changing climate and so reduce the resultant harms' (Dessler & Parson 2006, p. 90).⁶

4. Mitigation

A voluntary solution to CO₂ emissions abatement has proven to be insufficient and governmental intervention using carbon pricing mechanisms is necessary. The aim of signalling a carbon price that is real or implicit is to influence producers and consumers to emit less carbon and raise the competitiveness of low-carbon emitting industries. For political and economic reasons, policymakers appear generally to have decided that market-based regulatory instruments are preferable to command and control regulations. Market-based regulatory instruments include two broad types, *carbon taxes* and *tradable emission permit systems*.

A carbon tax draws from the work of economist Arthur Pigou who advocated taxing negative externalities by incorporating the appropriate social cost (Pigou 1920). In the climate change context this can entail taxing the CO₂ emissions from the burning of fossil fuels. Carbon tax design, like other taxes, derives from the chosen tax base and tax rate (Metcalf & Weisbach 2009, p. 501). A carbon tax, preferably, should be taxed upstream (on the producer or manufacturer rather than the consumer) to promote comprehensive coverage (Aldy, Ley & Parry 2008, p. 506).

Under tradable emission permit systems (generally known in the US as a cap-and-trade system), the government limits or caps the amount of allowable CO₂ emissions. Emitters then receive or buy allowances or credits; the total amount of credits is equivalent to the limit on emissions. Emitters who exceed their allotment must buy credits from emitters who use less than their allotment. The leading tradable emission permit system is the European Union's *Emission Trading Scheme* (EU ETS) (Dessler & Parson 2006, pp. 108-09).

4.1 Carbon import tariffs

Carbon import tariffs are a climate mitigation policy where Customs is frequently the administering agency. Theoretically, there are two general types of carbon import tariffs: *product taxes* and *process taxes*. Product taxes focus on goods such as fossil fuels or GHGs with industrial uses, and this is relatively non-controversial from an international trade perspective because they appear to be in compliance with World Trade Organization (WTO) rules on national treatment and non-discrimination. In addition, they are relatively simple for Customs to administer: Customs can apply a *specific* (for instance, 100 dollars per metric tonne of carbon in the good) or an *ad valorem* (for instance, 5 per cent

of the good's value) tariff. Current examples include Denmark, which taxes imports of the industrial GHGs of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) and is based on the Danish CO₂ tax correlated with the Global Warming Potential (GWP) up to a maximum of DKK 400/kg (Danish Ministry of the Environment 2005, p. 108). Norway also has an import tax on HFCs and PFCs (Norwegian Ministry of the Environment 2009, p. 10). Switzerland has a carbon tariff on some fossil fuels used for energy purposes at 36 francs per tonne of CO₂ (Swiss Customs 2010). More countries will likely implement product tax carbon import tariffs in the future. As Customs would generally be the responsible national agency, it is a subject ripe for focused research on the practicalities of administering these taxes.

More controversially, some policymakers are proposing process taxes, which are import tariffs on the *embodied carbon* (which is also known as *virtual carbon* or *embedded carbon*) of carbon-intensive goods. Embodied carbon, which relates to the process of producing a product rather than the product itself, has been defined as 'carbon dioxide emitted at all stages of a good's manufacturing process, from the mining of raw materials through the distribution process, to the final product provided to the consumer' (Kejun, Cosbey & Murphy 2008). Goods such as cement, paper, chemicals, glass, steel, industrial ceramics, iron, and aluminium that produce substantial carbon dioxide during their production process would be the main targets of such a tax.

This proposal is being made because implementation of a domestic carbon tax or tradable emission permit systems raises fears in some quarters of *carbon leakage to pollution havens* if emitters in other countries do not come under comparable carbon pricing regimes. The concern is that if Country A has raised its carbon prices significantly higher than Country B, there will be business and carbon migration from Country A to Country B, and aggregate global CO₂ emissions will not decrease. Moreover, businesses in Country A may claim they are at a competitive disadvantage to similar businesses in Country B.

To assuage concerns about carbon leakage some policymakers are thus advocating imposition of levies on the embodied carbon in the import or requiring importers to buy emission permits (Zhang 2010, p. 1) coupled possibly with rebates for exports. Because these actions could face WTO adjudication, proponents frequently cast them as BTAs, which could consist of '(i) the imposition of a tax borne by similar domestic products (that is, BTA on imports); and/or (ii) the refund of domestic taxes when the products are exported (that is, BTA on exports)' (WTO & UNEP 2009, p. 100). The literature on embodied carbon BTAs is vast and emphasises WTO law, economics, and whether they might spark a trade war. There is also research that, as a subsidiary matter, touches on design and administration.

Conventional BTAs have a long history. Economist David Ricardo provided the intellectual origins in 1824:

In the degree then in which [domestic] taxes raise the price of corn, a duty should be imposed on its importation...and a drawback of the same amount should be allowed on the exportation of corn. By the means of this duty and this drawback, the trade would be placed on the same footing as if it had never been taxed... (Ricardo 1824, cited in Hufbauer 1996, p. 21).

Even before Ricardo's commentary, the US in the late eighteenth century used BTAs to complement its excise tax on distilled spirits (Hufbauer 1996, p. 37). EU countries have used BTAs to complement excise taxes on alcohol and tobacco (Biermann & Brohm 2005, pp. 291-92) and for value added taxes (Hufbauer 1996, p. 21). In 1970, the General Agreement on Tariffs and Trade (GATT) formally defined BTAs in paragraph 4 of the GATT Working Party on Border Tax Adjustments (GATT 1970).

The US has applied *environmental BTAs* on at least two occasions. BTAs were imposed on imports of specified chemicals and other products to balance domestic excise taxes under the US Superfund Amendments and Reauthorization Act of 1986. As mentioned earlier, BTAs were also imposed to complement a US excise tax on ozone depleting commodities that took effect in 1990. The GATT approved the use of BTAs for Superfund and was never asked to judge the use of BTAs for the ODS excise tax (Hoerner 1998, pp. 8-15).

4.2 The law, economics, and politics of embodied carbon BTAs

Because detailed analysis on the WTO legality of embodied carbon BTAs is beyond the scope of this paper,⁷ only a short summary is provided here. Despite the WTO imprimatur on conventional BTAs and the history of BTAs functioning in practice, there is disagreement among legal experts on whether as embodied carbon BTAs they would be deemed legal under WTO law if litigated. The analysis is extremely complex and entails scrutiny of, among other things, whether a WTO dispute settlement body would distinguish whether the tariff is indeed targeting a *production process* (for example, the carbon emitted during the manufacturing of cement) and if so, whether this would be permissible. Moreover, there is the question of whether national and foreign cement are *like* products, if they were manufactured with different levels of environmental efficiency (Pauwelyn 2007b; WTO & UNEP 2009, pp. 106-07).

The alternative to pleading that embodied carbon BTAs are legal under GATT Articles I and III would be to claim they are allowable under one or two of the general exceptions in GATT Article XX, namely measures ‘necessary to protect human, animal or plant life or health’ and ‘relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption’. Following this, the exception must survive several tests in the GATT Article XX Chapeau, namely prohibition of measures that would constitute ‘arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade’. Litigation related to these general exceptions in the context of environmental measures has occurred in several cases (*US-Gasoline*; *Brazil-Retreaded Tyres*; and *US-Shrimp*) with uncertain implications for embodied carbon BTAs (WTO & UNEP 2009, pp. 107-10).

What may emerge, regardless of litigation over embodied carbon BTAs and decisions within the WTO arena, are expanded clashes related to climate change and trade liberalisation, and what the proper venue is for sorting out this conflict. As previously noted, under the Montreal Protocol, imports from and exports to non-parties of CFCs and other ODS were banned. Whether this would conflict with the GATT is in dispute but it was never litigated, perhaps because Montreal Protocol ratification quickly became nearly universal (Benedick 1998, p. 91; Brack 2000, p. 18).

Economists disagree on whether embodied carbon BTAs would be efficient and effective. For instance, McKibbin and Wilcoxon (2008) ‘conclude that the benefits produced by border adjustments would be too small to justify their administrative complexity or their deleterious effects on international trade’. Economist Paul Krugman, however, has written that ‘if you only impose restrictions on GHG emissions from domestic sources, you give consumers no incentive to avoid purchasing products that cause emissions in other countries; as a result, you have an inefficient outcome even from a world point of view. So border adjustments here are entirely legitimate in terms of basic economics’ (Krugman 2009).

Realpolitik could trump the legal and economic debates as policymakers may use embodied carbon BTAs as a political negotiating tactic on national and international levels. The US appears unable to garner the support for passage of climate legislation without them. Similarly, in the legislative experience targeting ODS, Hoerner (1998, p. 15) asserted that ‘the US Congress would never have enacted the ODC [ozone-depleting chemicals] tax without BTAs’. Moreover, inserting the possibility of such measures into proposed legislation, could inoculate the assertions of potential taxpayers who lobby against the installation of a carbon pricing mechanism on the basis of putative harm to competitiveness. Export-focused countries may be pressured by their exporters to implement policies that price carbon if BTAs are imposed by countries with business competitors. Finally, the identity of the potential applier and target of embodied carbon BTAs is not fixed in perpetuity as this could shift depending on who has considered or implemented such policies and who has not.

4.3 Administering embodied carbon BTAs

If some governments decide to implement these BTAs, Customs will be obligated to impose them. There is disagreement on whether it would be impossible or merely difficult for Customs to administer them. The *Economist* (2008) has opined that ‘a carbon tariff... would be hard to implement. Customs officials would either have to assess the emissions embedded in imports, an impossibly complicated task, or make arbitrary assumptions, a recipe for a trade war’. The reality is, however, that administering embodied carbon BTAs would be feasible. Several published research papers offer possible designs for calculating and administering these BTAs.⁸

Embodied carbon BTA procedures would be simplified if the exporter supplied the necessary information to the Customs administration of the import country. Similar to practices in assessing rules of origin, the exporter could provide a certificate of embodied carbon, although this would require some sort of verification. To influence cooperation from traders, Houser et al. (2008, p. 35) have suggested a trusted importer program where the Customs administration would evaluate importers individually for the carbon intensity of their product’s production process. It can be assumed that since the importers would not have this information because they did not participate in the production process, they would need to get it from the exporters or manufacturers. This proposal has similarities to Customs Authorised Economic Operator (AEO) programs established for supply chain security policies.

If the exporter and importer are unable or unwilling to provide the required information, then the Customs administration imposing the BTA would need to make the calculation. In targeting embodied carbon, two general approaches in the literature include ‘*top-down methods* using input-output analysis have often been applied to estimate embodied energy, CO₂ emissions, pollutants and land appropriation from international trade activities’ and ‘the *bottom-up approach* calculates embodied carbon by examining the production processes of specific products’ (Kejun, Cosbey & Murphy 2008). Because of its broad nature, the top-down approach (see, for example, Wyckoff & Roop 1994; Atkinson et al. 2010) does not appear at first blush to be conducive to the customs need to calculate embodied carbon of individual commodities (Kejun, Cosbey & Murphy 2008).

Measuring production processes of individual commodities is probably more realistic for customs usage. Key factors in calculating the carbon emitted during the import’s production process include process, feedstock (what raw material was used to power the manufacturing process), the energy source, and the technical efficiency of the equipment (Houser et al. 2008, pp. 33-34). The *predominant method of production* (PMP) (Zhang 1998, 2010; Biermann & Brohm 2005, pp. 298-99; Pauwelyn 2007a, p. 42) and the *best available technology* (BAT) (Ismer & Neuhoff 2004, 2007, pp. 137-64; Godard 2007, pp. 14-38) are two proposed methods.

PMP means that the country of import would apply the border adjustment by assessing the carbon embedded in an import based on their domestic production processes (Zhang 2010, p. 19). BAT means that the country of import would apply the border adjustment by assessing the carbon embedded in an import based on what the carbon emissions would be if the best available technology was used (for instance, if cement can be produced using natural gas or coal, the levy would be calculated based on the production process where natural gas was used) (Ismer & Neuhoff 2007, pp. 137-64). The efficacy of BAT is perhaps tarnished by the observation that it may introduce a disincentive by using the most efficient technology as its measurement instrument when what the policy should be targeting is what was actually used, such as the least efficient technology.

Gros and Egenhofer (2009, p. 74) have suggested using ISO 14067, which is a potential standard on quantifying the carbon footprint of goods and services. ISO 14067 is currently under development by the International Standards Organization and projected for rollout in 2012.

To simplify customs procedures, consideration could be given to the breadth of commodity coverage and which countries would be subject to the BTA. For instance, the BTA could be applied to a limited number of products that will make a difference to carbon abatement (Biermann & Brohm 2005, p. 298; Saddler, Muller & Cuevas 2006, p. 42). Related to targeting specific countries, climate change mitigation would be aided (reducing emissions by tiny economies will have no impact on CO₂ atmospheric concentration but lower emissions from large economies would have an impact), but this might run foul of WTO rules on non-discrimination. In addition, rules of origin add further complexity in determining whether one or more countries contributed to the production of the imports.

4.4 Some reflections on embodied carbon BTAs

Customs procedures related to embodied carbon BTAs would be feasible, albeit complex. This is not a new dynamic for Customs. Conventional customs procedures, while strengthened by risk analysis, automation and other modern analytical tools, must deal with the challenges of assessing commodity classification, valuation, and rules of origin, especially diverse public policy mandates, immense volumes of cargo and passengers, pressure for fast clearance of goods, deficiencies in available and accurate information, and limitations in agency capacity.

Similarly, improvements have evolved in achieving national policy objectives on anti-dumping. There is no doubt about the difficulty of calculating dumping – the home market sales price minus the export sales price (Jackson 1997, p. 251) – as it must rely on best available information and sophisticated calculations, such as home market prices, *normal value* (relates to third markets), and *constructed price* (constructed cost plus reasonable profit) (Jackson 1997, p. 251). While not easy, best efforts can be made in anti-dumping policy using expertise and rules that have improved over time, and that reduce the potential for arbitrariness.

Because WCO policy positions require Member consensus, the WCO is unlikely to take a formal position on taxing the embodied carbon of imports; some countries reject them while others have pockets of support. In addition, international negotiations on such measures will take place in other forums, especially the United Nations Framework Convention on Climate Change (UNFCCC) and the WTO. A more relevant question for Customs is whether the WCO or other customs experts should or will conduct further research on the technical methods of administering border measures targeting embodied carbon before it becomes an obligation. Some might assert that such research would be a concession that these measures are inevitable. Conversely, since such a policy would be a mandate that would not be of its choosing, advance preparation by Customs would perhaps be prudent.

Some policymakers have advocated the imposition of embodied carbon BTAs as part of their carbon pricing policies. The leaders of France and Italy, in an April 2010 letter to the European Commission's president, wrote 'it would be unacceptable if the efforts we have made within the EU...were compromised by carbon leakage caused by the lack or inadequacy of action in certain third countries' (as quoted in *Earth Times* 2010). To counter carbon leakage, the French Government has proposed an EU *Mécanisme d'inclusion carbone* (*carbon inclusion mechanism*), which would be a requirement that importers acquire CO₂ allowances (EuroActiv 2010a, 2010b). In the US, although several cap-and-trade bills that included embodied carbon BTAs were introduced by legislators in the 111th US Congress, efforts were eventually abandoned to pass a comprehensive US carbon pricing law in 2010.

4.5 Trade facilitation and commodity classification of low-carbon energy technology

Reducing tariff and non-tariff barriers to trade (NTBs)⁹ can foster expanded use of low-carbon energy technology (such as wind, solar, efficient lighting, and hydropower).¹⁰ The seminal Stern Report states that 'the reduction of tariff and non-tariff barriers for low-carbon goods and services, including within the Doha Development Round of international trade negotiations,¹¹ could provide further opportunities

to accelerate the diffusion of key [low-carbon] technologies' (Stern 2006, p. xxv). The World Bank has estimated that the elimination of tariff and NTBs would lead to an average increase of 13.5 per cent in trade of clean coal technology, wind and solar generation, and efficient lighting technology (World Bank 2008, p. 53).

Pursuing the Stern Report and World Bank recommendations will not be easy. Import tariffs, especially in the developing world, are substantial for low-carbon energy technologies (Steenblik 2005b, p. 5; Brewer 2008, pp. 10-12). Difficulties in customs classification of environmental goods is another obstacle to overcome. In addition, border regulatory delays and corruption inhibit trade, including trade in environmental goods, and for Customs this could suggest the need for 'green' green lanes.

Efficient and precise classification of environmental goods is crucial for trade facilitation of low-carbon energy technologies. The most obvious mechanism for this is the Harmonized System, which is the international nomenclature for goods passing through Customs and is managed by the WCO. The overall objective of the HS is uniformity in the classification of goods. The HS currently consists of approximately 5,000 commodity groups organised in 96 chapters and each item is identified with a six digit code. For example, related to solar power, photovoltaic cells, modules, and panels are classified in HS subheading 8541.40; photovoltaic system controllers (to control the functioning of the photovoltaic system) come under HS subheading 8537.10; and HS subheading 8507.20 includes, among other things, certain electric accumulators used in the storage of electricity obtained via solar cells, panels, or modules. Countries that have ratified the HS Convention are required to use the six digit nomenclature but are allowed to add additional digits for added specificity (this generally means expansion to eight or ten digits). Indeed, several countries and regional groupings such as the Association of Southeast Asian Nations (ASEAN) have expanded HS nomenclature, including in some cases for renewable energies (World Bank 2008, p. 51). The HS is generally amended every four to six years to keep up with changes in commodities; the most recent amendment was in 2007 and the next one is scheduled for 2012.

The HS's six digits arguably may be insufficient to precisely describe low-carbon energy technology because they might categorise together low-carbon and non low-carbon technology goods under the same HS code (World Bank 2008, pp. 50, 101). Theoretically, if all goods under a specific HS code were granted a lower tariff rate because some were considered to be low-carbon, some goods that do not contribute to lower emissions might benefit and Customs might collect less duty (World Bank 2008, p. 52). Products that are dual-use add further complications as some are contributive, neutral, or detrimental to climate change mitigation depending on their application (Steenblik 2005a, pp. 7-10; World Bank 2008, p. 77).

Options for using the HS to help facilitate trade in low-carbon energy technologies would be difficult in practice. Creating a separate HS chapter for low-carbon energy technologies would be one possibility. As was discussed previously, more precision was brought to the classification of ozone depleting substances in order to successfully reduce their emissions. Another method would be extending the number of digits of HS Code nomenclature, but the hurdles for doing so are immense; for instance, there would have to be consensus amongst all WTO Members in support of the expansion (Steenblik 2005a, p. 16; World Bank 2008, p. 90). As well, there could be relevant lessons to be drawn from the WTO's 1996 Information Technology Agreement (ITA), which aims to increase the amount of trade in IT goods by examining HS classification divergences and eliminating tariffs (WTO 2010).

Enforcement of intellectual property rights (IPR) of low-carbon technology transfer under the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) is another climate policy matter with customs participation. IPR enforcement may impact low-carbon technology's utility as a mitigation tool. Too strong IPR enforcement cuts off transfer of these needed technologies to the developing world. Too lax IPR enforcement will stifle incentives for innovation. Thus, public policy here will need to strive for a balanced approach (World Bank 2008, p. 14; Giddens 2009, p. 139; Meyer-Ohledorf & Gerstetter 2009, pp. 23-26).

4.6 ETS enforcement

Promoting compliance (and effective enforcement when necessary) with tradable emission permit systems or carbon taxes is essential to limit carbon emissions. While relatively simple carbon pricing mechanisms are the preferred approach to reducing evasion or fraud, enforcement by the government will be required. The EU ETS has been the victim of a VAT fraud called ‘missing trader intra-community’ (MTIC) fraud (Ainsworth 2009). The scam entails criminals importing carbon credits tax free, selling them to buyers while charging a VAT, and keeping the VAT rather than giving it to the tax or customs authorities. The MTIC fraud that has received the most attention is called ‘carousel fraud’ which repeats as long as possible the import and export of the same carbon credits (Ainsworth 2009, p. 4). In 2009 the United Kingdom’s Her Majesty’s Revenue and Customs raided businesses in relation to a suspected 38 million pound carbon credit VAT fraud (*Guardian* 2009) and the Belgian government charged three Britons with failing to pay VAT worth 3 million Euros on carbon credit transactions (*Guardian* 2010). Europol estimates at least 5 billion Euros in revenue losses to government coffers (Europol 2009) as a result of MTIC fraud.

5. Adaptation

In formulating their adaptation policies, governments should consider the potential implications of climate change (in addition, of course, to catastrophes not caused by global warming, such as earthquakes) on their customs and border management responsibilities. This is especially true because there has been an upward growth in disasters in recent decades (UNEP/GRID-Arendal 2010), and this trend can be expected to continue because of climate change. In particular, key Customs-climate change adaptation subjects include clearance of humanitarian aid shipments, trade recovery, and advance planning for conceivable international trade contraction.

5.1 Clearance of humanitarian relief consignments and trade recovery

During humanitarian assistance or relief¹² response actions, Customs can be an obstacle or facilitator of rapid movement of relief consignments. Although data is lacking on the scale of the problem, there have been alleged incidents where Customs delayed the clearance of relief consignments by demanding payment of customs duties or for other reasons (Fisher 2007, pp. 357-58). Because of the aforementioned upward trend in disasters, Customs will more frequently deal with expediting clearance of relief consignments in the future. This will especially be true for landlocked developing countries, where customs transit is of significant importance.

Several WCO instruments provide guidance for customs controls in such situations, including the 1970 *WCO Recommendation of the Customs Co-Operation Council to expedite the forwarding of relief consignments in the event of disaster*, the *WCO revised Kyoto Convention* (Specific Annex J.5), and the *WCO Istanbul Convention on Temporary Importation* (Annex B.9). In particular, these instruments provide detailed recommendations for simplified and expedited customs procedures, and the waiver of import duties in the clearance of relief consignments. In June 2010, the WCO established an Ad Hoc Working Group for Natural Disaster Relief to study the topic further and develop recommendations.

If climate change produces cataclysmic damage, such as flooding of coastal areas and major seaports, customshouses may be temporarily non-operational or require relocation. Moreover, trade may come to a standstill at border posts. While developed in the mindset of responding to armed attacks, the *WCO Trade Recovery Guidelines* adopted in June 2009 (WCO 2009b) could be applicable to climate change adaptation. The Government of Australia and the Asia-Pacific Economic Cooperation (APEC) have also developed trade recovery strategies (Australian Customs Service 2008; APEC 2007).

5.2 Contraction of international trade

Climate change could lead to contraction of international trade and thus could impact Customs, including changing roles and reduced revenue collection. Although not due to anthropogenic climate change, two recent events could be a foreshadowing of the types of problems that could ensue for international trade from climate change. The eruption in 2010 of the Icelandic volcano Eyjafjallajökull briefly caused chaos for, among other things, air cargo, and this had ripple effects for overall international trade transport. More significantly, the global financial crisis of 2008 included a plunge in international trade volumes.

Related to the economic crisis, the WCO researched the implications for Customs and submitted to the G20 recommendations on how Customs could contribute to international trade stabilisation. Declining imports meant Customs administrations in developing countries suffered a reduction in the collection of the customs duties vital to fund governmental operations. Moreover, there was a deteriorating market in the commerce lubricant of trade finance. The research found that some Customs administrations took positive action in response to the crisis by putting in place deferred duty payment plans; looser repayment plans for traders who experienced temporary financial setbacks; faster customs duty drawback; and showing greater flexibility in respect of security (guarantee) requirements. On the negative side, some governments were slow to adjust revenue targets despite the falling trade, and some Customs administrations were obliged to increase physical inspection of cargo (WCO 2009a). These findings and additional research could be instructive the next time there are significant reductions in international trade volumes.

6. Conclusions

This paper has presented a preliminary overview of the implications for Customs of climate change mitigation and adaptation policy options. It has provided a survey of academic literature and other research linked to the Customs-climate change nexus, and has endeavoured to build a foundation for further research and analysis. Analytical frameworks and research from established disciplines and knowledge branches have fuelled this paper's development. Improved understanding of customs matters can be greatly enhanced when the principles, theories, models, and empirical evidence of other disciplines are studied and applied in parallel.

To deal tangibly and expeditiously with the accelerating climate crisis, national and international policies must apply vigorous mitigation actions that raise the price of carbon to diminish carbon emissions and strengthen the competitiveness of low-carbon energy technology. There is an obvious role in climate mitigation policy for Customs as it can function as a lever to adjust trade dynamics that affect climate change. Finally, because some climate change consequences are inevitable, especially for most-at-risk developing countries, there is a need for anticipatory climate adaptation planning by government, including Customs.

References

- Ainsworth, RT 2009, 'The morphing of MTIC fraud: VAT fraud infects tradable CO₂ permits', *Boston University School of Law*, Working Paper No. 09-35.
- Aldy, JE, Ley, E & Parry, I 2008, 'A tax-based approach to slowing global climate change', *National Tax Journal*, vol. LXI, no. 3, pp. 493-517.
- Andersen, SO & Sarma, KM 2002, 'Protecting the ozone layer: the United Nations history', UNEP, London.
- APEC (Asia-Pacific Economic Cooperation) 2007, *APEC trade recovery programme study report*, 2007/SOM3/CTTF/003, APEC Counter Terrorism Task Force Meeting, Cairns, Australia, 30 June-1 July 2007.

- Archer, D & Rahmstorf, S 2010, *The climate crisis: an introductory guide to climate change*, Cambridge University Press, Cambridge.
- Atkinson, G, Hamilton, K, Ruta, G & van der Mensbrugge, D 2010, 'Trade in "Virtual Carbon" – empirical results and implications for policy', The World Bank, Washington, DC.
- Australian Customs Service 2008, 'Draft Business resumption concept paper', ACS, Canberra, ACT.
- Benedick, RE 1998, *Ozone diplomacy*, Harvard University Press, Cambridge, MA.
- Biermann, F & Brohm, R 2005, 'Implementing the Kyoto Protocol without the USA: the strategic role of energy tax adjustments at the border', *Climate Policy* 4, pp. 289-302.
- Brack, D 1996, *International trade and the Montreal protocol*, Royal Institute of International Affairs and Earthscan Publications, London.
- Brack, D, with Grubb, M & Windram, C 2000, *International trade and climate change policies*, Royal Institute of International Affairs and Earthscan Publications, London.
- Brainard, L & Sorkin, I 2009, *Climate change, trade and competitiveness: is a collision inevitable?*, The Brookings Institute, Washington, DC.
- Brewer, TL 2008, 'U.S. climate change policy and international trade policy intersections: issues needing innovation for a rapidly expanding agenda', Paper prepared for a Seminar of the Center for Business and Public Policy, Georgetown University, 12 February.
- Canadell, JG, Le Quééré, C, Raupach, MR, Field, CB, Buitenhuis, ET, Ciais, P, Conway, TJ, Gillett, NP, Houghton, RA & Marland, G 2007, 'Contributions to accelerating atmospheric CO₂ growth from economic activity, carbon intensity, and efficiency of natural sinks,' *Proc Natl Acad Sci USA*, vol. 104, no. 47, pp. 18866-70.
- Charnovitz, S 2003, 'Trade and climate: potential conflicts and synergies', in *Beyond Kyoto: advancing the international effort against climate change*, Pew Center on Global Climate Change, Arlington, VA, pp. 141-70, www.climate-tech-policy.org/wp/wp-content/uploads/2003/BeyondKyoto_Dec03.pdf.
- Cosbey, A (ed.) 2008, 'Trade and climate change: issues and perspectives', International Centre for Trade and Sustainable Development, Final Report and Synthesis of Discussions, Trade and Climate Change Seminar, Copenhagen, 18-20 June.
- Danish Ministry of the Environment 2005, *Denmark's Fourth National Communication on Climate Change under the United Nations Framework Convention on Climate Change*.
- Demaret, P & Stewardson, R 1994, 'Border tax adjustments under GATT and EC law and general implications for environmental taxes', *Journal of World Trade*, vol. 28, no. 4, pp. 5-65.
- Dessler, AE & Parson, EA 2006, *The science and politics of global climate change*, Cambridge University Press, Cambridge.
- The Economist* 2008, 'Emissions suspicions', 19 July, p. 88.
- Eichenberg, MB 2010, 'Greenhouse gas regulation and border tax adjustments: the carrot and the stick', *Golden Gate Univ. Environmental Law J*, vol. 3, pp. 283-364.
- Elliott, J, Foster, I, Kortum, S, Munson, T, Cervantes, FP & Weisbach, D 2010, 'Trade and carbon taxes', *Argonne National Laboratory*, Argonne, IL.
- EuroActiv 2010a, 'France details plans for carbon inclusion mechanism', 19 May, www.euractiv.com/en/climate-environment/france-details-plans-for-carbon-inclusion-mechanism-news-494220.
- EuroActiv 2010b, 'Objet: Mécanisme d'inclusion carbone,' Memorandum submitted by French Government.
- Europol 2009, 'Carbon Credit fraud causes more than 5 billion euros damage for European Taxpayer,' 9 December, The Hague.

- Fisher, David 2007, 'Domestic regulation of international humanitarian relief in disasters and armed conflict: a comparative analysis,' *International Review of the Red Cross*, vol. 89, no. 866, pp. 345-72.
- Frankel, JA 2009, 'Addressing the leakage/competitiveness issue in climate change policy proposals', in L Brainard & I Sorkin, *Climate change, trade and competitiveness: is a collision inevitable?*, ch. 3, The Brookings Institute, Washington, DC.
- GATT 1970, Working Party Report on Border Tax Adjustments, GATT Doc. L/3464, adopted 2 December 1970.
- Giddens, A 2009, *The politics of climate change*, Polity Press, Cambridge.
- Godard, O 2007, 'Unilateral European post-Kyoto climate policy and economic adjustment at EU borders', *École Polytechnique, Paris, Cahier no. DDX-07-15*.
- Gros, D & Egenhofer, C 2009, 'Climate change and trade: taxing carbon at the border?', *Centre for European Policy Studies*, Brussels.
- The Guardian* 2009, 'Brussels targets carbon trading fraud ahead of Copenhagen summit', reporter Ashley Seager, 29 September, www.guardian.co.uk/business/2009/sep/29/carbon-trading-carousel-fraud-eu.
- The Guardian* 2010, 'Three Britons charged over €3m carbon-trading "carousel fraud"', reporter Phillip Inman, 11 January, www.guardian.co.uk/business/2010/jan/11/eu-carbon-trading-carousel-fraud.
- Hansen, J, Ruedy, R, Sato, M & Lo, K 2010, *Global surface temperature change*, Working Paper, NASA Goddard Institute for Space Studies, New York, NY.
- Hoerner, JA 1998, 'The role of border tax adjustments in environmental taxation: theory and US experience', *Center for a Sustainable Economy*, Washington, DC.
- Houser, T, Bradley, R, Childs, B, Werksman, J & Heilmayr, R 2008, 'Leveling the carbon playing field', *Peterson Institute for International Economics*, World Resources Institute, Washington, DC.
- Hufbauer, GC 1993, 'The evolution of border tax adjustments', *Center for Strategic Tax Reform*, Washington, DC.
- Hufbauer, GC 1996, *Fundamental tax reform and border tax adjustments*, Institute for International Economics, Washington, DC.
- Hufbauer, GC, Charnovitz, S & Kim, J 2009, *Global warming and the world trading system*, Peterson Institute for International Economics, Washington, DC.
- IPCC 2007a, 'Summary for policymakers', Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge.
- IPCC 2007b, 'Synthesis report', Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge.
- Ismer, R & Neuhoff, K 2004, 'Border tax adjustments: a feasible way to address nonparticipation in emission trading', Cambridge Working Papers in Economics CWPE 0409, CMI Working Paper 36, The Cambridge MIT Institute, Cambridge, MA.
- Ismer, R & Neuhoff, K 2007, 'Border tax adjustment: a feasible way to support stringent emission trading', *Eur J Law Econ*, vol. 24, pp. 137-64.
- Jackson, JH 1997, *The world trading system: law and policy of international economic relations*, MIT Press, Cambridge, MA.
- Kejun, J, Cosby, A & Murphy, D 2008, 'Embodied carbon in traded goods', International Institute for Sustainable Development, Background paper for Trade and Climate Change Seminar, Copenhagen, 18-20 June.
- Krugman, P 2009, 'Climate, trade, Obama', *New York Times*, 29 June, <http://krugman.blogs.nytimes.com/2009/06/29/climate-trade-obama/>.

- Krugman, P 2010, 'Building a green economy', *New York Times*, 5 April, p. MM34.
- Mattoo, A, Subramanian, A, van der Mensbrugge, D & He, J 2009, 'Reconciling climate change and trade policy', Working Paper, *Peterson Institute for International Economics*, Washington, DC.
- McKibbin, WJ & Wilcoxon, PJ 2008, 'The economic and environmental effects of border tax adjustments for climate policy', paper prepared for the Brookings Conference on *Climate Change, Trade, and Competitiveness: Is a Collision Inevitable?*, 9 June, Washington, DC.
- Metcalf, GE & Weisbach, D 2009, 'The design of a carbon tax,' *Harvard Environmental Law Review*, vol. 33, no. 2, pp. 499-556.
- Meyer-Ohlendorf, N & Gerstetter, C 2009, 'Trade and climate change: triggers or barriers for climate friendly technology transfer and development?', Friedrich-Ebert Stiftung, Berlin.
- Mikuriya, K 2009, speech delivered by Kunio Mikuriya, WCO Secretary General, 9 January, Brussels.
- Monjon, S & Quirion, P 2008, 'Competitive distortions and leakage in a world of different carbon prices: trade, competitiveness and employment challenges when meeting the post-2012 climate commitments in the European Union', *European Parliament Policy Department, Economic and Scientific Policy*, IP/A/CLIM/ST/2008-03 07 08 & 14.
- NOAA (US National Oceanic & Atmospheric Administration) 2010, Earth System Research Laboratory, Global Monitoring Division, Trends on Atmospheric Carbon Dioxide, viewed 7 July 2010, www.esrl.noaa.gov/gmd/ccgg/trends/.
- Nordhaus, WD 2006, 'Alternative mechanisms to control global warming', *American Economic Review*, vol. 96, no. 2, pp. 31-4.
- Norwegian Ministry of the Environment 2009, *Norway's Fifth National Communication under the Framework Convention on Climate Change: status report as of December 2009*, http://unfccc.int/resource/docs/natc/nor_nc5.pdf.
- OECD 2006, *The political economy of environmentally related taxes*, OECD, Paris.
- Pauwelyn, J 2007a, 'US Federal climate policy and competitiveness concerns: the limits and options of international trade law', Working Paper 07-02, Nicholas Institute for Environmental Policy Solutions, Duke University, Durham, NC.
- Pauwelyn, J 2007b, 'A carbon levy on imports to fight climate change?', *Telos*, 11 September, www.telos-eu.com/en/article/a_carbon_levy_on_imports_to_fight_climate_change.
- Pigou, AC 1920, *The economics of welfare*, Macmillan, London.
- Revelle, R & Suess, HE 1957, 'Carbon dioxide exchange between atmosphere and ocean and the question of an increase of atmospheric CO₂ during the past decades', *Tellus*, vol. 9, pp. 18-27.
- Ricardo, D 1824, *Works and correspondence of David Ricardo*, Cambridge University Press, London.
- Saddler, H, Muller, F & Cuevas, C 2006, 'Competitiveness and carbon pricing: border adjustments for greenhouse policies', Discussion Paper No. 86, *The Australia Institute*, Canberra, ACT.
- Scripps Institution of Oceanography 2009, Data from Mauna Loa Observatory, Hawaii, viewed 7 July 2010, <http://scrippsco2.ucsd.edu/data/mlo.html>.
- Solomon, S, Plattner, G-K, Knutti, R & Friedlingstein, P 2009, 'Irreversible climate change due to carbon dioxide emissions', *Proc Natl Acad Sci USA*, vol. 106, pp. 1704-09.
- Steenblik, R 2005a, 'Liberalising trade in "environmental goods": some practical considerations', OECD Trade and Environment Working Paper No. 2005-05, OECD, Paris.
- Steenblik, R 2005b, 'Liberalisation of trade in renewable-energy products and associated goods: charcoal, solar photovoltaic systems, and wind pumps and turbines', OECD Trade and Environment Working Paper No. 2005-07, OECD, Paris.
- Stern, N 2006, *Stern review on the economics of climate change*, HM Treasury, London.

- Sugathan, M 2008, 'Climate change benefits from liberalisation of environmental goods and services', in A Cosby (ed.), *Trade and climate change: issues and perspectives*, International Centre for Trade and Sustainable Development, Final Report and Synthesis of Discussions, Trade and Climate Change Seminar, Copenhagen, 18-20 June 2008.
- Swiss Customs 2010, 'Taxe sur le CO₂', viewed 7 July 2010, www.ezv.admin.ch/zollinfo_firmen/steuern_abgaben/00379/02315/index.html?lang=fr.
- UN OCHA (United Nations Office for the Coordination of Humanitarian Affairs) 2003, *Glossary of humanitarian terms in relation to the protection of civilians in armed conflict*, United Nations, New York, NY, <http://ocha-gwapps1.unog.ch/w/lib.nsf/db900SID/KKEE-6DMRTJ?OpenDocument>.
- UNEP (United Nations Environment Programme) 2009, *Climate and trade policies in a post-2012 world*, Nairobi, Kenya.
- UNEP/GRID-Arendal 2010, 'Trends in natural disasters,' *UNEP/GRID-Arendal Maps and Graphics Library*, viewed 15 June 2010, <http://maps.grida.no/go/graphic/trends-in-natural-disasters>.
- 26 U.S.C. § 4681, (U.S. Code, Internal Revenue Code).
- WCO 1970, *Recommendation of the Customs Co-Operation Council to expedite the forwarding of relief consignments in the event of disasters*, 8 June 1970.
- WCO 1990, *Recommendation of the Customs Co-Operation Council on the insertion in National Statistical Nomenclatures of Subheadings to Facilitate the Collection and Comparison of Data on the International Movement of Substances Controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer*, 26 June 1990.
- WCO 2009a, *Communication on the global financial crisis for the 2 April 2009 G20 summit*, Brussels.
- WCO 2009b, *WCO trade recovery guidelines*, Brussels.
- Weart, SR 2008, *The discovery of global warming*, Harvard University Press, Cambridge, MA.
- Winchester, N, Paltsev, S & Reilly, J 2010, 'Will border carbon adjustments work?', *MIT Joint Program on Science and Policy of Global Change*, Report No. 184.
- World Bank 2008, *International trade and climate change: economic, legal, and institutional perspectives*, World Bank, Washington, DC.
- WTO 2010, 'Information technology agreement: introduction,' viewed 16 July 2010, www.wto.org/english/docs_e/legal_e/itadec_e.htm.
- WTO & UNEP 2009, *Trade and climate change*, WTO, Geneva.
- Wyckoff, AW & Roop, JM 1994, 'The embodiment of carbon in imports of manufactured products: implications for international agreements on greenhouse gas emissions,' *Energy Policy*, vol. 22, no. 3, pp. 187-94.
- Zhang, ZX 1998, 'Greenhouse gas emissions trading and the world trading system', *Journal of World Trade*, vol. 32, no. 5, pp. 219-39.
- Zhang, ZX 2010, 'Climate change meets trade in promoting green growth: potential conflicts and synergies', *Fondazione Eni Enrico Mattei*, Working Papers, no. 408, pp. 1-27.

Endnotes

- 1 The findings, interpretations and conclusions expressed in this paper are entirely those of the author. They do not necessarily represent the views of the WCO, WCO officials, or WCO Customs administration Members. The author would like to thank Thomas Cantens, Jae Young Choi, Ed de Jong, Mariya Polner, and Tadashi Yasui for their comments and suggestions. Any mistakes are those of the author.
- 2 The most prominent scientific assessment on this topic is an international consortium of scientists called the Intergovernmental Panel on Climate Change (IPCC), which was established by the United Nations Environmental Program (UNEP) and the World Meteorological Organization (WMO) in 1988 when climate change emerged as a public policy concern. The IPCC has thus far produced studies in 1990, 1996, 2001, and 2007.

- 3 The largest GHG by volume in the earth's atmosphere is CO₂. Other GHGs include methane, black carbon, halocarbons, nitrous oxide, carbon monoxide, and volatile organic compounds. CO₂ is thus a synecdoche for GHG and the terms are frequently used interchangeably; more accurately, all GHGs can be measured as carbon dioxide equivalent or CO₂e.
- 4 These include the Montreal Protocol on Substances that Deplete the Ozone Layer; the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; the Stockholm Convention on Persistent Organic Pollutants (POPs); the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade; and the Cartagena Protocol on Biosafety.
- 5 See, for example, Brack 2000; World Bank 2008; Brainard & Sorkin 2009; Hufbauer, Charnovitz & Kim 2009; UNEP 2009; WTO & UNEP 2009. While there is no similar voluminous portfolio specifically focused on the Customs-climate change nexus, there is substantial existing research indirectly relevant to this connection.
- 6 The third policy response, *geoengineering*, posits theories on methods of manipulating the climate to counteract CO₂ accumulation, such as using technology to suck CO₂ out of the atmosphere or propel sulphur particles into the stratosphere to reflect solar energy back into space (Dessler & Parson 2006, p. 90), and is not particularly relevant to Customs.
- 7 For more extensive analysis, see Demaret & Stewardson 1994; Ismer & Neuhoff 2007; Pauwelyn 2007a; Hufbauer, Charnovitz & Kim 2009; WTO & UNEP 2009; Eichenberg 2010.
- 8 See, for example, Zhang 1998, 2010; Ismer & Neuhoff 2004, 2007; Biermann & Brohm 2005; Saddler, Muller & Cuevas 2006; Pauwelyn 2007a, 2007b; Godard 2007; Houser et al. 2008; Monjon & Quirion 2008; Gros & Egenhofer 2009; Metcalf & Weisbach 2009; Winchester, Paltsev & Reilly 2010.
- 9 Additional government interventions that can benefit the competitiveness of low-carbon energy technology include investment in research and development, feed-in tariffs, technology transfer to developing nations, subsidies, and reducing subsidies for fossil fuels. The Kyoto Protocol also has a policy instrument called the Clean Development Mechanism (CDM), where countries in the developed world can offset some of their emissions by installing low-carbon energy technology sources in developing countries.
- 10 Policymakers also frequently discuss nuclear power as an option as it emits less CO₂ than coal and petroleum (but more than renewable energies) and appears currently to be more competitive than renewable energies. Better options would need to be found for what to do with the expanded volume of nuclear waste. Moreover, in the context of international trade there are significant national security concerns related to nuclear proliferation that have led to stringent export controls in the wake of the AQ Khan smuggling network.
- 11 The ministerial declaration that launched the WTO Doha Development Round mandates in paragraph 31(iii) 'the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services'. A final agreement, if one is ever reached, would presumably define environmental goods and services and provide a comprehensive list of such items. Such a list, however, would likely be broader than the low-carbon energy technology that would substantially assist in reducing CO₂ emissions (Steenblik, 2005a, pp. 4-5).
- 12 The United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA) has unofficially defined *humanitarian relief* as 'aid that seeks to save lives and alleviate suffering of a crisis-affected population' (UN OCHA 2003).

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Measuring the effectiveness of border management: designing KPIs for outcomes

Stephen Holloway

Abstract

This paper considers the problems associated with existing performance measures for border management and administration, and also the potential for leveraging supply chain processes to develop new integrated performance measures that are meaningful to business and border agencies. It explores the necessity for clear objectives that support the design of outcomes-based indicators and analyses the characteristics of effective performance measures. The paper concludes that an integrated performance measurement framework for border management can be developed on the basis of existing metrics. There is sufficient commonality of objectives to support an integrated approach that should improve the effectiveness and efficiency of international supply chains and border regulation.

The importance of performance measurement for border management

The OECD has said that ‘good regulation’ should:

- i. serve clearly identified policy goals, and *be effective in achieving those goals*;
- ii. have a sound legal and empirical basis;
- iii. *produce benefits that justify costs*, considering the distribution of effects across society and taking economic, environmental and social effects into account;
- iv. *minimise costs* and market distortions;
- v. promote innovation through market incentives and goal-based approaches;
- vi. be clear, simple, and practical for users;
- vii. be consistent with other regulations and policies; and
- viii. be compatible as far as possible with competition, trade and investment-facilitating principles at domestic and international levels (OECD 2005, p. 3, emphasis added).

I have italicised those particular phrases in the guiding principles to emphasise the importance of being able to make an objective assessment of the impact of particular regulatory approaches. In other words, good regulation should, *inter alia*, lend itself to measurement of its performance as a tool of government. Has the regulation in question been effective in achieving objectives and does it produce benefits that justify the costs incurred in its implementation? This point is particularly well made by Sparrow:

Citizens should surely expect that government institutions whose core mission involves the reduction of harms should be able to give an account of their performance in terms of harms reduced, suppressed, mitigated or eliminated. All the more so if it is a regulatory agency, which imposes obligations, inconveniences, and costs on citizens and businesses. Those who are regulated have every right to know that regulatory impositions not only served worthwhile purposes, but were effective in achieving their aims. ‘If your business is harm-control, show me harms you have controlled’ (Sparrow 2008, p. 123).

Sparrow's observations are particularly apposite to border regulation which has been a growth industry for government since the events of 9/11. The various responses to supply chain security threats has led to an increase in the overall regulatory burden on those engaged in international trade but it has been difficult to determine if that regulation has actually improved the ability of governments to identify potentially high-risk consignments (Widdowson & Holloway 2009). As the authors point out in their conclusions, such regulatory initiatives should be carefully examined to ensure they are achieving a cost-effective outcome for both business and government (Widdowson & Holloway 2009, p. 39).

The evolving nature of supply chain security initiatives makes the measurement of their impact on trade transaction costs particularly problematic, notwithstanding the fact that better security results in improved trade, growth and development prospects (Bagai & Wilson 2006). As previously mentioned, security can also 'increase trade costs by requiring costly changes in business practices and new investment in technology and infrastructure. Limited implementation capacity in developing countries to comply with the new requirements can affect export competitiveness' (Bagai & Wilson 2006, p. 3).

It is axiomatic that performance measurement is a crucial component of good regulation but its importance to border regulation specifically can be highlighted by reference to some key characteristics of modern international trade and the supply chains that support that trade.

Time has always been a key aspect of trade competitiveness. As Hummels has pointed out, the need for business to hold stock in inventory at final destination as a buffer against volatility in demand or against delays in border clearance can represent a significant increase in capital costs. Even one day's increase in shipping time can be the equivalent of an additional 0.8% ad valorem tariff for a traded good (Hummels 2001). As a response to new supply chain security requirements, shippers are also adding extra cycle time to their supply chains (Bagai & Wilson 2006).

Arvis et al. highlight the fact that 'Induced costs are inversely related to predictability and also tend to rise steeply with declining logistics performance. For example, suppliers to the same automobile manufacturer will carry 7 days of inventory in Italy but 35 days in Morocco. Some retailers in African countries maintain 90 days or more inventory. Bangladesh has to ship, on average, 10% of its garment production by air to be certain to meet the schedules of European buyers (Arvis et al. 2008, p. 57).

Any addition to the time it takes to move goods from origin to final destination has a tendency to eat into a business's cash flow, quite apart from the capital cost associated with inventory as discussed by Hummels (2001). A slower supply chain is a less competitive supply chain that could mean the difference between the establishment of an export market or not. This 'time sensitivity' of international supply chains applies equally to imports and exports. For example, Li and Wilson have found that time to export is a significant determinant of comparative advantage (Li & Wilson 2009). They comment early in their policy research working paper that:

In industries having just-in-time business practices, for instance, the entire production process will come to a halt if even a single input is missing. In industries shifting toward a more fragmented process and relying on international supply chains, delays in the delivery of intermediates accrue in all successive production stages. Eventually, small transaction costs can amount to disproportionately large values. Time delays yield higher transaction costs for these time-sensitive industries, and, thus, disproportionately dampen their exports (Li & Wilson 2009, p. 2).

Taking into account the fact that intermediate inputs currently represent 56% of goods trade and 73% of services trade (Lanz, Ragoussis & Miroudot 2009), the magnitude of time delays on trade transaction costs can be readily imagined.

Border regulation is a major contributor to the temporal parameters of international trade. The actions taken by Customs and/or other government agencies at a country's borders or, indeed, prior to the arrival of the goods can be a positive or a negative influence on international supply chains. Complex,

duplicative, unpredictable processes will create additional time delays, increase costs and reduce the competitiveness of supply chains while processes that encourage and support pre-arrival clearance and post-transaction validation of trade transactions create a relatively neutral environment from a supply chain perspective, in the sense that (in the majority of cases) there is no physical interference with the cross-border flow of goods. In this latter respect, a government presence that is essentially invisible to traders, that is, a neutral influence on the supply chain, is a positive outcome in that context.

As the World Bank states in its most recent Logistics Performance Index (LPI):

...Excessive physical inspection or inappropriate reliance on inspector discretion causes large variations in clearance times, and multiple inspections are frequent. Increasingly strict safety and security measures impair service provision in all but the top-ranking countries...Efficient border management and coordination of the various agencies involved in border clearance is increasingly important. The performance of agencies responsible for enforcement of sanitary and phytosanitary regulation – and to a lesser extent other types of product standards – appears to lag well behind customs in many countries. LPI survey respondents rate the activities of such agencies as a major factor leading to additional, sometimes redundant, paperwork and inspection processes in the lowest performing countries (Arvis et al. 2010, p. 2).

This discussion of the potential impact of border regulation on supply chain competitiveness is not meant to detract from the underlying policy rationale for that regulation. A policy rationale such as national security must still be given proper effect by actions taken in relation to the border but my argument is rather that, given particular regulatory alternatives to achieve a stated policy objective, the decision should be to adopt that option which has a positive or neutral impact on international supply chains.

Returning to the theme of performance measurement, if the outcome of border regulation and administration can be positive or negative, it becomes important for both industry and government to be able to ascertain that fact in respect of any particular border initiative, for example, the customs clearance process. I refer to ‘outcome’ but it is more precise to call this the ‘net outcome’ because as I will argue further, there could and in most cases will be a combination of outcomes for particular border initiatives. Some of the outcomes will be positive, some negative, and some both positive and negative depending on the perspective from which the initiative is viewed. My argument is that it is important to capture all perspectives when analysing a particular border initiative and therefore the concept of a net outcome as an overall measure of regulatory performance has validity.

How then should the time taken for clearance of the goods be estimated? Is it appropriate to adopt a benchmark to estimate average clearance times and are there current approaches to performance measurement of border-related processes that can be effectively utilised for assessment of particular border initiatives? What is needed is an assessment of the total cost that a particular consignment has to bear through a variety of border and related processes up to the final destination, a question that has previously been posed with respect to the measurement of port performance (see Bichou & Gray 2004). Efficient and effective performance measurement is needed to support that assessment.

Existing approaches to performance measurement of border processes

There are a number of existing approaches that provide some measurement of border clearance processes. Some approaches are broader in scope, for example, the World Bank’s ‘Doing Business’ surveys and ‘Logistics Performance Index’, while others such as the World Customs Organization’s (WCO’s) ‘Time Release Studies’ (TRS) are narrower in scope. There are also particular applications of performance measurement of border processes within defined regions, for example, the Trade and Transport Facilitation in Southeast Europe Program (TTFSE) and APEC’s review of progress with achieving a

5% reduction in trade transaction costs in APEC economies. Each of these approaches makes a valuable contribution to performance measurement of border processes but there is no single set of performance measures that posits a net outcome for business and government in combination.

Port performance indicators

Performance indicators that are applied to processes within ports tend to be physical indicators, that is, they refer in some way to time and processes affecting ships. They will measure issues such as:

- Ship turnaround time
- Average ship waiting time
- Cargo dwell time¹
- Productivity per crane-hour
- Tons per ship per day (Bichou & Gray 2004, p. 49; Bagai & Wilson 2006, p. 50).

These indicators do not analyse the regulatory processes at work within the port and are a snapshot of one aspect of the supply chain, that is, port efficiency and container movement through that node of the supply chain.

World Bank ‘Doing Business’ surveys: ‘Trading Across Borders’ segment

The World Bank’s ‘Trading Across Borders’ segment includes time and cost (in fees and charges) measures for the movement of goods across borders, based on a hypothetical trade transaction for import and export.² The scope of the performance measures is determined by reference to the time and cost of completing several stages of the international logistics process, that is, preparation of documents, customs clearance and technical control, ports and terminal handling, and inland transportation and handling.

For the ‘Doing Business 2010’ report, raw data for the ‘Trading across Borders’ component was collected from around 1,455 respondents drawn from 183 economies (World Bank 2009). In each case the Bank estimates the number of documents, the time taken, and the cost per container for export and for import. Therefore, ‘[e]very official procedure for importing and exporting the goods is recorded – starting from the final contractual agreement between the two parties, and ending with the delivery of the goods. All documentation and signatures required for country clearance of the goods is also recorded. For importing the goods, the procedures measured range from the vessel’s arrival at the port of entry to the shipment’s delivery at the factory warehouse. For exporting the goods, the procedures measured range from the packing of the goods at the factory to their departure from the port of exit’ (Bagai & Wilson 2006, p. 16).

The ‘Trading Across Borders’ data therefore includes elements of port performance in its measures as well as the impact of border regulation; at least from the perspective of business. Nevertheless, there has been criticism of the methodology, that is, that the hypothetical nature of the transactions and the relatively small survey samples used for the collection of the raw data mean that there are question marks over the representativeness of the Bank’s estimates (World Bank 2008). I will return to this issue later in the article.

World Bank ‘Logistics Performance Index’

The ‘Logistics Performance Index’ (LPI) is a qualitative measure of supply chain performance. It provides a global benchmark of logistics efficiency and service quality not treated specifically in the

'Doing Business' survey. It provides an assessment of trade logistics by collecting data on Customs, infrastructure, international shipments, logistics competence, tracking and tracing, domestic logistics costs, and timeliness, by examining trade procedures, infrastructure, services and reliability. The LPI is constructed from a worldwide survey of multinational freight forwarders and express carriers. Data is collected on seven aspects of logistics:

- Efficiency of the customs clearance process.
- Quality of trade and transport-related infrastructure.
- Ease of arranging competitively priced shipments.
- Competence and quality of logistics services.
- Ability to track and trace consignments.
- Frequency with which shipments reach the consignee within the scheduled or expected time (Arvis et al. 2010, p. 4).

The LPI is a particularly useful set of performance measures for supply chain managers but does not provide sufficient insight into the effectiveness of border initiatives, other than their impact on supply chain efficiency, for policy-makers.

Various trade logistics indicators are also identified by Bagai and Wilson:

- Clearance time: for imports, average time taken from when the goods arrive at the port of entry until the time they are claimed from customs
- Longest day to clear customs for imports: for imports, longest time taken from when the goods arrive at the port of entry until the time they are claimed from customs
- Release time of goods: normally from the time of arrival of goods at the port/airport/land border until their release to the importer or a third party on his behalf
- Transport time: the average time required to transport goods from the place of production/manufacturing/processing to the place from where the goods will be exported, or from the place of import to the final destination/distribution point or processing plant
- Transport cost: the total cost of transporting goods from the place of production/manufacturing/processing to the place from where the goods will be exported – or from the place of import to the final destination/distribution point or processing plant (Bagai & Wilson 2006, pp. 57-58).

WCO Customs Time Release Studies (TRS)

In 2002, the WCO outlined a methodology to help customs administrations measure the time required for the release of goods as part of establishing the performance of the administration and the efficiency of the clearance process. The recommended methodology is relatively simple and is applied from the time of arrival of the goods at the port/airport/land border until their release to the importer or a third party on their behalf. The data is collected in a way that allows each stage of the customs clearance process to be analysed.

Its utility for identifying bottlenecks in the process of clearing goods, reasons and possible solutions to any problems as well as for comparative purposes has been recognised by trade researchers (Bagai & Wilson 2006, p.18) although the WCO has cautioned against its use for that latter purpose (WCO 2002, p. 2). The WCO's caution anticipates some reluctance on the part of Members to share/publish the results of individual TRS although some countries have published the outcomes on their website, for example, Australia.

Bagai and Wilson identify customs performance as one of the focal points of international trade:

Longer clearance times is [*sic*] normally associated with lower efficiency in port operations management, complex cumbersome procedures and higher transport costs due to high costs of

storage, etc. Reducing clearance requirements and guaranteeing fast and predictable release of goods is an important function of customs administrations (Bagai & Wilson 2006, p. 16).

As a key focal point for international trade they recognise that a well-performing customs administration will have a positive flow-on effect for trade and that TRS is an effective tool for performance improvement in that respect. Indeed, other commentators have highlighted TRS as a management tool for continuous improvement rather than as a stand-alone activity (Zhang 2009).

While acknowledging the central role that customs administrations play in relation to border management, it is important not to overlook the fact that they are not the only government agency that have border management responsibilities (Zhang 2009; Arvis et al. 2010). The World Bank has placed particular emphasis on this fact in the 2010 LPI:

In all performance groups, the time taken to clear goods through customs is a relatively small fraction of total import time...Core customs procedures converge strongly across all performance groups, but physical inspection – and even multiple inspections of the same shipment by different agencies – are much more common in low performance countries...A corollary of the gradual convergence of customs procedures worldwide is that other border agencies are seen to be an increasingly serious constraint on supply chain performance in many countries (Arvis et al. 2010, p. 16).

In his discussion of TRS as a measure of trade facilitation, Zhang agrees with Bagai and Wilson that Customs is a focal point in border management and control but that ‘Close communication and cooperation among all the stakeholders such as the national government, Customs, OGAs [other government agencies], donors, and the private sector, are integral to smooth implementation’ (Zhang 2009, p. 126). Indeed, he claims that ‘[i]n some countries, a Steering Committee at policy level or a TRS Reference Group involving the private sector may be set up to serve as a channel of engagement with the industry sectors and OGAs involved in the supply chain’ (Zhang 2009, p. 126).

Zhang states that TRS can be approached in one of two ways:

The first is to cover only the customs procedures, and the second is to cover the whole process of clearance. The first appears to be simple, as complicated coordination with other stakeholders can be bypassed. However, it is recognised by experts and demonstrated from past experience that it is better that a comprehensive TRS be conducted. The reasons are twofold: first, a comprehensive TRS will yield more useful findings, especially in helping to identify the bottlenecks in the procedures that are out of customs control. This is in line with the concept and practice of supply chain management. Second, coordination and communication among stakeholders during TRS will provide a sound basis for possible efforts to seek solutions and to take action to reform the process (Zhang 2009, p. 131).

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) also supports the inclusion of all other border management agencies in the time measurement process as an adjunct to objectivity and completeness (UNESCAP 2009).

There can be little doubt that a whole-of-government TRS in the context of border management will provide a more accurate picture of overall performance and can be disaggregated to identify specific bottlenecks and/or other deficiencies in border-related processes. However, notwithstanding the value of such an approach, it is still necessary to inject some supply chain metrics to achieve a combined measure of border management effectiveness.

Trade and Transport Facilitation in Southeast Europe (TTFSE) Program – Regional application of border performance measures

The Trade and Transport Facilitation in Southeast Europe Program (TTFSE) had as its objective the strengthening and modernising of the customs administrations and other border control agencies in the former Yugoslav Republic of Macedonia, Albania, Bosnia and Herzegovina, Bulgaria, Croatia, and Romania.

In particular the program was intended ‘to reduce non-tariff costs to trade and transport; and to prevent smuggling and corruption at border crossings. There are five project components. The first improves customs procedures, assists streamline operations at three border posts and one inland terminal on a pilot basis; provides customs training in new procedures, and trains for agency awareness and cooperation; and restructures the customs administration. The second component provides technical assistance and advisory services to trade and international transport participants through the European chamber; improves communication between border control agencies and trading community by using a virtual forum; and supplies equipment. The third component improves information system, provides personnel training, and stimulates regional and inter-agency cooperation. The fourth component improves border crossing facilities. The fifth component includes the services to support program implementation’.³

The relevance of the TTFSE program to this research is its development of key performance indicators (KPIs) for monitoring the implementation and impact of the program. Those KPIs as outlined by Bagai and Wilson are:

KPIs at Pilot Inland Terminals

- Import clearance time - time between entrance of truck into the terminal and release of goods (minutes)
- Physical examination - number of times that goods are examined or the cargo compartment is searched compared to the total number of import, export and suspense declarations (%)
- Trucks cleared in less than 15 minutes - number of times that a truck completes import clearance in less than 15 minutes compared to the total number of import clearances (%)
- Irregularities/Number of examinations - number of examinations discovered during physical examinations compared to the total number of physical examinations carried out (%).

KPIs at Pilot Border Crossings

- Truck examination - number of trucks actually opened (that is, seals broken) compared to the total number of trucks processed (%)
- Irregularities/number of examinations: number of irregularities discovered during examinations compared to the total number of trucks examined (%)
- Average border exit time: for trucks exiting the country, it is the time between joining the queue and crossing the border (minutes)
- Average border entry time: for trucks entering the country, it is the time between crossing the border and departing the station (minutes)
- Surveyed occurrence of corruption: number of cases when a driver makes or is asked to make an unauthorised payment compared to the total number of trucks/locations surveyed.

KPIs of Customs Efficiency (Ratios)

- Revenue collected/customs staff: total revenues collected/total number of customs employees
- Total customs administration cost/revenue collected: total budget of the administration (including salaries, overtime, bonuses and benefits)/total revenue collected irrespective of its destination

- Revenue collected/salaries: total agency salaries, overtime bonuses and benefits/total revenue collected irrespective of its destination
- Trade volume/customs staff: trade volume/number of customs employees
- Annual number of declarations/customs staff: total number of declarations (import, export, suspense regimes, but excluding transit) irrespective of the number of items/total staff employed by Customs (Bagai & Wilson 2006).

In addition, annual user surveys were conducted to supplement the KPI measurements. In essence, the data obtained from these KPIs provided twin measures of customs efficiency in Southeast Europe and border crossing and clearance times from the user perspective at pilot sites.

Problems with existing performance measures

Taking a supply chain perspective for the moment, sourcing decisions are generally made on the basis of the concept of ‘total landed cost’.⁴ Border administration (including the calculation of duties) is an important component of total landed cost but can be difficult to assess, particularly in an environment of multiple trade agreements (Lee 2010). Supply chain security initiatives further complicate the calculation of total landed cost. Lee comments that:

This process can also become even more complex when some nations, such as the United States, are concerned with the threat of security when container shipments can be used by terrorists as a weapon of mass destruction. The result is added documentation requirements, inspection, and delays. In the total landed cost analysis, the logistics and transaction costs, and the inventory holding costs, can be greatly affected by the cross-border processes. For example, if such processes are long and unreliable, then the inventory in transit will be high, and the safety stocks that the importing company need to carry would have to be increased (Lee 2010, p. 178).

Despite the significance of border regulation and administration, there is currently no holistic approach to measuring the performance of border initiatives. Current approaches, in most cases, do not describe how to measure ‘outcomes’ as they relate to the various stakeholders, both public and private, but rather focus mainly on border processes, such as clearance times. For example, the cross-country indices produced by the World Bank provide important insights into the performance of border processes but are essentially measures of outputs rather than outcomes (IEG 2008).

The World Bank indices are compiled from surveys that target the private sector experience of the border clearance process. They do not include a regulatory agency perspective of that process and are not intended to measure the broader effectiveness of particular border regulation initiatives. By comparison, TRS programs provide an effective measure of customs performance at the border and have the potential to be expanded to provide a cross-agency performance measure provided that it is designed to allow for disaggregation but is less useful for business seeking information about supply chain performance or the impact of border regulation initiatives on supply chain efficiency. There are shortcomings with both sets of measures depending on the user’s perspective.

The World Bank’s ‘Doing Business’ survey has been questioned over some of its methodologies. An independent evaluation of the survey was conducted for the World Bank in 2008 by the Independent Evaluation Group (IEG).⁵ Some of the weaknesses identified by IEG included:

Many other factors affect macroeconomic outcomes, and the direction of causality between regulation and economic outcomes is very difficult to isolate. Since regulations generate social benefits as well as private costs, what is good for an individual firm is not necessarily good for the economy or society as a whole. Therefore, policy implications are not always clear-cut, and the right level and type of regulation is a matter of policy choice in each country (IEG 2008, p. xv).

First, the data are provided by few informants, with some data points for a country generated by just

one or two firms...Second...[it is] insufficiently transparent about the number and types of informants for each indicator, the adjustments its staff make to the data received from informants, and the changes made to previously published data and their effects on the rankings...Third, DB makes much of its country rankings. The rankings entail three weaknesses. First, because most of the indicators presume that less regulation is better, it is difficult to tell whether the top-ranked countries have good and efficient regulations or simply inadequate regulation. Second, the small informant base makes it difficult to measure confidence in the accuracy of the individual indicator values, and thus in the aggregate rankings. Third, changes in a country's ranking depend importantly on where it sits on the distribution: small changes can produce large ratings jumps, and vice versa (IEG 2008, p. xvi).

The overall conclusion by IEG in this regard was that the 'Doing Business' survey measures the costs but not the benefits of regulation.

The utility of TRS as a broader measure of performance is dependent on its scope, that is, does it cover only the customs procedures or the whole process of clearance including other border agencies? (Zhang 2009) .An additional problem with TRS is that there is no commonly accepted definition of customs clearance times nor is there a standard methodology for calculating the days required to clear customs at national points of entry on a time series basis (Bagai & Wilson 2006). To quote the examples used by Bagai and Wilson: 'The ICAs calculation is based on firm level surveys, while TTFSE measures clearance at the border. There is a discrepancy between firm surveys and on the ground interviews and observations. For Uzbekistan, WBES gives an average clearance time of 11 days compared to 5 days by UNESCAP' (Bagai & Wilson 2006, p. 41).

Furthermore, while the importance of involving all border agencies in performance measurement has been acknowledged, it must also be acknowledged that the involvement of different agencies in the clearance process can yield different results in baseline calculations of customs clearance (Bagai & Wilson 2006).

The approach to performance measurement adopted as part of the TTFSE program includes the usual time measures but interestingly, adds measures that look at the numbers of physical examinations and any irregularities that are discovered as part of that process. This measure allows border administrations to make some assessment of the effectiveness of their risk management profiles and is therefore a measure of outcomes as well as outputs. It is also a measure that is meaningful to both business and government. As stated by the World Bank in its LPI '[e]xcessive physical inspection or inappropriate reliance on inspector discretion causes large variations in clearance times, and multiple inspections are frequent' (Arvis et al. 2010, p. 2). A performance indicator such as this not only tells business something about clearance times but provides some reasons why.

Unfortunately, there is a natural tendency for border agencies to measure outputs rather than outcomes. This is well demonstrated in relation to enforcement-type measures, for example, amount of drugs seized over a period of time rather than any assessment of whether or not a particular drug strategy has been effective. As Willis, Anderson and Davis state when commenting on performance measures published by Australian Customs and Border Protection in relation to drug enforcement: 'While the small number of drug seizure indicator data form an important part of regular, formal agency monitoring and reporting processes (such as the agency's annual report), other drug market data (for example, drug purity and price) and social harm data are chiefly used informally and are not publicly reported' (Willis, Anderson & Davis 2010, p. 4).

Citing an earlier report the authors observe that 'As outlined in Willis, Homel and Gray (2006), traditional measures of law enforcement performance focus on crime rates, arrests, seizures and clearance rates as key measures of success. Such measures are simple, visible and easily understood measures of police effort, although they can provide ambiguous results and do not tell the "full story". Essentially, they demonstrate the extent to which police engage in certain types of activities and how they allocate

resources. They have only a small amount to say in terms of the complexities of law enforcement work and the broader impacts of law enforcement effort' (Willis, Homel & Anderson 2010, p. 6).

The authors quote the Parliamentary Joint Committee on the Australian Crime Commission to emphasise this point:

It has always struck the Committee...that we have a less informed knowledge base in one of the most important areas of social and public policy in Australia – that is, law enforcement – than in almost any other area...we do not have national benchmarking enabling the community to make intelligent, strategic, long-term judgements about the threats that face the law enforcement environment... We need to develop effective measuring devices in law enforcement that enable us to make better judgements about where limited resources should be applied...where there are very large expenditures of public resources we need to be able to better distinguish between those areas which need further enhancement and those where we will face the law of diminishing returns (House of Representatives 2007)' (Willis, Homel & Anderson 2010, p. 7).

Those comments are apposite for the performance measures currently being adopted in relation to border management. The 'full story' of border management is not being told and isn't being told to the whole audience (business and government in combination). If 'efficient border management and coordination of the various agencies involved in border clearance is increasingly important' (Arvis et al. 2010, p. 2) then this must be acknowledged in the performance measures being designed to evidence that new efficiency. Of course, achieving a true collaboration in border management is not just about coordination of the various agencies involved in border clearance but also about involving business stakeholders in the design and implementation of those measures.

At this time there are few performance measures that provide that three-dimensional view of border management from a combined (that is, government and business) perspective. There is valuable data contained within international supply chains. This has been recognised in the various supply chain security initiatives that have been implemented, particularly those requiring advance cargo information such as the US Advanced Manifest Rule. There is less evidence of that data being leveraged by border agencies to measure their performance or as a basis for closer integration between business and border agency databases.

Bagai and Wilson summarise the limitations of available data. They do so in the context of the impact of trade costs and facilitation on competitiveness but the summary is equally applicable to the border management context:

- Lack of harmonized definitions and measurement tools which can lead to different indicators of the same barriers
- Limited country coverage
- Poor quality data that can be difficult or impossible to replicate
- Lack of time series data sets
- Aggregation of various data sources is problematic or impossible
- Difficulty to use same indicators for cross-country analysis and for measuring project performance (Bagai & Wilson 2006, pp. 40-41).

I respectfully agree with the authors' observation that the international supply chain sequence provides a useful frame of reference when designing performance measures, and assert that this is just as valid for measuring the effectiveness of border management initiatives as it is for capturing progress in trade facilitation. Border administrations in adopting 'layered' approaches to supply chain security are pushing regulation further upstream in the supply chain, so it makes sense to understand the different nodes that operate within international supply chains and leverage that information for the benefit of government and business. I return to this theme in a subsequent section of the article.

Integrating border performance with supply chain performance

One of the key conclusions that can be drawn from the World Bank's LPI is that 'although costs and timeliness are of paramount importance, traders are primarily concerned with the overall reliability of the supply chain' (Arvis et al. 2008, p. 54). They are also concerned at the degree of 'friction' that is imposed by cross-border processes (Lee 2010, citing Hausman et al.). In other words, while the performance of public agencies is one factor in logistics performance, it is certainly not the only one. As Arvis et al. go on to say:

Although performance outcomes such as domestic costs or the time taken to reach a destination are important, traders mostly value the performance of logistics services available to them: the reliability and predictability of the supply chain matters most. For example, traditional measures of performance such as direct freight costs and average delays, while important, may not capture the overall logistics performance and thus the ability of countries to use trade for growth. The predictability and reliability of shipments, while more difficult to measure, are more important for firms and may have a more dramatic impact on their ability to compete.

Indeed, professionals view the friendliness of border processes primarily in terms of the transparency and the predictability of clearance procedures. Even where countries have already implemented a customs modernization program, the coordination of border procedures between customs and other agencies... is an important concern (Arvis et al. 2008, pp. 54-55).

If reliability and predictability of the supply chain are most important to traders then they need to be captured in some form in performance measures being applied to border management. Predictability that flows from better coordination between border agencies provides a more robust source of information for use by those same agencies in their risk assessments of particular trade transactions. In other words, there is the potential for a 'win-win' outcome through the acknowledgment of a key performance factor for business when designing border regulation and its associated performance measures.

This returns us to the theme that performance measures should be meaningful across relevant stakeholder groups, in this case, government, the relevant border agency, traders and the public. This requires performance measures that can be disaggregated, that is, measures that allow determination of policy outcomes but contain sufficient granularity to provide insight into more specific issues such as delays in clearance, the effectiveness of risk profiles or the effectiveness of coordination between border agencies.

By way of illustration: it is common for customs administrations to act as 'agent' of other government agencies at the border with the consequence that customs 'inherits' any inefficiencies that exist within the 'delegating' agency process and is often (unfairly) perceived by traders or passengers as the cause of any delay. One could therefore argue that customs has a vested interest in designing performance indicators that are capable of being disaggregated into border processes 'controlled' by Customs and those which are outside their control.

A more three-dimensional approach to performance measurement necessarily implies better integration between border (regulatory) performance and supply chain performance. In this way the impact of particular border management initiatives on the efficiency of international supply chains can be assessed, as can the effectiveness of the border management initiative in achieving particular policy objectives such as border security. As Lee states, '...it is important for governments and companies to work on reducing both the mean and variance of times and costs of cross-border trade processes' and further on, citing Hausman et al., '...the results can be used to see the benefits from reducing total process times... Trade-related processing time and cost can also be improved by re-engineering processes to eliminate unnecessary steps and streamline others (such as by introducing more parallel processing rather than sequential processing, introducing advanced information technologies (such as electronic customs clearance and documentation flows), using data mining and screening methods to identify only

high-risk containers for security inspections, and adopting advanced scanning technologies to shorten cargo inspection times' (Lee 2010, p. 184).

Problems with current performance measurement approaches and the potential benefits of an approach that produces meaningful information for traders and regulators lead naturally to consideration of an integrated performance measurement framework. Is such integration possible?

An 'integrated' performance measurement framework

I contend that an integrated performance measurement framework is possible. Matsumoto and Lee discuss a range of key performance indicators that are useful for business and government utilising the processes contained within international supply chains as a frame of reference (Matsumoto & Lee 2007). They do so in the context of trade facilitation but the analysis is equally applicable to border management and adopts a time and cost breakdown for each step in the border clearance process. The authors separately describe performance indicators that have utility for the private sector and government respectively. Thus, performance indicators suggested as being useful in assessing the impact of initiatives on the private sector include:

- cost of processing trade and customs documentation
- time taken to get trade documents approved
- number of staff needed to process and handle trade documentation and customs
- cargo clearance time
- amount of stock enterprises have to carry.

Suggested indicators for government directed towards assessment of regulatory compliance, data accuracy and efficient resource usage include:

- number of trade officers involved in processing trade documents
- number of enforcement officers as a ratio of trade and cargo volume
- rate of traders' compliance with the documentation requirements
- accuracy in classification of trade data
- accurate information in documents
- compliance with rules of origin
- correct payment of duties (Matsumoto & Lee 2007, pp. 189-90).

It should be possible to develop a matrix of performance measures that integrate government and private sector indicators. Some indicators will be specific to the private sector and others to government but there are indicators that can be rationalised in favour of an 'integrated' indicator, for example, time taken to process clearance documentation which can combine the private sector 'cost of processing trade and customs documentation' and 'number of trade officers involved in processing trade documents' to provide an overall (and cross-agency) measure of clearance processing performance. The problem with the current approach of having two or more separate indicators for essentially the same process is that it is quite likely to throw up different results due to the different perspective.

The key to integrating supply chain and border regulation performance measures is the development of high-level outcomes that are relevant to government and private sector objectives, for example, transparency is an objective that is important to both business and government. The specification of high-level outcomes then underpins and informs the development of key performance indicators possessing particular characteristics. A useful model in this regard is that developed by Willis, Homel and Anderson in support of the National Drug Law Enforcement Performance Measurement Framework (Willis, Homel & Anderson 2010).

The model developed by Willis, Homel and Anderson (2010) is built around four high-level outcomes and ‘includes a process for adapting the performance measurement framework to accommodate the specific needs of drug law enforcement agencies operating in different settings in Australia’.

In the specific instance of drug law enforcement those four high-level outcomes were identified as: reducing drug crime and drug-related crime; reducing organised crime; improving public health and improving public amenity. Specific performance measures associated with each outcome were then defined on the basis of certain characteristics, that is:

- Clear in their purpose (that is, who will be using the information and how and why it will be used)
- Useful (in gauging the effectiveness of policies and strategies)
- Valid (measure what they should measure)
- Reliable (give consistent results)
- Easy to interpret (make sense and reflect real events)
- Easy to construct (reflect the real places they are used in)
- Consistent with other performance indicators in the National Drug Strategy (that is, aligned with the wider drugs policy environment)
- Easy to adapt to different settings and develop over time (Willis, Homel & Anderson 2010, p. 1).

If the same model is adapted for border management the high-level outcomes might be, for example, to reduce the time taken for border clearance; reduce the total cost for import- and export-related transactions; simplify the border clearance process; identify and interdict high-risk cargo.

Against those high-level outcomes, specific performance measures might then be developed as follows:

Time

- Total time for the trade transaction
- Time taken to process relevant documentation
- Border (not just customs) clearance time (perhaps relying on TRS methodology)
- Average time for all procedures (import and export)
- Physical examination - number of times that goods are examined compared to the total number of declarations (%)
- Time taken for inspection (physical and non-physical)

Cost

- Total cost for a trade transaction
- Total cost of import- and export-related procedures
- Port and terminal charges (for example, demurrage)
- Revenue collected/customs or all border agency staff: total revenues collected/total number of customs employees

Simplification

- The number of signatures (approvals) for a trade transaction
- The number of documents required for border clearance
- The number of documents required for a trade transaction
- The number of agency approvals required for specific transactions
- The amount of ‘churn’ in border clearance, that is, how much multiple handling of documentation occurs (versus once-only communication)

- Percentage of relevant data traders can access electronically
- Percentage of just-in-time data exchange

Risk

- Percentage of containers examined by non-intrusive means (for example, X-ray) as a ratio of trade volume
- Percentage of containers physically examined as a ratio of trade volume and as a ratio of non-intrusive examinations
- Number of detections during examinations as a ratio of the total number of physical and non-intrusive examinations (provides some indication of risk profile effectiveness).

The achievement of an integrated performance measurement framework for border management therefore requires a linkage between strategic objectives and priorities in respect of both the private sector and border agencies so that progress against those overall objectives can be monitored (Willis, Homel & Anderson 2010). This linkage can be extended to international initiatives, for example, the WCO SAFE Framework in respect of supply chain security or ISO standards. A preliminary focus on ‘cross-cutting’ objectives will necessarily move the emphasis away from the type of activities or processes being undertaken to the measurement of the changes that these activities and processes are expected to effect, for example, reduction in border clearance time (see also OECD 2010).

As Willis et al. state: ‘To be sound the measures should relate well to the actual phenomena occurring and be focused on the objectives being sought. Experience has shown that finding sound measures for complex systems, such as border security, requires a coherent conceptual understanding of the objectives that the system is designed to achieve, the dynamics of the phenomena that threaten those objectives, and how operational programs influence the threats to the objectives’ (Willis et al. 2010, p. 5).

Otley outlines five questions that must be asked of and answered by any performance measurement system:

1. What are the key objectives that are central to the organization’s overall future success, and how does it go about evaluating its achievement for each of these objectives?
2. What strategies and plans has the organization adopted and what are the processes and activities that it has decided will be required for it to successfully implement these? How does it assess and measure the performance of these activities?
3. What level of performance does the organization need to achieve in each of the areas defined in the above two questions, and how does it go about setting appropriate performance targets for them?
4. What rewards will managers (and other employees) gain by achieving these performance targets (or, conversely, what penalties will they suffer by failing to achieve them)?
5. What are the information flows (feedback and feed-forward loops) that are necessary to enable the organization to learn from its experience, and to adapt its current behaviour in the light of that experience? (Otley 1999, pp. 363-82).

These questions are equally appropriate when one broadens the context to border management generally rather than single organisations involved in that process.

The design of key performance indicators (KPIs) for an integrated framework

The previous discussion has suggested a number of key performance indicators (KPIs) that in combination can deliver an integrated performance measurement approach to border management but is it possible to describe the essential characteristics of such KPIs without being definitive about their specific parameters? Willis et al. express the view that ‘if possible, the measures should be sufficiently general so that they can be used to make comparisons across modes of transportation (land, sea, and air), program types, agencies, and geographic regions’ (Willis et al. 2010, p. 6). This reiterates the view expressed throughout that all border agencies, not just customs administrations, be included in any border performance measurement framework.

Within that broader context of comparability, KPIs can exhibit one of two temporal characteristics, that is, they can be ‘lagging’ indicators which measure a variable at the end of a process or a consequence of applied strategies (for example, revenue collected, drugs interdicted, seizures) or they can be ‘leading’ indicators measuring variables during the process and used to determine progress against milestones or objectives (for example, effectiveness, quality, cycle time, implementation of compliance programs).

Lagging indicators tend to be the more popular among border administrations and therefore achieve some uniformity across different administrations (for example, clearance time, as noted previously), while lead indicators tend to be designed more specifically to address the particular needs and objectives of particular border administrations. This renders lead indicators more problematic for comparison purposes, notwithstanding that they have far more potential as indicators of outcomes rather than outputs. Is it possible therefore to promote more uniformity among leading indicators to encourage their use within an integrated performance measurement framework for border management? I believe that it is possible to achieve this to some degree.

If lead indicators are designed by reference to a multilateral border/supply chain framework such as the WCO’s SAFE Framework of Standards, it is possible to attract some uniformity. Individual border administrations and supply chain participants that benchmark their KPIs against the SAFE Framework of Standards achieve a measure of comparability and an outcomes focus.

An effective performance measurement approach for border management will have an appropriate mix of lagging and leading indicators among its KPIs. A statement of outcomes that doesn’t also include leading indicators will not communicate how those outcomes are to be achieved nor will it provide a progress report on whether or not the particular strategy is being successfully implemented. Conversely, the addition of lagging indicators will allow analysts to go behind the information provided by the lead indicators to establish the reasons for different levels of performance and contribute to the evaluation and adjustment of strategies (Trosa & Williams 1996; OECD 2010).

The performance indicators for border management should be sufficient to provide a meaningful picture of efficiency and effectiveness against the stated objectives but not be so many or so complex as to become costly and unmanageable. If there are too many KPIs the border administration will spend more time gathering information than analysing it. The principles against which KPI design should be judged are set out by the OECD: they should ‘give a precise definition of the intervention logic, providing an operational description of the overall objective, purpose and results in terms of the variable (what will change?), target value (how much?), target groups/beneficiaries (who/whom?) and time (by when?)’ (OECD 2010, p. 7). This means that the selection of KPIs should not be dictated by the fact that they may be easy to measure or have been used previously but rather that they deliver a meaningful indication of outcomes related to objectives.

An example used by Trosa and Williams illustrates this very well and I repeat it here:

[W]hen Australia Post first developed an indicator to measure performance of its mail sorting centres, it chose a simple, easily quantifiable, measure of output – the number of letters sorted in a day. A perverse consequence was that in some cases, pre-sorted mail was sorted again to boost apparent performance. Mail delivery was consequently slower. The performance indicator now used is the percentage of mail delivered on time from mail box to addressee, timeliness of mail delivery being important to clients (Trosa & Williams 1996, p. 49).

The requirement for data to inform KPIs can of course impose its own costs on government and the private sector. It is therefore important that KPIs utilise existing data sources as much as possible (OECD 2010). To use an analogy, dipping into an information stream that already exists (say, as part of logistics processes) is preferable to creating an entirely new stream of information. This becomes a simple cost/benefit exercise. Similarly, poor quality data does not assist effective performance measurement even in real-time (IBM 2006). Innovations in information and communications technology are helping to overcome data quality deficits. As the IBM report highlights, ‘Public-private information sharing mechanisms pool data collected between Customs and the trading community. This feature shifts information exchange from multiple, one-to-one relationships to just-in-time data accessibility. TradeNet in Singapore; Felixstowe in the UK and 1-Stop.Biz in Australia have all implemented community portals to enable “advanced information” and pre-filing’ (IBM 2006, pp. 25-26).

Conclusions

It is possible to develop an integrated performance measurement framework for border management that is meaningful for business and government. At levels ranging from the determination of objectives through the design of KPIs and gathering of data to support them, it is possible to discern common themes capable of supporting an integrated approach that improves the effectiveness and efficiency of international supply chains and border regulation.

References

- Arvis, J, Mustra, MA, Ojala, L, Shepherd, B & Saslavsky, D 2010, *Connecting to compete 2010: trade logistics in the global economy: the logistics performance index and its indicators*, International Bank for Reconstruction and Development/The World Bank, Washington, DC.
- Arvis, J, Mustra, M, Panzer, J, Ojala, L & Naula, T 2008, ‘Connecting to compete: trade logistics in the global economy’, Ch. 1.4, *Global enabling trade report 2008*, World Economic Forum, Davos, Switzerland.
- Bagai, S & Wilson, JS 2006, ‘The data chase: what’s out there on trade costs and nontariff barriers?’, World Bank Policy Research Working Paper 3899, April, World Bank, Washington, DC, <http://econ.worldbank.org>.
- Bichou, K & Gray, R 2004, ‘A logistics and supply chain management approach to port performance measurement’, *Maritime Policy Management*, January-March, vol. 31, no. 1, pp. 47-67. (ISSN 1464-5254)
- Hummels, D 2001, ‘Time as a trade barrier’, GTAP Working Papers 1152, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University, IN.
- IBM 2006, *Border management in the new century: emerging trends and best practices*, IBM Global Business Services, New York, NY.

- IEG (Independent Evaluation Group) 2008, 'Doing business: an independent evaluation, taking the measure of the World Bank-IFC Doing Business Indicators', The World Bank, Washington, DC. (DOI:10.1596/978-0-8213-7552-5)
- Lanz, R, Ragoussis, A, & Miroudot, S 2009, 'Trade in intermediate goods and services', OECD Trade Policy Working Papers, No. 93, OECD Publishing. (DOI: 10.1787/5kmlcxtldk8r-en)
- Lee, HL 2010, 'A long review of research and practice in operations research and management science', International Series in Operations Research & Management Science 148, eds MS Sodhi & CS Tang, Springer Science and Business Media, LLC. (DOI 10.1007/978-1-4419-6810-4_10)
- Li, Yue & Wilson, JS 2009, 'Time as a determinant of comparative advantage', World Bank Policy Research Working Paper WPS5128, November, World Bank, Washington, DC.
- Matsumoto, T & Lee, SH 2007, 'Regional best practice on Time Release Study', WCO Regional Office for Capacity Building, Bangkok, Thailand, viewed 7 September 2010, www.wcoomd.org/files/1.%20Public%20files/PDFandDocuments/Procedures%20and%20Facilitation/Time_Release%20_Study_ENG.pdf.
- OECD (Organisation for Economic Co-operation and Development) 2005, '*OECD Guiding principles for regulatory quality and performance*', viewed 19 August 2010, www.oecd.org/dataoecd/19/51/37318586.pdf.
- OECD (Organisation for Economic Co-operation and Development) 2010, 'Indicators to measure the performance of a national SPS system', STDF/OECD Working Paper (Draft): for discussion at the STDF/OECD Technical Working Meeting on SPS Indicators World Trade Organization, Geneva, 1 July, viewed 11 June 2010, STDF/Coord/293/Working Paper Draft Rev. 2.
- Otley, D 1999, 'Performance management: a framework for management control systems research', *Management Accounting Research*, vol. 10, pp. 363-82.
- Trade and Transport Facilitation in Southeast Europe Program (TTFSE), World Bank, Washington, DC, www.seerecon.org/ttfse.
- Trosa, S & Williams, S 1996, 'Benchmarking in public sector performance management', Department of Finance, Commonwealth of Australia, Canberra, ACT.
- UNESCAP (United Nations Economic and Social Commission for Asia and the Pacific) 2009, '*Designing and implementing trade facilitation in Asia and the Pacific*', November, Geneva, Switzerland. (ISBN 978-971-561-861-8)
- Widdowson, D & Holloway, S 2009, 'Maritime transport security regulation: policies, probabilities and practicalities', *World Customs Journal*, vol. 3, no. 2, pp. 17-42.
- Willis, K, Homel, P & Gray, K 2006, 'Developing and implementing a performance measurement framework for drug law enforcement in Australia', Monograph Series No. 18, National Drug Law Enforcement Research Fund (NDLERF), Commonwealth of Australia, Canberra, ACT.
- Willis, K, Anderson, J & Davis, B 2010, *Implementing a drug law enforcement (DLE) performance measurement framework in Australia*, Australian Institute of Criminology, National Drug Law Enforcement Research Fund (NDLERF), Commonwealth of Australia, Canberra, ACT. (ISSN: 1449-7476)
- Willis, K, Homel, P & Anderson, J 2010, 'Developing the capacity and skills for national implementation of a drug law enforcement performance measurement framework', Monograph Series No. 34, Australian Institute of Criminology, Canberra, ACT. (ISSN: 1449-7476)
- Willis, HH, Predd, JB, David, PK & Brown, WP 2010, *Measuring the effectiveness of border security between ports-of-entry: technical report*, RAND Homeland Security and Defense Center, Santa Monica, CA. (ISBN 978-0-8330-4977-3)

- World Bank 2009, 'Doing business 2010: reforming through difficult times', The World Bank Group, Washington, DC. (DOI: 10.1596/978-0-8213-7961-5, ISSN: 1729-2638)
- World Customs Organization (WCO) 2002, 'Guide to measure the time required for the release of goods', Brussels.
- World Customs Organization (WCO) 2007, *WCO SAFE Framework of standards to secure and facilitate global trade*, WCO, Brussels.
- Zhang, S 2009, 'TRS as a measurement of trade facilitation: the experience of Customs in the Asia Pacific Region', *World Customs Journal*, vol. 3, no. 2, pp. 125-34.

Endnotes

- 1 The product of the cargo handled and the period of time between when the cargo has been unloaded and the time that the same cargo leaves the port/terminal divided by the total quantity of cargo handled.
- 2 It is assumed that the business in question is based in the largest city of the economy in question and does not operate within an export processing zone or an industrial estate with special export or import privileges. It is domestically owned with no foreign ownership. The data collection is based on the business exporting a 20-foot equivalent unit (TEU) container of standardised cargo by sea transport. Every official procedure that is necessary to export the container is identified, along with the time taken in calendar days and the fees and charges in US dollars. The same is done to collect the data relating to the importation of an equivalent cargo. The costs exclude the costs of tariffs, duties and ocean transportation. The time taken and the costs exclude those incurred in the sea transport stage but they include those in the land transport stage. The cargo traded is a dry cargo. It is not hazardous, does not include any military equipment, does not require refrigeration or any other special environment, and does not involve any special phytosanitary or environmental safety standards, other than accepted international standards.
- 3 World Bank, viewed 9 September 2010, www.worldbank.org/kz/external/default/main?pagePK=64027221&piPK=64027220&theSitePK=361869&menuPK=361907&Projectid=P070089.
- 4 Total landed cost 'consists of the cost of acquisition, freight cost, customs and duties, transaction costs, other logistics costs (such as documentation), potential tax subsidies, and inventory holding costs' (Lee 2010, p. 177).
- 5 The Independent Evaluation Group (IEG) is an independent, three-part unit within the World Bank Group. IEG-World Bank is charged with, inter alia, evaluating the activities of the IBRD (The World Bank). IEG reports directly to the Bank's Board of Directors through the Director-General, Evaluation.

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Reforming Customs by measuring performance: a Cameroon case study

Thomas Cantens, Gaël Raballand and Samson Bilangna¹

Abstract

Many Customs administrations have suffered from corruption and struggled to identify options for ameliorating this malady. In seeking to reduce corruption, while simultaneously strengthening performance (such as raising revenue collection and enhancing trade facilitation), policymakers should conduct experiments that can assist in identifying constructive policies. Such an experiment has been tested for Cameroon Customs, with some preliminarily positive results. In 2007, Cameroon launched a reform of its Customs administration, which included the installation of ASYCUDA (an automated Customs clearance system). In February 2010, as a continuation of the reform, Cameroon Customs introduced a system of performance contracts signed between the Director General and a number of front-line officers in the port of Douala. The core of the performance contracts is an agreement that the practices of the customs officers will be recorded and reported to the Director General. After four months of their implementation, initial results are encouraging (including lower corruption, higher revenue collection, and shorter clearance times) and may point to the birth of a new professional culture. This paper focuses on the experience and results so far of the performance contracts aspect of the reform, and suggests that replication may be beneficial for other Customs administrations.

Des Lupeaulx: 'After all, though statistics are the childish foible of modern statesmen, who think that figures are estimates, we must cipher to estimate. Figures are, moreover, the convincing argument of societies based on self-interest and money, and that is the sort of society the Charter has given us, in my opinion, at any rate. Nothing convinces the "intelligent masses" as much as a row of figures. All things in the long run, say the statesmen of the Left, resolve themselves into figures. Well then, let us figure.'

H de Balzac 1844, *Les Employés* ['Bureaucracy'], Chapter 9.

1. Introduction

In 2007, Cameroon Customs launched a reform and modernisation initiative. In particular, the reform was intended to reduce corruption which had long been a constant stain on the reputation of the administration and hindered fulfilment of its mandates. The reform began with the installation of ASYCUDA, a Customs clearance system, which would enable the administration to not only track the processing of each consignment, but also to measure a substantial number of criteria relevant to the reform, such as compliance with the deadline for recording the manifest by consignees.

For almost two years, upper management and front-line officers shared the same reality thanks to 'figures' (performance indicators) to measure how the reforms initiated by the former were applied by the latter. While this initial quantification phase bore fruit, its impact gradually declined. In identifying

this problem, a possible solution was adopted: beginning in 2010 quantification became prescriptive in that objectives have been set for the customs officers. More specifically, Cameroon Customs introduced a system of individual performance contracts to comprehensively measure the actions and behaviours of customs officers operating at two Douala port bureaux using indicators extracted from ASYCUDA.

Preliminarily, the results from this experiment are encouraging. The Cameroon Customs bureaux that are the experimental group have generated better results than the control group on matters such as revenue collection, reducing corruption, and trade facilitation. This paper traces the Cameroon reform from the introduction of the performance indicators to the preliminary measured results of performance contracts.

The paper's second section provides an overview of measurement theory and the Cameroon Customs reform. The third section begins by narrating the events and decisions which over the last four years gradually led Cameroon Customs to introduce quantification of their action. The fourth section discusses the principles and results of the last stage, the introduction of performance contracts. These contracts have had a positive impact on inspectors' professional practices as well as facilitating border-crossing and strengthening law enforcement. The fifth section provides an analysis of the long-term impact of the difficulties raised by the introduction of performance measurement, and the final section concludes and presents the next possible steps.

2. New public management and performance contracts

In his novel *Les Employés*, which deals with public servants,² the 19th-century French author Honoré de Balzac makes one of his characters, the secretary general of finance Monsieur Des Lupeaulx, admit that figures are of some importance to reform. When reform was applied to a ministry, however, it generally meant that a number of bureaucrats were themselves '*réformés*' ('reformed', in the sense of fired) using the term current at the time (Ymbert 1825).

Over a century later, in the 1970s, *new public management* (NPM) theory introduced private sector management techniques into the public sector. NPM encompasses a heterogeneous range of instruments and ideas which find common ground in the neoliberal critique of the welfare state. Initially a 'simple' desire to reduce the power of the State, above all by privatising its actions in the social sectors, it expanded into a softer and more consensual version with the introduction of the 'public entrepreneur' figure: a public servant who, in order to achieve global objectives, enjoys a degree of flexibility in organising their resources.³

In February 2010, Cameroon Customs launched an experiment which shares a number of '*mots d'ordre*', *credo*, with NPM: 'autonomy', 'performance' and 'quantification'. This pilot resulted in the implementation of individual 'performance contracts' signed between the Director General of Customs and two key customs offices in the port of Douala. These contracts represent a new step in the process of improving performance which began three years earlier.

Performance contracts are based on the objective measurement of the actions of public servants and financial incentives or career advancement policies. In Cameroon, the global objective of the performance contracts is to encourage customs officials to adopt good professional practices. Indeed, fighting bad practices is a key element in improving customs revenues. Corruption has a direct negative impact on customs revenues and competition in the private sector.

The history of Cameroon Customs demonstrates the same capacity of the public sector to gradually absorb private sector techniques as do those countries where NPM⁴ developed: a pre-shipment inspection company (in place since 1987) is responsible for evaluating imported goods and some exports; public servants – including customs officials – were dismissed and public sector salaries cut in the wake of structural adjustment plans (1992, 1994).

Moreover, this process of introducing techniques from the private sector has often been imposed by external constraints, in particular the structural adjustment plans of the 1990s, in the same way that many countries have seen an evaluation culture imposed from outside. The 1990s therefore saw their first ‘*déflatés*’, a French term coined to describe lay-offs, including voluntary departures, from the public service (Mbonji 1999), which echoes Balzac’s ‘*réformés*’.

Nevertheless, the flexibility of Cameroon Customs’ contracts differs from that of the NPM’s ‘public entrepreneur’. The background of corruption means that the Director General is less well-informed than his subordinates: (s)he does not know exactly how or to what extent agents are applying the reforms which have been adopted. This finding can be extended to a large number of administrations in sub-Saharan Africa (Mbembe 1999; Raffinot 2001; World Bank 2005). The contracts also aim to recreate and strengthen the hierarchy in order to achieve reform. The Cameroon experiment does not, therefore, have the same vision as the NPM policies which question the Weber model of the administration (Rouban 1998; Spanou 2003) and result from agency theories based on principal-agent models.

Despite its strong presence in debates on state reform, measurement of performance in itself is not so widespread that the literature on this subject abounds (Julnes & Holzer 2001). The impact of incentives policies is rarely measured rigorously and studies often focus on those public services dubbed social services (health, education) and on front-line agents (Considine & Lewis 2003). No project has been carried out in fiscal administrations anywhere in the world, nor *a fortiori* in sub-Saharan Africa, to our knowledge.

Moreover, although there are often claims of resistance to these policies of quantifying public action, little research relates their implementation in the form of a narrative which points out the key moments (Wholey & Hatry 1992). This is the angle taken by this paper, which aims to present the policy of performance measurement in Cameroon Customs by correlating, as much as possible, the history of the reform and figures which measure its results.

3. History of the reform

Not everyone in Douala celebrated 1 January 2007. On that day, the head of the IT Division of Cameroon Customs became, in the eyes of his colleagues and of freight forwarders, the main agent of a mini-revolution: by disconnecting the PAGODE⁵ computerised customs clearance system, he put an end to 20 years of sometimes tormented history of a software system which processed 90% of customs revenue. The following day, not without some apprehension, he launched Customs activities on ASYCUDA,⁶ a system developed by UNCTAD.⁷ This seemingly exclusively IT switchover was, in reality, the culmination of an opportunity taken over the previous eight months to prepare a reform of customs procedures.

The impact of automation

All customs procedures have been automated using the options offered by ASYCUDA. This process of automation abolished the ‘release note’, which obliged customs brokers or importers to return to the customs inspector once they had paid their customs debt in order to obtain that document.

Automation has been accompanied by a process of greater empowerment on the part of customs clearance actors who have been obliged to use the customs computer system to carry out their operations from their own premises. This refocused customs officials on their job. The common customs clearance halls were closed; customs officials no longer jointly manage customs warehouses and areas in the port together with their private owners, and they no longer manage the connections to the customs network.

Greater empowerment and automation constituted advances in themselves, but it is the combination of the two which consolidated change.

A turbulent launch in the port of Douala

From the first week of its operation, ASYCUDA was challenged; its installation and effectiveness questioned. In Cameroon, customs revenues represent 27% of national revenues, the state remains the biggest employer,⁸ and most consumer products are imported. When the newspapers accused Customs of losing over 2,300,000 Euros a day, rumours of commercial disorder and a loss of fiscal revenue posed a social and political threat. In the first days, goods did not go out, containers piled up and, according to its operator, the container terminal risked blockage. Paralysis threatened to such an extent that a manager of the container terminal took the unfortunate initiative of asking shipping agents not to send any more vessels to Douala. This message provoked the ire of the authorities who requested immediately to convey a counter-message.

The challenge was also propagated from within Customs itself. The simplification of procedures had distanced customs officials from users. Those who had had to leave the customs warehouses and areas no longer received the legal bonuses previously paid to them for their work, part of which was also redistributed to all customs officials. Many customs officials therefore criticised the launch of a system which they considered to have been imported and installed under pressure from outside (Cantens 2007).

The Director General and the minister chose to expose the reality as objectively as possible, by opposing rumours with figures. This was a decisive moment for the future institutionalisation of performance measurement.

Their message initially aimed to prove that no duties or taxes had been lost since, if the goods did not leave the port, their presence represented a guarantee. Nevertheless, this argument was risky and liable to cause concern in the event that too many advantages were granted with too few guarantees.

The Director General was therefore keen to distinguish which customs clearance professionals used ASYCUDA. A week after the launch, at a public meeting in Douala, in the presence of importers and exporters, the Director General asked his head of IT division to read out the first figures taken from the system: 30 professionals listed already worked on ASYCUDA, and the Director General advised importers to work with them rather than with the other 90 who had not yet operated on the new system due to a failure to properly install it on their premises.

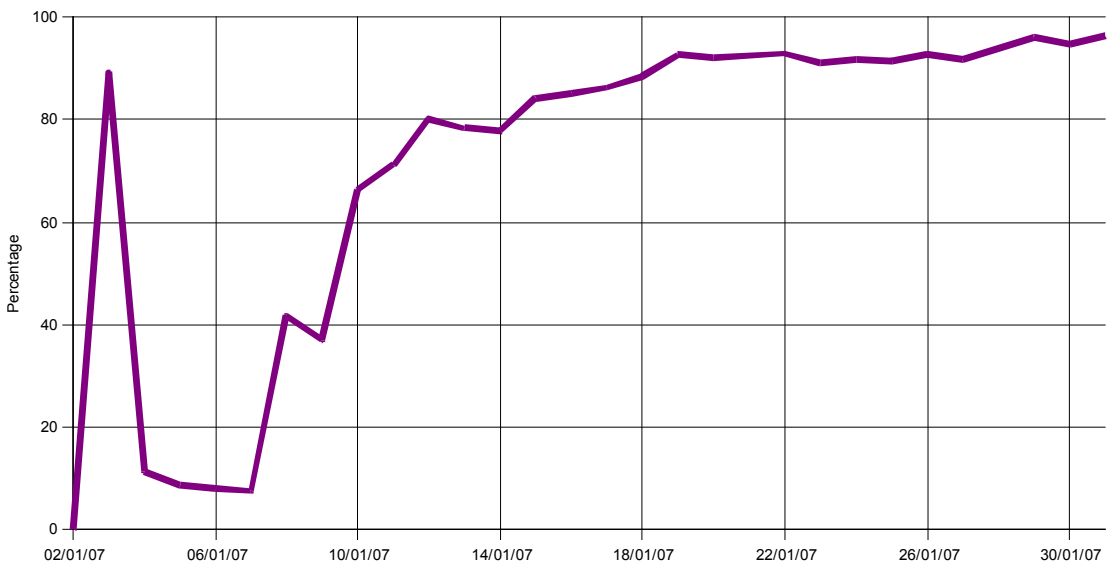
After two weeks of operation, the Director General requested a list of front-line inspectors who were still reluctant to use the system. A few inspectors were holding 40% of duties and taxes registered but not yet paid (see Figure 1). He contacted them directly and the declarations were immediately assessed. The habit of using figures as a means of controlling the quality of service took hold; inspectors were now aware that their hierarchy was checking up on them via the computer system.

In the following months, a team was constituted to reply to specific requests from the Customs and political hierarchies: to provide daily information on revenues, declarations which had not yet been assessed by inspectors, and the number of containers which had left the port. The Director General brought operational managers together on a regular basis, brandishing the notes submitted by this team and warning that he had the figures and knew the names of agents who were not facilitating customs clearance.

The rapid assessment and increased monitoring of front-line services bore fruit: the system took off and, despite the rumours, in January 2007 it recorded revenue 15% higher than in January 2006, 18% higher than in January 2005 and 24% higher than in January 2004. January 2007 was also a very good month in terms of processing times: as Figure 2 shows, in 2007, processing times declined in the following months, which were not subject to the same pressure.

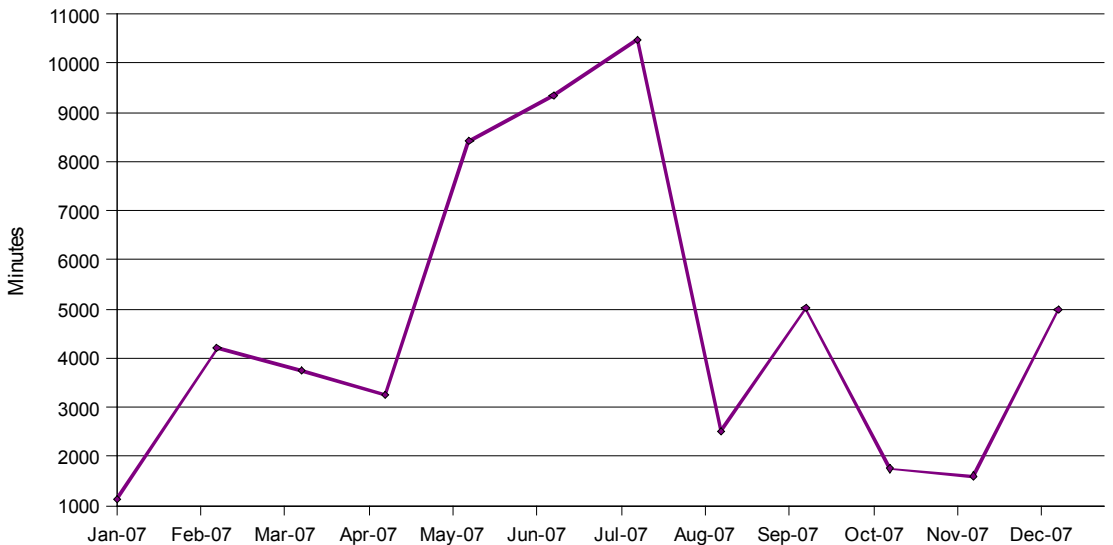
Nevertheless, no solution was found to other problems in 2007. Shipping agents did not comply with the new rule requiring submission of the manifests 24 hours before the vessel's arrival, which slowed down the process and prevented any targeting. Front-line control was ineffective; some bad practices

Figure 1: The ratio of the number of declarations assessed by inspectors divided by the number of declarations registered by brokers during ASYCUDA's launching month (January 2007) (by percentage)



Source: Cameroon Customs

Figure 2: Monthly average customs release time in 2007 (in minutes)



Source: Cameroon Customs

remained, raising doubts as to the inspectors' ethics. Thus, a competition to process more declarations created tensions between inspectors in the same office and made some inspectors nostalgic for the old IT system.

By the end of 2007, all customs officials were aware of the system's potential vis-à-vis internal audit of the service, having themselves been victims or having exploited it. The cross-checking of data was a potential threat which also weighed on the operational managers in their reports to the Director General: it had become clear that it was no longer possible to systematically explain a drop in revenue by a decline in economic activities.

The launch of a measurement policy, a key pillar of the Cameroon Customs reform

In January 2008, the Director General decided to make performance indicators a pillar of his reform policy and set up a team of computer experts and customs officials. Structuring the flow of information back to the Director General responds to an obvious difficulty he faced. Not being in the field, he is, in a context of corruption, less well-informed than his operational staff. This situation has been accentuated by the relocation of the Directorate General to Yaoundé, over three hours away from the port by road. The Director General's 'co-management' of current customs operations, as described by some senior officers who denounced it in 2006, nevertheless gave operators the possibility of complaining rapidly to the superior authority. By relocating, the Director General deprived himself of simple access to direct sources of information.

From February 2008, the team put in place 25 indicators for the 11 customs offices in Douala. These indicators measured economic activity from a customs viewpoint, the times taken by customs officials and brokers to process files, the effectiveness of controls and of sensitive procedures, and compliance with the customs channels.⁹ The principles of indicators have already been widely discussed. They rest on the key idea that fraud and corruption are necessarily linked (Libom, Cantens & Bilangna 2009). After the gains generated by automating procedures, the next revenue niches lie in the fight against corruption.

Evaluation therefore achieved a certain level of institutionalisation, making it more effective than sporadic controls, and thus became a 'social process' (Varone & Jacob 2004). By introducing this system of indicators, the Director General made a choice radically different from that of his predecessors who managed PAGODE. Because it is automated, no customs clearance system, be it PAGODE or ASYCUDA, can compete with the vivid imagination of fraudsters and their empirical pugnacity which drives the hope of high profits. Under PAGODE, the general development policy was to strengthen the system permanently by uncovering detected frauds, on a case-by-case basis. Ultimately, the system's complexity created insecurity and a strong dependence on computer experts. Under ASYCUDA, this policy was reversed. The system continues to offer computer security, designed to ascertain the identity of the actors and the irreversibility of their acts. But it is also judged on its capacity to provide the most realistic image possible of customs clearance in the field.

In 2008 and 2009, the Director General and operational managers met in Douala to examine the monthly report on indicators. This report was distributed to them before the meeting, with each of them noting their own results and the results of their colleagues, of each unit and of each inspector. These meetings gave managers the opportunity to better control their subordinates.

The impact of the measurement policy

The results were tangible.¹⁰ The tax yield of a declaration increased consistently: +21% between the first quarter of 2007 and the second quarter of 2009 despite the tax exemption measures for staple food adopted in March 2008. For containerised imported goods for domestic use, the average yield of a declaration increased by 10% in 2007.¹¹ Disputed claims increased without any additional pressure being placed on operators: the share of duties and taxes collected following controls rose from 0.75% to 1.02%

of revenue. The duties and taxes collected in this way thus increased by 56% while the number of disputed claims increased by only 12%. In terms of facilitation, 75% of maritime manifests were recorded in the system 24 hours before the arrival of the vessel, allowing 18% of declarations to be submitted before unloading the goods. In the port of Douala, between 2007 and 2009, the average assessment time¹² of all customs offices collectively was reduced from 1.2 days to 0.8 day. The total processing time¹³ between 2007 and 2009 was reduced from 6.5 days to 5 days. Efforts were also made by the freight forwarders and managers of customs warehouses and customs clearance areas.

This significant improvement in processing time for the maritime professions shows the existence of indirect impacts. By equipping themselves with performance indicators, customs officials strengthened their capacity for dialogue with the private sector and weakened the intermediation of the shipping agents. By disseminating some indicators to importers and exporters, the Director General was therefore able to demonstrate the responsibility of all actors in the customs clearance process. As a result, some freight forwarders processing large volumes of goods reduced their intervention times by half between the beginning of 2008 and the end of 2009.

Other non-quantifiable results pointed to a gradual acceptance of the constraints linked to performance measurement and its integration into hierarchical reports. At meetings, some operational managers appeared with a laptop allowing them to view the report on indicators directly. Others submitted a monthly report matching the indicators with their own data which they had been obliged to collect. Indeed, some indicators raised questions which forced the heads of operational services to carry out their own internal investigations in order to justify the results. In one particular case, where the interpretation of the results continued to oppose that of the directorate general and operational services, cross-checks revealed the failings of the pre-shipment inspection provider.

After two years of operation, the directorate general of Customs considered that the operational services in Douala had had sufficient time to adopt the performance measurement techniques, while at the same time a wind-down of this policy threatened to combine with the impact of the economic crisis.

On the one hand, economic activity linked to external trade was dwindling. Exports dropped by 40% in 2009 against 2008, and imports concomitantly declined (see Figure 3).

On the other hand, revenue targets continued to grow (+6% in 2010) while there was a gradual fall in values declared from the end of 2009 onwards. At the same time, the enforcement action of customs officials in the field appeared to have levelled off. While this has little impact on revenue, it nevertheless remains an indicator of relations between customs officials and users.

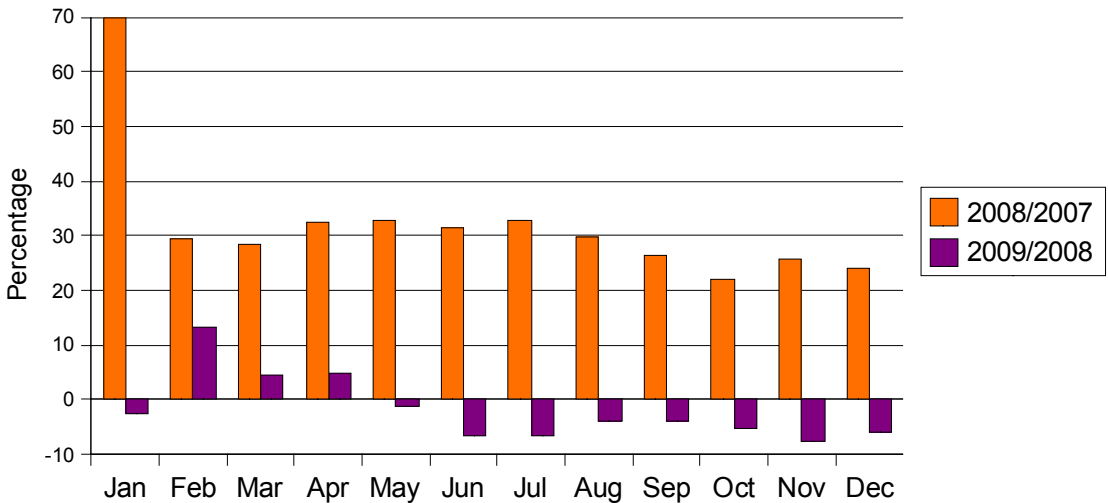
4. Performance contracts, a new step

One of the solutions envisaged was to move from a purely descriptive performance measurement to a prescriptive measurement. At the end of 2009, Cameroon Customs obtained funding from the World Bank to support, over a six-month experiment period, their draft performance contracts in the port of Douala.

Principles

In this pilot stage the performance contracts were launched in two of the seven offices in the port of Douala. These two offices collect 76% of the port's revenue. Office DP I handles imports of goods in containers for clearance for home use, with the exception of vehicles, has 10 to 11 inspectors and collects 60% of revenue. Office DP V handles imports of vehicles, including in containers, has 5 to 7 inspectors and collects 16% of revenue.

Figure 3: Comparison of the monthly value of imported goods (2009 vs 2008, and 2008 vs 2007) (by percentage)



Source: Cameroon Customs

Like any other contract, the performance contracts formalise an agreement between two parties specifying mutual obligations as regards results. The contracts go beyond revenue targets, which are fixed annually by Customs for the Government. Nevertheless, these revenue targets as well as the distribution of products of disputed claims and of protocols already formed a ‘numbers system’ which regulated reality (Ogien 2010). This situation is common to all fiscal administrations and offers favourable ground for performance measurement.

The Cameroon contracts incorporate two specific features which take account of the context of corruption. First, they are signed between the Director General and, individually, the head of sector (who heads the region), the two heads of office and the customs inspectors. Each commits themselves directly to the Director General and not to a direct hierarchical superior. Second, the global objectives inherent to every Customs administration (facilitation and enforcement) are complemented by objectives which aim to abolish bad practices.

Unlike NPM, which seeks to ‘optimise’ an administration/structure in relation to its objectives (Wholey & Hatry 1992; Strathern 2001), the Cameroon contracts are not based on a relationship between resources allocated and services provided. In Cameroon, the goal is, above all, that individuals comply with the formal structure: the match between their action and the rules of the structure is measured, which reinforces the formal framework and does not call into question Weber’s model of organisation of the administration. The contracts evaluate the adherence of individuals to the organisation’s rules.

On the other hand, the principle of rational choice which assumes that individual behaviour is guided by seeking to maximise individual profit and which characterises NPM (Mascarenhas 1993) is, in Cameroon, pushed to its extreme by the individualisation of the contracts.¹⁴ The system of incentives and sanctions is therefore at the heart of the reform. A clear distinction must therefore be made between sanctions and incentives.

Cameroon Customs have long since adopted a policy of financial incentives via the distribution of the yield from fines and various memoranda of understanding with its partner professions (Bilangna 2009; Cantens 2009). During meetings with the inspectors and their superiors to draft the contracts, exchanges showed the importance of non-financial incentives. Indeed, given the method of distributing the yield from fines which legally guaranteed each inspector 10% of the fine imposed with no upper limit, inspectors did not prove particularly interested in additional financial incentives. At any rate, they did not appear to believe that the administration could better this 10% any more than it could compensate, in the case of those inspectors who were corrupt, for the profits lost due to ethical behaviour. A number of incentives have therefore been envisaged: congratulatory letters, entering the congratulations on agents' personnel files, easier access to the Director General by a regular meeting ultimately also reviewing the professional aspirations of successful agents, further training courses, etc. As regards sanctions, a process of interviews and warnings has been introduced. The main sanction remains, for agents, eviction from those offices with strong fiscal potential and where the possibilities of earning money legally through disputed claims are high.

From this point of view, the threat of sanction by transfer to an office with little earning potential would therefore have a greater impact on personal behaviour than the hope of an incentive. This concurs with the observations of Besley and Ghatak (2005) who found no evidence that incentives were important in organisations structured around the notion of mission rather than of profit. The Cameroon experience therefore rests more on contractual governance of deviant behaviour (Crawford 2003): five of the eight contract objectives relate explicitly to bad practices that must be curtailed, even though the eight objectives are equally split between four facilitation objectives and four enforcement objectives, following the two cardinal missions of every Customs administration. These objectives are described in the following sections.

The experimental protocol

For each objective, a comprehensive review was carried out to determine which parameters were to be taken into account and, once these parameters had been defined, the performance contract set a minimum or maximum threshold. This threshold is a median calculated on the basis of the declarations processed by the offices over the previous three years, 2007, 2008 and 2009. The sample covers 74,591 declarations for Office DP I and 63,761 for Office DP V.

Then, every 10 days and once a month, each objective was the object of an individual calculation by an inspector to evaluate to what extent the threshold had or had not been achieved. The results were presented to the inspectors and to the heads of office by the team in charge of the project.¹⁵

Two opposing objectives have been integrated into the contracts: releasing the goods more quickly and increasing the numbers of disputed claims. It is the balance of the two objectives which limits the harmful effects: facilitation alone would not regulate corruption issues, while enforcement alone could likewise legitimise corruption if facilitation constraints were not imposed.

The trade facilitation indicators

The first global objective of facilitation is the time measured between the declaration's entry by the customs broker and its assessment by the customs office inspector.¹⁶ The study of the sample from the last three years showed that a very large majority of declarations were assessed the same day or the next day, in both offices. The difference lay at the level of same-day assessment, with DP V processing over 80% of declarations the same day, compared with over 64% in DP I. But ultimately, by the end of the next day, both offices had assessed over 90% of declarations entered in the system. A second, smaller, tranche was cleared by the maximum three-day deadline, by which time 96-97% of declarations had been assessed. After this, progress was slower.

Thus the global objective of facilitation has been defined in two measurable objectives: a minimum threshold of declarations assessed with zero days, and a maximum threshold of declarations assessed within five or more days.

Two potential problems have made it necessary to integrate two more objectives into the contracts. The first is the non-assessment of declarations. Not assessing problematic declarations and leaving them on hold in the system artificially reduces the assessment time. The contract has therefore set a maximum threshold for non-assessed declarations.

The second, more complex, problem is the speed of assessment and the offsetting entry. Inspectors choose to offset after assessment rather than amending the declaration prior to the assessment. This practice concerned 80% of adjustments, regardless of control channel, be it physical or documentary. It reduces the assessment time, which thus no longer shows the time actually taken by the inspector to carry out their control.

This choice is a bad practice which may be interpreted in two ways, each compatible with the other. First, once offsetting entries becomes routine, users are at permanent risk of readjustment by the inspector who assessed their declaration. Second, by systematically offsetting their adjustments, inspectors ensure that they have a maximum number of declarations to process. ASYCUDA automatically assigns declarations to inspectors on the basis of their workload calculated on the basis of the numbers of declarations already assigned to them which are awaiting assessment. By carrying out the assessment rapidly, inspectors keep their workload at a low level but are obliged to adjust declarations via offsetting entries. Apart from the negative impact on the relevance of the assessment time, this practice results in competition between the inspectors. On average, in Office DP I, the 'fastest' inspector manages to process up to six times more declarations a day than the 'slowest'. This competition adversely affects the equal treatment of users and can at the same time induce corruption.

The contracts therefore laid down two objectives. The first, in the contracts for heads of customs offices, requires a maximum deviation of 1.5 between inspectors' processing speeds; the head of a customs office may suspend inspectors who process declarations too 'rapidly'. The second objective, in the contracts for inspectors, fixes a maximum threshold for offsetting entries by the inspector who has also assessed the declarations redirected from the physical inspection channel to the documentary control channel.

The fight against fraud and bad practices indicators

The second global objective is enforcement. The amount of duties and taxes raised increases based on both the number of declarations collected and the additional amounts collected following the controls. The green channel is not currently activated, and so all declarations are subject either to documentary controls or to a physical inspection.

The contracts set a global objective for inspectors: a minimum percentage of amounts of duties and taxes collected following adjustments compared to the amounts of duties and taxes assessed.

However, this objective may be affected by two biases. The first is the size of the disputed claim. To achieve a minimum amount of adjustments, inspectors could increase the number of small disputed claims. Analysis has confirmed the average size of disputed claims over recent years. In Office DP V, 65% of adjustments were below 300 Euros (compared with an average assessment of over 3,000 Euros). In Office DP I, the red channel showed a paradox: in numerical terms, low-level adjustments predominate over high in the case of high-risk declarations. Forty per cent of disputed claims yielded between 1% and 5% of the amounts assessed. To remedy this tendency the contracts fixed a maximum threshold in numerical terms for small disputed claims and a minimum threshold for the highest disputed claims in the red channel.

The second thing which may potentially affect this objective is linked to the rerouting of declarations.¹⁷

Rerouting by inspectors is a legitimate action. However, rerouting through the red channel (physical inspection) may also be a means of pressure on the user. Thus it was necessary to monitor the adjustments carried out on those declarations rerouted to the red channel. The contracts have not set a limit on the number and proportion of declarations rerouted; moreover, the operational services already had enough constraints obliging them to rapidly process low-risk declarations. The only measurable objective consisted of fixing a rate of adjustment for declarations rerouted to the red channel greater than that for those declarations that were not rerouted.

The impact of performance contracts

Preparations for the deployment of the performance contracts lasted several months, from September 2009 to February 2010. The inspectors and their managers were involved in all stages of preparations, from the drawing up of the contracts to the choice of indicators and periodic performance reviews. Before the launch, stakeholders were brought together in a contract design workshop. This prompted the creation of a unit specifically in charge of the program in question, made up of customs officials and computer staff. It is supported by the World Bank and the World Customs Organization.

During the preparation stage, however, the contracts did not give rise to much debate, given their newness and above all the distrust of the operational actors. While this facilitated the signing of the contracts, the first regular meetings (held every ten days) were very turbulent: most operational actors had not properly foreseen the consequences. This obliged the project team to adapt some indicators rather than rewriting them completely as some parties to the contracts wished. This tension, a sign of gradual acceptance, continued and led to a number of amendments in the course of the first quarterly evaluation.

After 13 weeks of implementation, halfway through the experiment, the results proved positive surprisingly quickly. This testifies as much to the effectiveness of the contracts as to the willingness of the agents and their growth potential.

The impact on revenue is measured in relation to economic activity for which it is difficult to obtain reliable data in virtual real time. Hence the selection of numbers of container imports, values declared, numbers of articles and tonnage – all data which can easily be extracted from the ASYCUDA system. None of this data is absolutely reliable, but points to trends which may help interpret revenue developments.

In Office DP I, the duties and taxes assessed over the period increased by 1.5% in 2010 over 2009, while the values declared fell by 3.5% and the number of imported containers by 22%. Taking the previous three-month period (November 2009-January 2010) as a point of comparison, the fall in values and in the number of containers imported had already begun: -7% for value and -3% for containers, while assessments had also fallen by 3.9%.¹⁸ Moreover, the tax yield of the declarations rose by 5% over the contract period compared to the previous three months, or 1.5 million Euros per month (on the 30 million Euros collected) and by 3% if compared with the quarter prior to that. Thus, it could be said that the contracts had reversed the trend of the previous months: despite a significant fall in activity and in values declared, the revenue collected was on the increase.

In Office DP V, the duties and taxes assessed over the period increased by 26% in 2010 over 2009, which is in line with the increase in values (+30%), volumes (+41%) and the number of declarations (+33%). Taking the previous three-month period (November-January) as a point of comparison, despite a small increase in declarations and imported volumes (+17% and +6%), the values declared and the duties and taxes collected fell (-9% and -8%).

The average yield per declaration has increased by 10% compared to the three months preceding the introduction of the contracts and 16% compared to the six-month period preceding the introduction of the contracts. However, this sizeable increase must be put into perspective. In 2009, apart from the month of December, the values declared and the number of declarations stagnated at low levels for ten consecutive months. In 2008, the average yield per declaration was greater than the values noted

in the period of application of the contracts. Thus, for Office DP V, it is difficult to conclude that the performance contracts have had a positive impact in terms of revenue collection, unless they are being compared only with the continuous decline over the months prior to the introduction of the contracts.

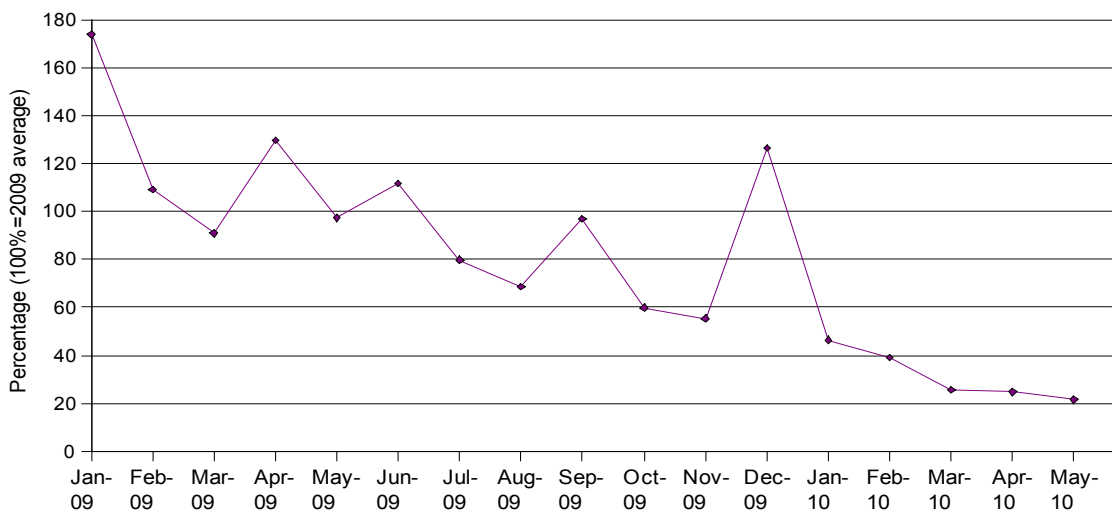
The impact on deadlines is more homogeneous. The months under contract have recorded the best times since 2008 (see Figures 4 and 5). A qualitative threshold, reached in 2009, has been exceeded: almost 90% of declarations are assessed the day they are entered compared with less than 80% previously. At Office DP I, 100% of inspectors processed at least 75% of their declarations the same day in April, 70% in February and March and 50% the previous months. At Office DP V, 100% of inspectors processed at least 85% of their declarations the same day in April, 83% in March and 30% in February. During the previous months, only one inspector reached this threshold in October 2009. Processing speeds have, moreover, evened out. Whether measuring the standard deviation of daily processing speeds or the relationship between the fastest and slowest speeds, the indicators have been halved. Inspectors therefore no longer engage in stiff competition to process as many declarations as possible.

The impact of the performance contracts on disputed claims is also very important. In quantitative terms, revenue from disputed claims has increased +17% for Office DP I and +322% for Office DP V between the period under contract and the preceding period of the same length.

At Office DP I, while positive, the impact measured must be placed in the context of the months preceding the experiment: the months of February, March and April 2010 have reversed the downwards trend initiated in 2009 but the levels of disputed claims attained in March and April 2010 remain lower than those attained in 2008. At Office DP V, the months of February, March and April 2010 represent a significant increase over the period after the steady fall since mid-2008 (apart from two exceptional months in 2009).

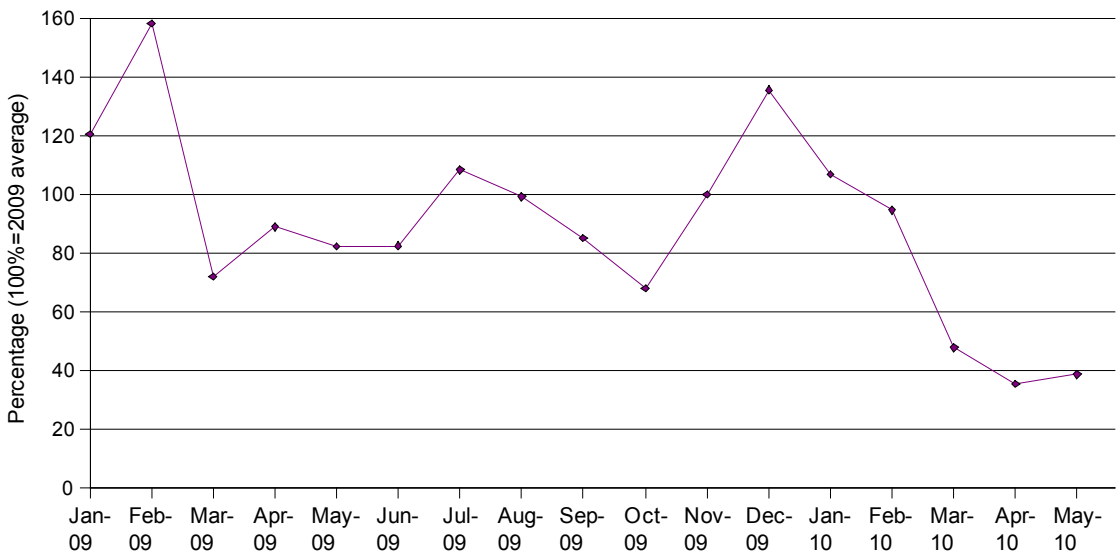
In qualitative terms, the performance contracts marked a break. The inspectors abandoned low-level disputed claims to concentrate on major ones. In Office DP I, in March and April 2010, all inspectors collected an average of more than 1,500 Euros per adjustment. They were at 30% to 50% of that amount in the preceding months. The median adjustment increased from around 1,500 Euros in the months prior to the period under contract to over 3,000 Euros in March and April 2010. At Office DP V, half the

Figure 4: Assessment time at Douala Port I (January 2009-May 2010) (by percentage)¹⁹



Source: Cameroon Customs

Figure 5: Assessment time at Douala Port V (January 2009-May 2010) (by percentage)



Source: Cameroon Customs

inspectors carried out adjustments averaging over 1,500 Euros in March and April 2010. One third of inspectors achieved this in January and February 2010, and none attained this threshold in the months prior to that.

The contracts have also had an impact on bad practices. First, rerouting from the yellow channel to the red channel is more effective in terms of disputed claims. From this point of view, the inspectors have shown true discipline. At Office DP I, 42% of rerouted declarations were the subject of litigation in April 2010. The rate was between 10% and 12% in February and March and below 10% the previous months. At Office DP V, the rate was 58% for the month of April 2010. It was 11% and 15% respectively in February and March 2010. Previously it ranged from 0% to 5%.²⁰ Second, the practice of systematically offsetting declarations in the yellow channel has declined sharply and some inspectors have put an end to it entirely. While on average 80% of declarations adjusted in the yellow channel were adjusted via an offsetting entry by the inspector who carried out the assessment, this proportion fell to 7% in April for Office DP I and 19% for Office DP V.

Non-quantifiable results

Three non-quantifiable impacts have also been found. The operational managers used the contracts as an argument to organise greater fluidity in inspection procedures with the operator of the container terminal, a request which had previously gone unanswered for over two years.

The inspectors are, moreover, now more 'diligent', in their own words and those of their superiors. The strong constraint of facilitation and the end of the competition to attract most declarations requires a more constant presence in the office.

Finally, relationships between the inspectors and their heads of office have improved by making the actors more aware of their responsibilities. Having become accountable to the Director General for their litigation results, the inspectors refused to have to assume responsibility for rerouting declarations at the request of their superiors. The superiors themselves reroute declarations where their information shows this to be necessary.

The review of these results augurs a real change in Cameroon Customs after three years of introducing quantification systems and a policy of patient implementation.²¹ Front-line inspectors have a precise account of their actions in the system giving them evidence and justifications in the event of blacklisting. While it is impossible to say whether these changes are irreversible, the conditions required to establish such irreversibility must be examined.

5. Towards a new professional culture?

This reform shows the key role of the Director General. This involvement is a strong characteristic of the reforms linked to NPM and poses the question of how durable their policy may be once they leave their posts.

The involvement of the organisation's senior managers is often found to be an essential factor in the success and implementation of a new culture (Behn 2002) insofar as they are the main beneficiaries, having widened their authority from technical to management fields (Wholey & Hatry 1992; Franklin 2000; Julnes & Holzer 2001). In Cameroon, the indicators and the contracts have tackled the information asymmetry generally found in ministries of finances between headquarters and grassroot officials (Mascarenhas 1993; Raffinot 2001). At the same time, the objectivity of the performance of inspectors may help a manager to turn down external requests to the administration 'to place' a protégé in an office with high revenue potential.

Despite these advantages, the future directors general of Customs will continue this quantification of performance only under two conditions: first if the quantification of action serves as a framework for reflection and for everyday work for all customs officials, in other terms if a new professional culture is established; and second if this quantification is dynamic.

This section examines the conditions underpinning professional culture, and questions the need for utilisation of a performance measurement system.

Why performance contracts may have an impact

Performance measurement does not take root on virgin ground. Customs officials have professional associations and demonstrate an esprit de corps linked to their important role in financing the developmental state (Cantens 2009). It is interesting to understand just how the contracts feed this culture.

One of the first conditions for a professional culture is the existence of a professional distinction (Elias 1950; Fischer 1966). Customs officials already have their own technical language and the contracts reinforce this distinction: a common language of quantity, problematic associations of technical terms, a common culture of presenting results in the form of graphs and tables which end up becoming a vernacular of their own (Porter 1995).

Secondly, the contracts induce a new way of generating acceptable standards without completely disrupting the existing hierarchical relations. The contracts take into account the fact that the coercive exercise of administrative authority does not function satisfactorily and rests, in the main, on the willingness of those who are supposed to carry out the orders. The contracts do not clash with this situation but exploit it: calculated on the basis of the medians for recent years, the contractual thresholds therefore take account of the behaviour of all, and thus establish a practical standard of behaviour which, because it is based on a median behaviour, will be recognised and therefore become acceptable.

Third, the contracts strengthen freedom of decision-making, a freedom which already existed and is peculiar to every repressive administration. Customs officials have the power to reach a compromise settlement for disputed claims and the concept of 'risk analysis' is familiar to them: faced with the size of flows, and traders' demands for speed, the administration recognises, in controlling only those cargoes

it deems to be high risk, that it cannot counter all frauds or all forms of corruption comprehensively. The contracts strengthen this possibility. By emphasising the pressure on two conflicting constraints – to release goods more rapidly and to impose more sanctions – inspectors are strongly encouraged to decide for themselves which cases should be investigated. Sociological analyses of public servants exercising policing missions have shown that they prioritise their interventions, given that they cannot process all cases which are submitted to them (Montjardet 1992, 1994; Favre 2001; Mouhanna 2001; Macci 2002).

Professional distinction, generation of ‘acceptable’ practical standards, freedom of decision-making are all conditions required for the development of professional culture, conditions which raise the problem of the relationship with the law. Performance contracts, like all contracts, place the law in the background, which raises two questions.

First, the indicators melt fiscal policy into fiscal technique: they do not take into account the fact that certain flows or operators are easier to tax than others. How can we take account of the administration’s efforts to extend the tax base of certain operators reputed to be difficult? Performance contracts lay down global thresholds which it is assumed that inspectors in the field will somehow ‘make do with’.

Secondly, to what extent does this freedom exist within Customs itself? We are asking heads of customs offices to be ‘managers’, and distancing them from customs clearance functions, but every managerial function needs to be accompanied by a certain freedom of decision making. However, this freedom is not guaranteed by a legal text but linked to appointment methods which rely largely on the political authority. Sociological issues combine with political issues – for instance, tribalism is invoked to explain why heads of customs offices are not allowed to choose their own subordinates, or corruption to avoid the development of preferential networks. Yet, just as inspectors and customs brokers are given the option of carrying out customs clearance badly, shouldn’t we give the heads of customs offices the possibility of making a poor choice of subordinate, so that they can truly be judged on their managerial capacity?

The sustainability and irreversibility issues

Continuing participation in the development of the content of the contracts helps render performance measurement irreversible. The problem is even more critical as it may be simple to design a system of measurement but it is much more complicated to use it and thus to make it transparent so as to open it up to criticism. Use of it is therefore a process (Julnes & Holzer 2001).

Indeed, the rapid results of the Cameroon experiment are also connected to its fragility. There is no standardisation of performance measurement through national agencies as in the United Kingdom, France or the United States (Franklin 2000). Such agencies may increase implementation times by generating conflicts with the administrations (Kelly 2008). In Cameroon, the absence of such centralisation has certainly accelerated the process by promoting implementation: measurement comes from below, from the operatives. Whether or not the process of performance indicators will be irreversible therefore depends on the capacity of customs officials to meet a number of challenges in years to come.

The first is to keep internal debate open in order to promote the genuine involvement of agents in building their culture. However, how can a debate be kept open when the knowledge produced rests on measurement? Measurement leads to an objectivity which tends to restrict any kind of debate: if a figure is ‘bad’, there is no other solution than to seek to ‘improve it’. However, the measurement of human activities is never completely satisfactory as it includes neither intention nor meaning (Ogien 2000). If we were to measure economic activity precisely and in real time, with incontrovertible figures, we would also be measuring the willingness of the agents in the field to adopt best practices. However, we must resign ourselves, the complexity of trade flows and the weaknesses of control resources mean that it is impossible to establish a reliable and constant measurement system: the indicators can only provide warnings and performance contracts can only provide a common frame of reference, not the best administration possible. To maintain lasting internal debate, the next step would be to give front-

line inspectors information on the impact of their individual performances in terms of revenue and facilitation.

The second challenge is data abundance and the capacity to cross-check and summarise them so as to bring out their meaning. Assuming the establishment of a new professional culture based on quantification, figures will abound. This is what is currently happening. Teams which had to manage just a few indicators in 2007 now have to manage over 300 (30 indicators multiplied by 11 offices) plus 136 objectives (8 objectives multiplied by 17 inspectors). This trend is also coming from outside, with the proliferation of performance measurement frameworks. Other actors are seeking to impose their own measurements. The fact that figures are being imposed by outside forces is a condition governing irreversibility but makes the situation more complex.

This excessive complexity does not affect the operational services but the central services. One of the consequences will certainly be the increased power of advisers responsible for cross-matching the figures and producing clear information which is argued objectively. It is likely, and certainly desirable, that the profusion of figures will ultimately move them into the background, to be used solely as argumentative data and as a tool for criticism and development.

The final challenge, at least, will be to administer the short-term evolution of the contracts. After four months of operation all, or almost all, customs office inspectors have reached or even surpassed 100% of objectives. Moreover, some objectives are now attained systematically and no longer need to be monitored, other than to verify their quality does not decline. Moreover, the number of objectives in the contracts cannot increase indefinitely. The solution is probably twofold.

First, the contracts will have to lose some indicators and integrate new ones. The contracts will be used to focus the attention of inspectors on an issue at a given point in time.

Second, the thresholds for the objectives will have to evolve. There is another alternative policy. If it is a matter of getting rid of the less productive staff on an objective and transparent basis, then the thresholds will have to increase on the basis of the medians: the medians are taken as objectives for the year N but calculated solely on the basis of the year N-1. If the priority is to achieve the revenue targets and therefore above all to reward the best, then the objectives would have to be increased proportionally to the increase in the revenue targets adopted by the government.

6. Conclusions

This paper traces the Cameroon Customs reform from the introduction of the performance indicators to the preliminary measured results of performance contracts. Moreover, the paper demonstrates the positive, although preliminary, results of individual performance contracts implemented in two Douala port bureaus using indicators extracted from ASYCUDA. Several lessons can be drawn from the Cameroon case study.

Customs' performance contracts are at the meeting point between two concepts which are the subject of much research and controversy: governance on the one hand, and new public management on the other. Performance contracts are interesting in that they penalise corruption and poor practice while distancing themselves from any points in common with corruption. As in the case of a crime or offence (Crawford 2003), the contracts allow a return to the idea of a 'situation of governance' (Blundo 2002) and the need for empirical research; corruption is a question of opportunities and acts and not of predisposition or specific individuals. Given the threat they pose, and their use of a standard calculation method, the contracts therefore constitute a policy of corruption prevention and of detection, to some extent.

The fact that this is a pilot and not a vast, structured program has two advantages. First, Cameroon Customs have controlled the risk that a major conceptual reform might pose to revenue collection. There was no question that the contracts would compromise the level of revenues collected. On the other hand,

the contractual dimension demonstrates to all agents that the hierarchy really is committed to granting more flexibility, which always remains in doubt (Behn 2002).

Wholey and Hatry (1992) defined four conditions for performance measurement: the right time (not necessarily when drawing up the financial balance sheet), a comparison (with the past or with an objective), a selection (it is not possible to measure everything) and low cost. In the case of Cameroon Customs, we have seen that timing was a key element in success: taking time to implement the contracts was the leitmotiv of the directors general. In addition, the objectives of the contracts have always been calculated on the basis of performances in previous years. The historic dimension is essential – any reform must also help clarify what change it is helping to bring about. Finally, in terms of costs, all IT developments specific to performance measurement have been achieved using free software.

Establishing a policy of indicators and performance contracts has the advantage of giving more weight to the empirical knowledge of how the administration actually operates and of offering the framework for its own evaluation (Varone & Jacob 2004). However, this advantage is often perceived as more of a risk: quantification of public action is a leap into the unknown and the heads of administration may be afraid of revealing the failings of their structure. In a way it is inevitable. The Cameroon pilot is of interest in that it was carried out in a context where public servants were all labelled corrupt by the public. There was, therefore, little resistance on their part to investing in performance culture in order to demonstrate that this was not true and to highlight the efforts made.

As next steps, at the end of the pilot, more lessons could probably be drawn. If results are confirmed, which is likely, performance contracts will be expanded to more offices and the replication question to other Customs administrations will be worthy of consideration.

References

- Balzac, H de 1985 (1844), *Les Employés*, Folio Society, London.
- Behn, R 2002, 'The psychological barriers to performance management: or why isn't everyone jumping on the performance-management bandwagon?', *Public Performance & Management Review*, vol. 26, no. 1, pp. 5-25.
- Besley, T & Ghatak M 2005, 'Competition and incentives with motivated agents', *American Economic Review*, vol. 95, no. 3, pp. 616-36.
- Bilangna, S 2009 'La réforme des douanes camerounaises: entre les contraintes locales et internationales', *Afrique contemporaine*, no. 230, pp. 19-31.
- Blundo, G 2002, La gouvernance entre technique de gouvernement et méthode d'exploration empirique, Editorial, Bulletin de l'APAD, no. 23-24.
- Cantens, T 2007, 'La réforme de la douane camerounaise à l'aide d'un logiciel des Nations Unies ou l'appropriation d'un outil de finances publiques', *Afrique contemporaine*, no. 223-224/3-4, pp. 289-307.
- Cantens, T 2009, 'Être chef dans les douanes camerounaises, entre titular chief, idéal-type et big katika', *Afrique contemporaine*, no. 230, pp. 83-100.
- Considine, M & Lewis, JM 2003, 'Bureaucracy, network, or enterprise? Comparing models of governance in Australia, Britain, the Netherlands, and New Zealand', *Public Administration Review*, vol. 63, no. 2, pp. 131-40.
- Crawford, A 2003, 'Contractual governance' of deviant behaviour', *Journal of Law and Society*, vol. 30, no. 4, pp. 479-505.

- Elias, N 1950, 'Studies in the genesis of the naval profession', *British Journal of Sociology*, vol. 1, no. 4, pp. 291-309.
- Favre, P 2001, 'Around Dominique Monjardet's Sociologie de la force publique: recent books and articles in French in the field of sociology of the police', *Revue française de sociologie*, vol. 42, Supplement: An Annual English Selection 2001, pp. 175-86.
- Franklin, AL 2000, 'An examination of bureaucratic reactions to institutional controls', *Public Performance & Management Review*, vol. 24, no. 1, pp. 8-21.
- Julnes, PdeL & Holzer, M 2001, 'Promoting the utilization of performance measures in public organizations: an empirical study of factors affecting adoption and implementation', *Public Administration Review*, vol. 61, no. 6, pp. 693-708.
- Kelly, J 2008, 'Performance reporting: an emerging imperative with unintended consequences?', *State & Local Government Review*, vol. 40, no. 2, Carl Vinson Institute, University of Georgia, pp. 84-91.
- Libom, M, Cantens, T & Bilangna, S 2009, Gazing into the mirror: operational internal audit in Cameroon Customs, Discussion Paper No. 8, World Bank, Washington, DC.
- Macci, O 2002, 'Dominique Monjardet – Ce que fait la police, sociologie de la force', *Annales. Histoire, Sciences Sociales*, vol. 57, no. 6, pp. 1718-21.
- Mascarenhas, RC 1993, 'Building an enterprise culture in the public sector: reform of the public sector in Australia, Britain, and New Zealand', *Public Administration Review*, vol. 53, no. 4, pp. 319-28.
- Mbembe A 1999, 'Du gouvernement privé indirect', *Politique Africaine*, no. 73, pp. 103-21.
- Mbonji, E 1999, 'Les "déflatés" du développement. De la tradition de dépendance à l'autogestion', *Le bulletin de l'APAD*, no. 18, Itinéraires de "déflatés" au Cameroun.
- Merrien, FX 1999, 'La Nouvelle Gestion publique: un concept mythique', *Lien social et Politiques*, no. 41, pp. 95-103.
- Monjardet, D 1992, 'Quelques conditions d'un professionnalisme discipliné', *Déviance et société*, vol. 16, no. 4, pp. 399-403.
- Monjardet, D 1994, 'La culture professionnelle des policiers', *Revue française de sociologie*, vol. 35, no. 3, Police, ordre et sécurité, pp. 393-411.
- Mouhanna, C 2001, 'Faire le gendarme: De la souplesse informelle a la rigueur bureaucratique', *Revue française de sociologie*, vol. 42, no. 1, pp. 31-55.
- Ogien, A 2000, 'La volonté de quantifier. Conceptions de la mesure de l'activité médicale', *Annales. Histoire, Sciences Sociales*, 55th year, no. 2, pp. 283-312.
- Ogien, A 2010, 'La valeur sociale du chiffre. La quantification de l'action publique entre performance et démocratie', *Revue française de socio-économie*, 1st semester, pp. 19-40.
- Porter, TM 1995, *Trust in numbers: the pursuit of objectivity in science and public life*, Princeton University Press, Princeton, NJ.
- Raffinot, M 2001, "'Motiver" et "chicoter": l'économie politique de la pression fiscale en Afrique subsaharienne', in M Raffinot, F Roubaud (eds), *Les fonctionnaires du Sud entre deux eaux: sacrifiés ou protégés?*, Autrepart 20, Bondy, pp. 91-106.
- Rouban, L 1998, 'Les Etats occidentaux d'une gouvernementalité à l'autre', *Critique internationale*, no. 1, pp. 131-49.
- Spanou, C 2003, 'Abandonner ou renforcer l'état wébérien', *Revue française d'administration publique*, vol. 1-2, no. 105-06, Ecole nationale d'administration, pp. 109-20.
- Strathern, M 2001, 'Blowing hot and cold', *Anthropology Today*, vol. 17, no. 1, pp. 1-2.
- Varone, F & Jacob, S 2004, 'Institutionnalisation de l'évaluation et nouvelle gestion publique: un état des lieux comparatifs', *Revue Internationale de Politique Comparée*, vol. 11, no. 2, pp. 271-92.

Wholey, J & Hatry, H 1992, 'The case for performance monitoring', *Public Administration Review*, vol. 52, no. 6, pp. 604-10.

World Bank 2005, *Bâtir des Etats performants. Créer des sociétés engages*, Groupe de travail sur le renforcement des capacités en Afrique, World Bank, Washington, DC.

Ymbert, J-G 1825, *Mœurs administratives*, vol. 1, 279 pages.

Endnotes

- 1 The authors would like to thank Melinda Hollingsworth for translating the paper from French into English, Robert Ireland, Stella Hamill and an anonymous referee for their comments and suggestions. The findings, interpretations and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the WCO, WCO officials or staff members, or the Customs administrations they represent. Any mistakes are those of the authors.
- 2 *Les Employés* has been translated into English variously as 'Bureaucracy' or 'The Government Clerks'.
- 3 A number of authors have already traced this development and drawn preliminary conclusions in countries where these principles have been applied, in particular the United States, the United Kingdom, New Zealand and Australia (Mascarenhas 1993; Considine & Lewis 2003; Julnes et al. 2001).
- 4 Mainly the United States and the United Kingdom (see Merrien 1999; Considine & Lewis 2003).
- 5 PAGODE: *Procédures Automatisées de Gestion des Opérations de la Douane et du commerce Extérieur* (computerised management procedures for Customs and external trade operations).
- 6 Automated SYSTEM for CUsToms DATa.
- 7 United Nations Conference for Trade And Development.
- 8 The State employs 170,000 public servants and military servicemen.
- 9 **Activity indicators** (number of manifests recorded, number of containers recorded, number and amounts of declarations recorded, removal notes validated) – **Performance indicators** (compliance with the deadline for recording the manifest by the consignees, assessment period, payment period, average time between assessment and issue of removal note by freight forwarder, number of declarations not assessed, removal notes not found, reporting time by freight forwarder) – **Control indicators** (adjustment manifests, amendments before assessment and offsetting entries, value added of the amendments and offsetting entries by inspector, declarations assessed but not paid, exemptions, reassignments of declarations, workload by inspector, declarations cancelled, declarations paid without removal note) – **Risk management indicators** (declarations in the red channel with removal report but not seen by scanner, declarations rerouted to other channels, value-added of rerouting declarations, transit documents cancelled, monitoring volumes and number of operations carried out by physical persons).
- 10 All figures are calculated for the import declarations cleared for home use, which represent 80% of declarations in terms of amounts and in numbers at the port of Douala. The calculation thus avoids taking account of the different offices for which the remit may have been amended, or of changes in rules affecting special procedures or procedures specific to public contracts.
- 11 In all offices, the number of items per declaration has not varied significantly, the indicator of average assessment remains relevant over the period.
- 12 Assessment period: period between the submission of the declaration by the freight forwarder and assessment by the Customs service.
- 13 Total of three periods: assessment period, payment period (period between the assessment by the customs officer and payment by the customs broker) and removal period (period between payment and obtaining the removal note issued by the manager of customs clearance warehouses).
- 14 The idea of team performance, however, is also present insofar as indicators targeting the operation of the team have been introduced for heads of the customs office and of the sector.
- 15 This calculation is performed via an IT application run on the ASYCUDA database.
- 16 The times are calculated in terms of full days, excluding only those public holidays falling on a Saturday or Sunday.
- 17 'Rerouting' means the redirection of the declaration to a processing channel other than the original channel.
- 18 The fall in activity is explained above all by the sudden drop in imports of goods subject to low rates of tax (20% between February-April 2009 and February-April 2010). However, these goods represent around one-third of values declared.
- 19 To protect confidentiality and to point out the deviation before the contracts, data are expressed in percentages of the 2009 average for Figures 4 and 5.

20 These rates are almost too high. During the mission, the inspectors expressed cautiousness with which they carried out any rerouting of declarations. They had set themselves a very high rate of disputed claims, much higher than the objective set in the contracts. The objective (one rerouted declaration out of six had to be the subject of a disputed claim) was re-worded so as not to provoke, in the long run, a perverse effect which would see inspectors no longer rerouting declarations but carrying out, at their discretion, physical checks on declarations in the yellow channel.

21 This is confirmed by surveys of customs agents, in particular during the contract experiment period.

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Large Traders' Customs Units

Leonardo Macedo

The full version of this abridged article will be published in the March 2011 issue of the *World Customs Journal*.

Abstract

Large Traders' Customs Units (LTCU) are important for customs and revenue collection as a strategy to mitigate revenue risks. In addition, Customs administrations may utilise such units to implement pilot projects in order to develop faster clearance procedures and more effective post-clearance audits.

Large Taxpayers Units

The introduction of Large Taxpayers Units (LTU) by tax administrations is a well established practice which is based on the premise that a few large taxpayers account for the majority of an economy's revenue collection (Pareto principle). Tax administrations recognise that large taxpayers are different from other groups of taxpayers, requiring specially designed tax compliance programs. As such, LTUs provide large taxpayers with a single point of contact with the tax administration, and enable the administration to tailor their compliance programs to meet the specific circumstances of the taxpayers' commercial activities.

Several international organisations recommend the practice of establishing LTUs. Among the key findings listed by the OECD in their guide are:

- Criteria to identify large businesses vary from country to country. However, characteristics of large taxpayers are generally very similar: complex in their structure, having multiple operating entities with international business dealings, and responsible for a high portion of tax revenue.
- Some tax administrations have special units to perform risk analysis and intelligence gathering, provide technical advice, and to monitor and evaluate performance of large taxpayers.
- All participating countries cite tax compliance issues related to international transactions and international business structures as major areas of concern and focus.
- A focus on building a better relationship between the tax administration and the large taxpayers is a common approach across the countries and is contributing to more cooperation and openness.
- All countries recognise that the complexity of the tax law, business structures and transactions in the large business segment have created a need for specialised knowledge and expertise in certain areas.
- Technology is not only used to improve the quality of service to large taxpayers but also to manage compliance, including the capability to identify risk early, and to increase efficiency in operating the large business unit (OECD 2009).

In summary, a significant number of tax administrations has established, with positive results, special treatment around different types of taxpayers, or taxpayer segments.

International trade concentration

In several economies a relatively small number of traders and a few significant import/export products account for a large share of international trade. Degrees of trade concentration vary according to factors

such as geography, internal market size, industrialisation, national income, dependence on exported/imported commodities. The lessons learned by tax administrations in relation to LTUs are considered to be of particular relevance to the customs environment, and the introduction of LTCUs by Customs administrations is likely to provide a significant enhancement to their compliance management programs.

When dealing with large traders, Customs administrations are faced with a range of compliance management issues such as multiple units of operation; high volume of imports/exports; complex international sales contracts (royalties, engineering projects, financial terms); cross border transactions with related parties; complex issues relating to tax law and accounting principles; policies and strategies to minimise tax liabilities; and complex financing and business structures. Customs administrations should therefore focus their efforts on monitoring and analysing the constantly changing trends in international trade in order to identify potentially high risk products and industry sectors.

LTCU and Authorised Economic Operators

The innovative concept of the Authorised Economic Operator (AEO) and its initial complexity of compliance assessment provides a perfect opportunity for Customs administrations to introduce LTCUs. Recognising the fact that most AEOs are also large traders/taxpayers, the LTCU approach should prove to be an ideal method of developing, implementing and hosting the AEO program.

Technical assistance and capacity building support for the establishment and operation of LTCUs could be provided by international organisations. This should include advice on best practices in relation to key components such as mission, human resources, risk management, audit and enforcement.

Conclusions

The advantages of establishing LTCUs in the customs environment should be similar to those reported by tax administrations when establishing LTUs. To maximise their utility, LTCUs should be staffed by motivated officers who would monitor and analyse commercial trends as well as the compliance behaviour of relevant traders and other stakeholders. This approach will also provide an important avenue for enhancing customs expertise in the area of compliance management.

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Section 2

Practitioner Contributions

Jordan's electronic transit monitoring and facilitation system

Arif A Alfitiani

Abstract

Like most countries with numerous international borders, Jordan has adopted a number of different approaches to managing transit traffic over recent years. Developing a secure and more facilitative approach to transit traffic and cargo has been a high priority for the Jordan Customs Department. The electronic transit monitoring and facilitation system has led to a significant reduction in the cost of moving goods through Jordan as there is no longer a requirement to travel in convoy. As transit traffic has increased, the number of smuggling attempts has decreased while at the same time transit journey time has reduced by more than 60 per cent. This article provides an insight into the operation of the system as well as providing some analysis of the system statistics.

1. Background

Transit trade involves the movement of goods across borders with duty unpaid and in most cases, without physical inspection. This raises the danger of smuggling the goods within this cargo to the internal market of the country, and the possibility of smuggling dangerous materials such as narcotics or explosives during the transit trip.

Most countries implement strong measures to avoid these dangerous consequences of transit cargo trade and to achieve better control of customs duties. These measures include high guarantees to ensure the customs duties are paid and sometimes include physical inspection of the cargo before allowing it to cross the country. In Jordan, in addition to these measures, the trucks are escorted in groups of 50 to 100 during the journey. These measures result in delays (10 to 24 hours) to the trade across borders and do not guarantee the safety of the country from possible well planned smuggling.

2. Jordan Customs Department's pioneer project

Transit trade in Jordan contributes to the national economy and presents a major means of smuggling. Annually, hundreds of thousands of trucks cross the country as Jordan is the main trade route between the Arabian gulf countries, Africa and Europe (see Figure 1).

The main goal of Jordan Customs is to use a tracking system to improve control over the transit shipments as well as preserve the integrity of the goods sealed in the shipment – without affecting trade facilitation and without sacrificing security.

The idea of using tracking technology to manage the transit trade in Jordan was first introduced by the telecommunication directorate at Jordan Customs in 1997 along with a centralised video monitoring system. The limitations of tracking technology at that time and the lack of an electronic map of Jordan delayed the realisation of this idea. Jordan Customs continues theoretical studies and investigates available technologies with the aim of facilitating trade without sacrificing security needs. Many pilot projects and

experiments have been conducted using tracking technology for this purpose, and the outcome was a detailed Request for Proposal (RFP) leading to a public tender in late 2006, and implementation in late 2008.

Figure 1: Middle East map (Jordan at the centre)



3. Practical considerations

The published RFP summarised the expected outcomes of the theoretical and practical studies conducted by Jordan Customs and included details of the technical and operational requirements needed to utilise tracking technology for customs purposes.

Choosing a tracking system for fleet management is not complicated and can be readily found in the market. However, applying tracking technology for customs application presents many complicated issues that need to be resolved and handled carefully to guarantee the success of the system, as tracking technology alone cannot handle customs requirements. The proposed solution needed to address the following issues to be successful:

1. To avoid tampering with goods, a proper seal needs to be installed on truck and/or container doors.
2. To avoid separating trailer from tractor, proper seals are needed to tie the trailer to the tractor.
3. The system should be able to import and export electronically the customs declaration data from an automated customs system.
4. The tracking unit should be portable, easy to install and remove in minimum time (less than two minutes), have a rechargeable long-life battery, sufficient to complete a trip from the entry border to the exit border taking into consideration the time allowed to be spent in country, and have a tampering alarm.
5. The seals should communicate by wireless with the tracking unit and send an alarm when tampering occurs.
6. The system should be fast, reliable, secure, fully supported and incorporate hot standby with reliable GSM and Wi-Fi communications.

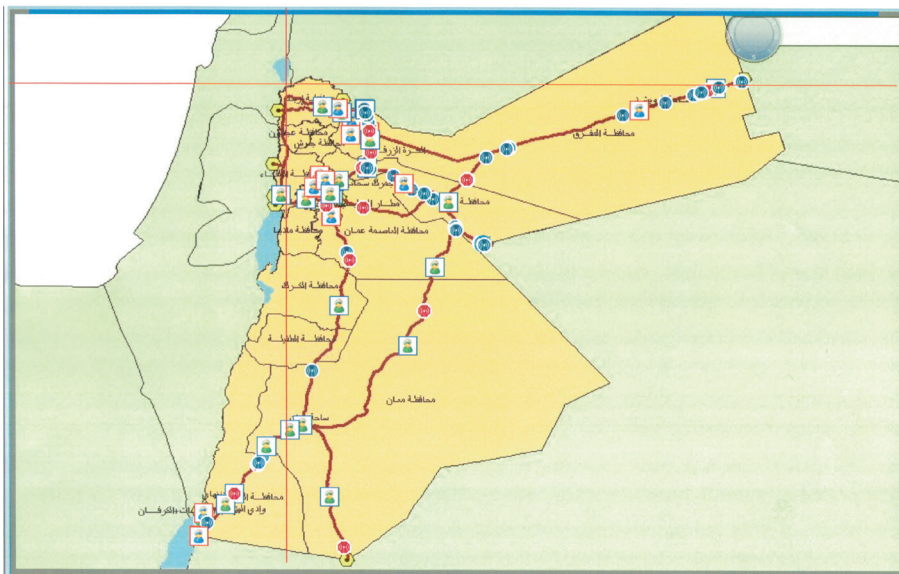
The RFP also indicated that the system must allow customs authorities to monitor simultaneously on a real time basis (see Figure 2) thousands of shipping trucks from a central control room that is equipped with large wall monitors (see Figure 3). As well, the system must report, on a real time basis, any predetermined events when they occur. The position and status of the truck should be monitored on real time bases, based on predetermined time intervals or distances. As the trucks will be allowed to travel separately without physical escorts on predetermined routes, electronic geo fences will be established around these routes and around the areas that have some potential to be used for smuggling. An alarm should be sent to the control room in case any of the trucks divert from the pre-assigned route. As initiating a transit trip by the system starts at the entry border crossing by installing the tracking unit and the electronic seals, assigning a transit route and determining the exit border crossing point at which the tracking unit and the seals will be removed and the transit trip terminated, a trip report must be produced electronically at the control room. This report must include all violations committed during the transit trip.

4. Implementation and technology

Jordan's electronic transit monitoring and facilitation system uses GPS technology to locate the position of the trucks being monitored. GPRS/SMS technology is used for communication between the tracking units and the control room. RFID technology is used for communication between the tracking unit and the electronic seals to secure the shipment's door and to avoid separating the tractor from the trailer. Digital maps (vector and raster) are used to provide graphical interface to the user to enable the operator to follow up truck movements. The MIS/CIS is used to provide statistics and reporting, and to interface with other existing computerised applications to avoid duplication in data entry, wireless networks and PDAs are used at the customshouses to initiate and terminate transit trips.

The tracking operation starts at the customs entrance centre. After the transit truck completes all customs procedures, the truck moves to an electronic tracking yard located just before the exit gate; a tracking unit and electronic seals are configured and installed on the truck and the transit route which the truck will follow is assigned. The unit is identified by the system at the control room and the truck appears on the main monitoring screen.

Figure 2: Online monitoring of transit trucks



During the transit trip, the truck's position is updated at pre-assigned way points based on a computerised risk analysis system – the duration can be short for high risk shipments and longer for low risk shipments. Any violation committed during the trip is reported immediately to the control room.

When the truck reaches the customs exit centre, a trip report is issued by the system that shows the route that has been followed and any violation that may have been identified during the trip. The report is analysed by a customs officer who will terminate the transit trip and remove the tracking unit and electronic seals. The tracking unit is then recharged for use on another trip in the opposite direction.

5. Violation handling

If a violation is committed by the truck driver during transit trips, such as diverting from the pre-assigned route or tampering with the goods or stopping in prohibited places, an alarm is initiated in the main control room and the nearest available patrol car along the transit route moves to investigate the violation and report to the control room.

Figure 3: Main Control Room



Jordan Customs manages and oversees all international transit moving through Jordan. In the period January 2010 to June 2010, there were 87,738 transit vehicles. The table below shows the number of vehicles that were monitored and the various customs centres that were involved in the transit process.

Table 1: Overall transit traffic

Customs Centre	Jaber	Omary	Zarqa-Free Zone	Amman	Modawara	Aqaba	Karama	Sahab	Total
January	5204	2740	336	38	42	2191	2	17	10570
February	4333	3880	343	56	38	1912	1	31	10594
March	5056	7056	367	109	44	2430	2	66	15130
April	4992	7269	318	43	59	2260	0	51	14992
May	6441	7683	334	44	49	2158	6	63	16778
June	7951	8329	401	32	53	2826	12	70	19674
Total	33977	36957	2099	322	285	13777	23	298	87738

Important violations committed for the period from June 2010 to October 2010 have been investigated and Table 2 shows the result of this investigation.

Table 2: Violations in transit trips

	Number of transit trips	Diverting from transit route	Tampering with the tracking unit and the e-seal
Number	95,133	10,375	1,189
Percentage from total number of transit trips		11%	1.2%

Research indicates that most truck drivers who divert from the transit routes are looking for short routes or attempting to avoid traffic jams. Many of the drivers who remove the tracking unit from their vehicle are actually looking to protect the device from theft while they are on authorised stops.

6. Effect on smuggling

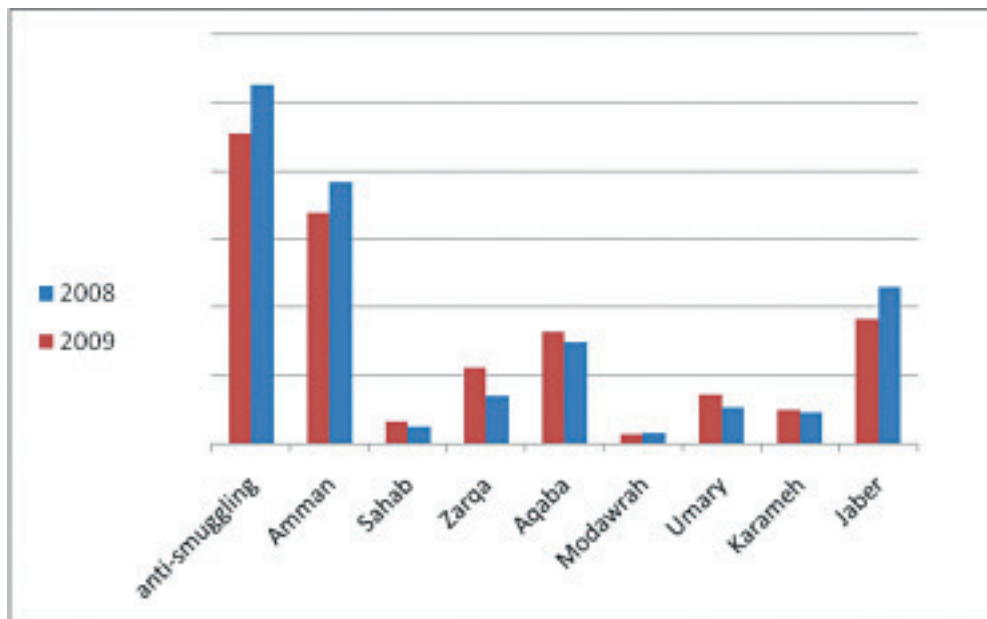
To measure the effect of the electronic tracking system on smuggling in transit trade, a comparative study of the smuggling cases (attempts) for the years 2008 (before the application of the tracking system) and the year 2009 (after the application of the tracking system) has been conducted. The following factors were taken into consideration when analysing the statistical results of this study:

- Ninety per cent of the transit trade was concentrated between Jaber, Umary, Zarqa and Aqaba customs centres.
- The high-risk cargo was concentrated in the following transit routes:
 - Started from Jaber customshouse and ended at Umary and Zarqa customshouses
 - Started from Aqaba customshouse and ended at Zarqa and Karamah customshouses.
- Anti-smuggling directorate mainly concerned in the smuggling cases along the transit routes.
- The transit tracking system was applied on the external transit (cargo crossing the country) as well as internal transit (directed from the external to the internal customshouses for inspection).
- The tracking system started operation gradually in January 2009.
- These statistics were for the transit customs centres where the tracking system had been applied.

Table 3: Number of smuggling cases at customs centres, 2008 and 2009

Year 2008	Year 2009	Customs centre
1147	916	Jaber
224	243	Karameh
268	360	Umary
72	70	Modawrah
745	819	Aqaba
351	559	Zarqa
124	161	Sahab
1920	1694	Amman
2630	2280	Anti-smuggling
7481	7102	Totals

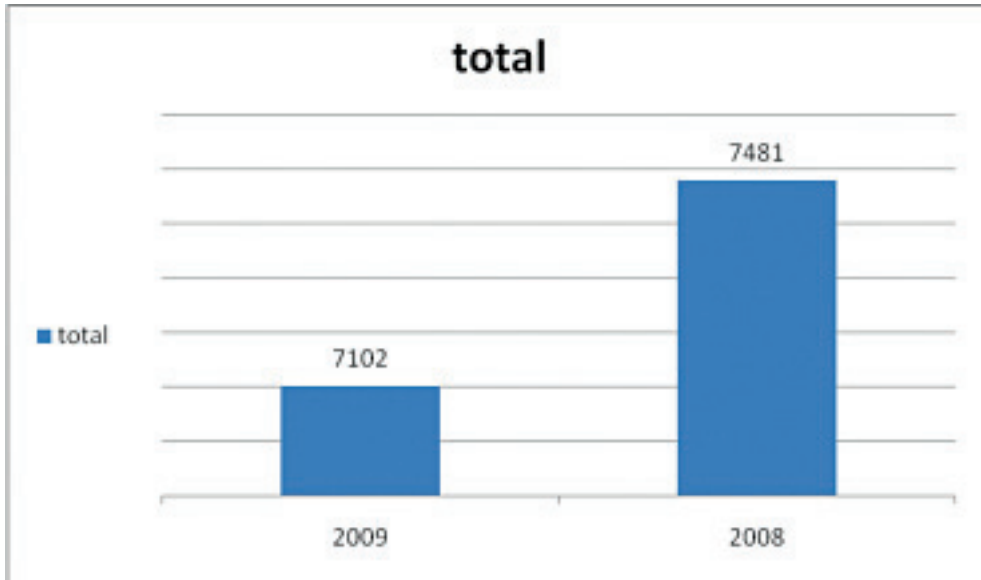
Figure 4: Smuggling cases, 2008 and 2009



Based on the abovementioned statistics and factors, we can conclude the following:

- Smuggling cases during the transit trip have been reduced; this explains the decrease in smuggling cases for the Anti-smuggling Directorate in 2009.
- Smuggling cases inside the destination customshouses have increased, as can be seen in the increased number of smuggling cases in Umary, Zarqa and Karameh customshouses in 2009.
- As Aqaba is a free economic zone and due to the application of the tracking system on almost all containers leaving the port, it became difficult to smuggle goods during the transit trip, hence more smuggling attempts were discovered within that zone, this explains the increase in smuggling cases in Aqaba in 2009.
- Figure 5 shows that the total number of smuggling cases decreased in 2009 compared to 2008. The main factor for this decrease is the application of the transit tracking system.

Figure 5: Comparison between the total number of smuggling cases for 2008 and 2009



7. Results

The introduction of this system by Jordan Customs has proven to be very useful:

- The need to escort transit trucks has been reduced by more than 90 per cent – only bulky and high duty goods are escorted.
- Truck congestion at the customs yard (where the trucks used to wait for the formation of a convoy) has been eliminated.
- Transit trade across Jordan has been increased by more than 80 per cent.
- Security has been enhanced with more control over the trucks while they are in Jordan.
- A major problem at Aqaba container terminal has been solved: the containers are tracked electronically from the terminal to the internal customshouse for physical inspection instead of inspection at the terminal, which reduces the waiting time for the containers at Aqaba port.
- Transit journey time has been reduced by more than 60 per cent, for example, the transit trip from Jabber at the Syrian border to Omary at the Saudi Arabian border has been reduced from an average of 8 hours to an average of 3.5 hours, and from Aqaba to Bagdad (Iraq) from 3 days to an average of 13 hours (see Tables 4 and 5).
- Jordan Customs has facilitated maximum transit trade without sacrificing security, hence has contributed to supply chain security and facilitation.
- A survey distributed to truck drivers and traders identified that both drivers and traders prefer to use the electronic tracking system and pay the cost of this service rather than return to the traditional escort system. The use of the tracking system is optional for traders and drivers, however, to cover running costs, Jordan Customs has imposed a \$30 service fee on trucks which use the system.
- It has been noticed during the last year that the number of smuggling cases by transit trade reduced significantly, and as well, the number of organised smuggling within customs centres has increased, which indicate that the tracking system deters the smuggler from handling the smuggled goods during the transit trip, the goods have to reach the customs centre (border or internal) and the smugglers need to try to handle their smuggled goods by organised means inside the customs centre.

Table 4: Transit trip duration from Syrian border (Jaber) to Saudi border (Umary)

GPS Unit No.	Trip duration(hrs)	Truck plate No.
8745	3:14	1
9696	2:48	2
8999	4:39	3
3799	3:17	4
9705	2:47	5
3780	4:08	6
9465	2:46	7
9813	3:48	8
3272	3:37	9
9437	4:02	10
9502	2:55	11
8695	3:11	12
9647	3:45	13
9739	3:08	14
3155	3:39	15
3617	4:11	16
3107	3:13	17
3460	3:20	18
3598	3:54	19
9378	2:54	20
Average Trip duration 3:27 hours		

Table 5: Transit trip duration from Aqaba Port to Iraqi border (Karameh)

GPS Unit No.	Trip duration (hrs)	Car S. No.
9333	10:32	1
3677	13:43	2
3533	11:29	3
3962	13:46	4
3397	12:06	5
3668	11:54	6
3870	12:55	7
9732	14:08	8
9762	10:46	9
9823	10:34	10
9440	12:39	11
9339	13:19	12
3327	14:59	13
9458	13:46	14
8902	14:19	15
9716	14:52	16
3227	12:49	17
8692	14:28	18
3853	11:56	19
8566	13:45	20
Average Trip Duration 12:56 hours		

8. Recommendations

The Jordan Customs electronic transit monitoring and facilitation system is a pioneer model and to date, a very successful replacement for the escort system. It has proven it can increase supply chain security, reduce costs and facilitate the movement of goods across borders.

However, the following important aspects must be handled carefully:

- As some of the customs centres terminate transit trips more than initiated trips, extra tracking units and electronic seals at these centres must be transferred to other customs centres that initiate more trips than are terminated. Handling the extra units and transferring them between customs centres need to be well planned and at accurate time intervals to avoid any shortage of tracking units at high traffic centres.
- The patrol cars that investigate the violations committed by the transit trucks must be distributed along the transit route to ensure that any truck can be reached in less than 30 minutes.

9. Future developments

X-Ray integration

The system will be connected to the x-ray cargo scanners at each border crossing. The x-ray images of the scanned trucks will be attached to the trip report. The trucks that commit violations during the journey will be scanned again at the exit border and the images will be compared before allowing the trucks to leave the country.

Risk analysis integration

A risk analysis system will be developed and integrated with the tracking system to provide assessment of the risk level posed by drivers during a transit journey. This analysis will be based on a driver's antecedents, the type of goods being carried, previous violation details, type of goods being carried, origin of the goods, etc. The assessment will be used to assist customs patrols in responding to threats.

References

Jordan Customs 2004, Pilot project report for transit monitoring system.

Jordan Customs, Directorate of Risk Analysis, Documentation of risk analysis system.

Jordan Customs, Directorate of Telecommunication and Control 2006, Electronic tracking system, RFP Document.

Jordan Customs, Minutes of meetings of transit and escorting steering committee (2006 to 2008).

Jordan Customs, Directorate of Telecommunication and Control 2009-2010, Statistical reports issued by electronic tracking system.

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Measuring the performance of Customs Information Systems (CIS) in Malaysia

Mohd Afandi Md Amin

Abstract

In the scope of this study, 'performance measurement' includes the collection and presentation of relevant information that reflects progress in achieving organisational strategic aims and meeting the needs of stakeholders such as merchants, importers, exporters and other clients. Evidence shows that utilising information technology (IT) in customs matters supports import and export practices and ensures that supply chain management flows seamlessly. This paper briefly reviews some practical techniques for measuring performance. Its aim is to recommend a model for measuring the performance of information systems (IS): in this case, the Customs Information System (CIS) used by the Royal Malaysian Customs Department (RMCD). The study evaluates the effectiveness of CIS implementation measures in Malaysia from an IT perspective. A model based on IS theories will be used to assess the impact of CIS. The findings of this study recommend measures for evaluating the performance of CIS and its organisational impacts in Malaysia. It is also hoped that the results of the study will assist other Customs administrations evaluate the performance of their information systems.

Introduction

This study was motivated by the positive effects that information and communication technology (ICT) can have on customs modernisation. For over a decade, Customs administrations around the world have faced a variety of pressures and demands from political bodies, law enforcement agencies and the business community as they modernise customs services in line with the development of information technology (IT) and international trade. Challenges include improvements in trade facilitation, social protection, national security, and revenue collection (McLinden 2005). In facing up to these challenges, customs services have adopted the latest ICT as a means of reinforcing the development of their organisations and ensuring the efficiency and effectiveness of customs operations.

Both national governments and international organisations are promoting the implementation of ICT as a means of facilitating trade. The initiative is supported by the Malaysian government, the Organisation for Economic Co-Operation and Development (OECD), World Bank, World Customs Organization (WCO) and World Trade Organization (WTO). As a member of the WCO, Malaysia also employs ICT initiatives to comply with global trade requirements such as the WTO's Valuation Agreement and 'to enhance trade facilitation functions and improve the process of customs modernisations' (Lewis 2003). The implementation of CIS represents a major step towards the implementation of e-commerce solutions using electronic data interchange (EDI), with paperless transactions being the ultimate goal.

In many organisations, a key component of strategic planning consists of measuring the performance of the resultant strategies and initiatives as well the planning itself. In order to measure performance in

today's organisations, one must ask 'how effectively', the organisation in question delivers its products and services to satisfy the needs of its stakeholders (for example, the government and private sector participants). In terms of customs administration, performance measurement can be seen as ensuring Customs' effectiveness in facilitating trade by means of trade facilitation techniques or in protecting a nation from illegal import and export (for example, smuggling and drug trafficking).

In view of the need to measure performance from an IS perspective, this paper suggests how an existing system can be measured using IS theories and end-user reactions. This will form the framework for assessing the performance of CIS in Malaysia.

This paper is divided into three sections: the first explains the concept of performance measurement and its significance to Customs; the second discusses methods of performance measurement. The final section elaborates the various theories underpinning the measurement of performance from an IS perspective and forms the bulk of the study. From the various models used to define IS performance, one was selected as a means to provide comprehensive explanations, measure CIS implementation and assess impacts on the Royal Malaysian Customs Department (RMCD) administration.

Measuring performance

There are many reasons why organisations wish to measure their performance (Behn 2003). Cameron and Whitten (1983) attempt to measure the performance of an organisation by summarising as six questions the variables that drive organisational performance. Following a survey of 29 organisations they updated their guidelines and formulated seven questions to help measure an organisation's performance (see Table 1, below). Other researchers have used these guidelines to ascertain the function and performance of IS (Myers & Prybutok 1998).

Table 1: Questions for measurement guidelines

Questions	CIS Implementation
Question 1: What domain activity is being focused on?	e.g. clearance of import, export and transit
Question 2: Whose perspective, or which constituency's point of view, is being considered?	e.g. top management and other stakeholders
Question 3: What level of analysis is being used?	Periodically, ranging from quarterly to annually Subjective: perceptual data from individual
Question 4: What timeframe is being employed?	Monthly or yearly
Question 5: What types of data are to be used?	e.g. usage data feedback reports
Question 6: What referent is being employed?	
Question 7: What is the purpose of the evaluation?	e.g. performance evaluation acceptance

Source: Adapted from Cameron & Whetten (1983)

Definition of performance measurement

Performance measurement represents one cornerstone of business excellence. Business excellence models not only promote the use of performance measures but also enquire whether performance measurement systems are designed in a way that reflects the overall strategy and ensures the system is effective in monitoring, communicating, and propelling performance.

Baird and Stammer (2000), using Baldrige's criteria, explain the task of 'measuring performance' by referring to its constituent components. Accordingly 'measuring' concerns the numerical data that quantifies input, process, output, performance of the processes relating to products and services as well as overall organisation; 'performance' on the other hand, reflects the output results obtained from processes ('output' here relating to services and products) that permit the evaluation of subjective goals, standards, past results, as well as organisational aspects. Performance can be measured in financial or non-financial terms.

The importance of measuring performance

In the business world, it is difficult to measure performance because it is determined by various nebulous factors. Similar to customs matters, performance measures not only involve a variety of procedures and regulations but also various dimensions such as increases in revenue collection, shorter processing and customs clearance time, preventing the loss of revenue, or the simplicity of procedures, forms and processes.

The following lists the main reasons why performance measurement represents an important part of an organisation:

1. *Clients' requirements.* For example, customs' services are bound to meet the requirements of a wide range of stakeholders, including the government and private sector. Measuring performance allows Customs to find out whether services are simple, transparent and effective.
2. *Understanding processes.* By measuring performance, Customs can identify the critical aspects of their procedures. This enables them to understand the procedures or processes in question, thereby directing their attention to crucial aspects.
3. *Fact-based decision-making.* Defining performance reduces the risk that customs officers will make an incorrect decision. The use of IT can simplify some procedures thus reducing the time that brokers spend dealing with customs officials.
4. *Improvement.* By defining performance measures, Customs can identify the improvements needed to provide a better quality service such as the controls of goods in transit, calculation of customs value and risk management.

Evaluating methods of performance measurement

There are various 'theories' providing different frameworks and reference models for measuring performance. Some are reflected in standards and global measures related to the 'core-business'. They include the balanced scorecard approach (BSC), key performance indicators (KPI), the economic value-added approach (EVA), activity-based costing (ABC) and total quality management (TQM). This section briefly reviews the typical methods used to measure performance in a business context.

The balanced scorecard approach

The balanced scorecard (BSC) was developed by Kaplan and Norton (1992) and is based on stakeholder theory (Graham 2009). BSC offers a way of measuring performance which covers four interrelated

dimensions: (1) financial, (2) customer, (3) internal business process and (4) learning and growth perspective. This framework recognises that traditional financial accountancy measures are incapable of describing, implementing and managing strategies (Amaratunga, Baldry & Sarshar 2001). Instead, it measures performance using logical structures, objectives and criteria (Abran & Buglione 2003).

BSC does not yet provide a direct means of measuring the success/impact of IS. However, as many IS researchers are now recognising that financial criteria alone cannot measure IS success/impact (Murphy & Simon 2002), the BSC can provide useful indicators for IS evaluation. Indeed, several attempts have been made to adapt BSC to measure IS. For example, Martinsons, Davison and Tse (1999) introduced a BSC-for-IS framework which consolidates four perspectives from traditional BSC in order to assess the performance of the IS department, project and applications.

According to a recent report presented by the Performance Measurement Association (PMA) about user satisfaction, 39 per cent of the Financial Times Stock Exchange (FTSE) 100 companies actively use the BSC (BPIR 2010). Other researchers claim that between 40 to 60 per cent of Fortune 1000 companies are currently implementing BSC (EPM 2010).

Key performance indicators

Key performance indicators (KPIs) can be defined as ‘performance indicators that have a significant impact on the overall performance of an organisation in the area of strategic, tactical, operational planning, and control’ (Gunasekaran, Patel & McGaughey 2004). All indicators are quantifiable and reflect critical success factors (CSFs) within the organisation (Fortner 2010).

In relation to customs administrations, KPIs have been employed by UK Customs (HM Revenue and Customs [HMRC]) ‘to help the department make sure it is on track to achieve...[its] objective’ (HMRC 2007) in the following core areas of its business: the aggregate level of losses for VAT, excises, direct tax and National Insurance contributions taken together, level of tax credit error and fraud, as a percentage of finalised entitlement, applications for Working Tax Credit, Child Tax Credit and Child Benefit.

In addition, RMCD has also employed KPIs as part of its modernisation drive in the public sector and in conjunction with a government initiative on KPI implementation. This initiative was started in 2005 and measures performance based on core business, core process, clients, and performance targets. All methods of measuring KPIs must be specific, measurable, achievable, realistic, and time-bound (SMART).

Information systems performance measurement

Generally, the implementation of IT tends to increase costs and is therefore a cause for concern in management circles (Heo & Han 2003). As part of its customs modernisation initiative, Malaysian Customs has been granted a large budget to implement IT in the various customs administrations. In view of this, CIS performance should therefore be managed in light of the system’s strategic role rather than its return on investment (ROI) (Ballantine et al. 1998; DeLone & McLean 1992).

It is important to ensure that the measures used to evaluate performance are related to CIS’s strategic role. According to El-Masri (2009), there are two lines of research into the evaluation of IS: (1) the contextual antecedent and behavioural determinant of IS performance and (2) improving IS evaluation definition (for example, success and impact) from the stakeholder’s standpoint.

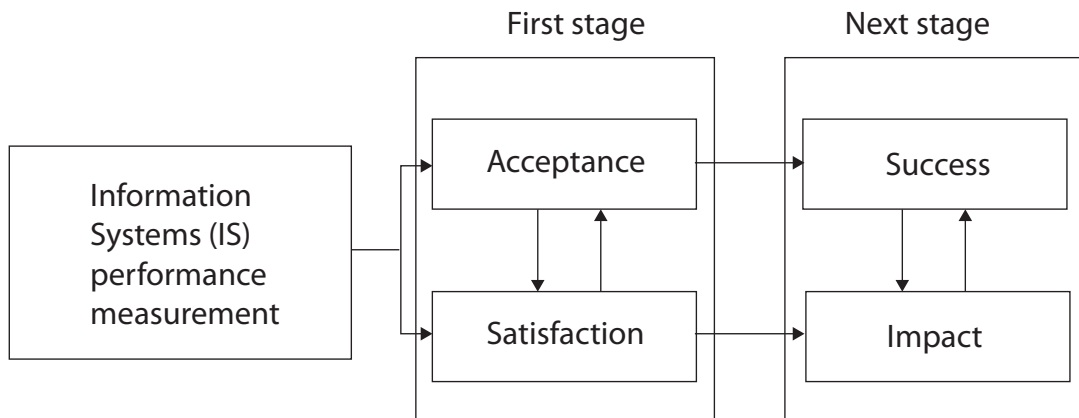
There are also five fields of research on measuring IS performance within a business context (El-Masri 2009):

- *Behavioural perspective*: refers to the implementation of IS as well as related steering and control processes.

- *Technological perspective*: views the IT component as the principal determinant of success (Zhu et al. 2004).
- *Operational perspective*: views IS implementation in terms of internal organisational performance and individual staff performance (Zhu et al. 2004) and impact (Gable, Sedera & Chan 2008)
- *Business perspective*: relates to the strategic and financial impact on the organisation (Kaplan & Norton 1992).
- *Attitudinal perspective*: concerns the psychological aspect that could impede or drive success. It is viewed in terms of user satisfaction and progress in IS implementation.

Figure 1 illustrates how IS performance measurements relate to measures within the generic framework. Accordingly, the first stage of measuring IS performance is to ascertain a new technology's 'user acceptance' and 'user satisfaction'. The next stage determines 'success' and 'impact' by referring to the way the technology is used. This study aims to measure the success of CIS implementation and ascertain the impact on RMCD.

Figure 1: IS performance measures



Source: As proposed in the RMCD study

The following section presents the concepts of 'user satisfaction' and 'user acceptance' as elaborated in IS studies. Both measures can be used to define the performance of CIS in terms of how it is perceived by individual users or the staff. In this context, 'success' and 'impact' refer to the organisational effectiveness of CIS implementation measures adopted by RMCD. In measuring CIS performance, all measures are interrelated in the short term (first stage) and long term (subsequent stage).

User satisfaction

In most IS research, user satisfaction is found in a system that meet user expectations (that is, the quality of the system and how the user feels about using it). These expectations are relayed through a psychological paradigm whereby the users evaluate a system and provide feedback. This could be negative or display a lack of trust in the system. However, user satisfaction is an abstract concept and depends on various factors; in terms of CIS, the user's attitude towards the system will have an impact on user satisfaction.

Additionally, Wixom and Todd (2005) have found that user satisfaction literature explicitly enumerates the attributes of system and information design (for example, information accuracy and system reliability). This represents a potentially useful diagnostic tool for system design. However, other researchers (Davis 1989; Goodhue & Thompson 1995) have also established that user satisfaction is a weak indicator of system usage. According to Ajzen and Fishbein (2005), this is due to the fact that beliefs and attitudes about objects (that is, the systems) are generally poor indicators of behaviour (that is, system usage).

User acceptance

Considering that the acceptance of a system may be determined by user satisfaction, the user's belief in the system's capacity to handle the tasks in question is also a relevant consideration. Therefore, user satisfaction can result either in acceptance (that is, if the user has positive belief in terms of for example, time and effort) or rejection (that is, if the user has a negative impression in these respects). Concerning CIS implementation, the quality of information will have a positive effect on the perceived usefulness of the system and satisfaction in using it. This is supported by Davis (1989) who argues that there is a direct correlation between the quality of information and the user's job performance. Dillon (2001) defines user acceptance as 'the demonstrable willingness within a user group to employ information technology for the task it is designed to support'. According to this definition, acceptance depends on the user providing evidence of their use of technology.

Researchers of human-computer interaction (HCI) have also identified the human factors determining users' responses to the system interface. According to their findings, acceptance largely depends on the concept of usability. HCI research is based on the assumption that the acceptability of technology for users depends on its usability (Dillon 2001).

Additionally, user acceptance of technology derives from the theory of self-efficacy (Bandura 1997). Self-efficacy is defined as 'people's judgments of their capabilities to organise and execute courses of action required attaining designed types of performance'. Research shows that users who trust the systems in question are more likely to accept them. Moreover, reinforcing users' self-efficacy could save time, effort and money. These factors could also have a positive impact on acceptance because it would give users an incentive to use the system (Venkatesh et al. 2003). Therefore, in terms of CIS, users are more likely to accept a system they believe will save time and increase their productivity.

According to Wixom and Todd (2005), user acceptance literature (for example, the theory of acceptance model) – unlike that on user satisfaction (Venkatesh et al. 2003) – provides a good indicator of usage by measuring behaviours against attitudes and beliefs (that is, regarding ease of use and usefulness) that reflect users' interests in terms of time, target and context (for example, system usage).

Theoretical models for measuring IS performance

IS research has developed several theoretical models for ascertaining how people adopt new technology. Here again there are two lines of research: (1) an individual's acceptance (as described in the section above), and (2) 'success' and 'impact' at organisational level (depicted in Figure 3). In this context, IS research has adopted rigorous theoretical models that define indicators of technology acceptance on the basis of psychology and IS.

Individual measures

IS performance is measured using psychological factors (that is, human behaviours indicating acceptance and/or rejection of technology) and the system itself. Concerning the former indicator, Figure 2 depicts two theoretical models which are widely used to define technology acceptance and satisfaction.

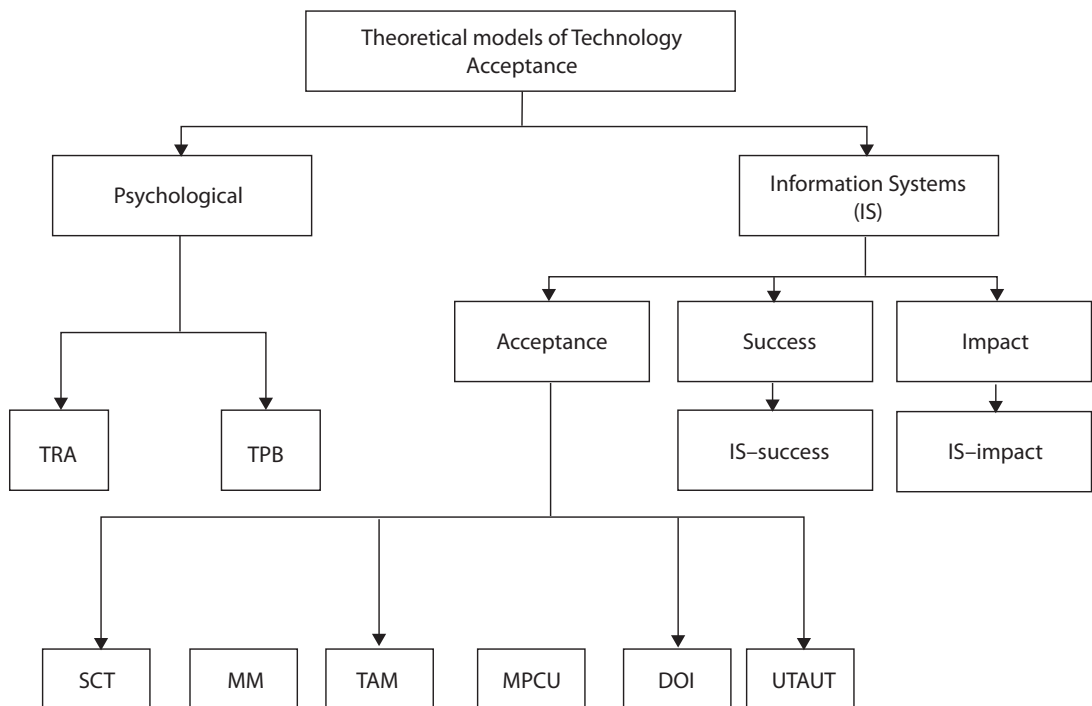
Psychological measures

The two models are: the theory of reasoned action (TRA), and the theory of planned behaviour (TPB). TRA (Ajzen & Madden 1973) is the most basic and influential theory on human behaviour and has been used to predict a wide range of behaviours. Davis (1989) constructed the theory of acceptance model (TAM) from TRA to assess an individual's acceptance of technology and found that the explanation for

predicting the way users intend to use technology was consistent with studies that had employed TRA in other contexts. TAM is considered the most influential and commonly employed theory to describe an individual’s acceptance of IS (Lee, Kozar & Larsen 2005).

TAM assumes that an individual’s acceptance of technology is defined by two major variables: perceived usefulness and perceived ease of use. TPB (Ajzen & Fishbein 1980) has been used to explore the determinants of individual acceptance and usage in many technologies (Venkatesh et al. 2003). The core constructs of TPB are attitudes, subjective norms and perceived behavioural control. These constructs define how easy or difficult it is for users to perform behaviour (for example, to use and accept a new technology).

Figure 2: Theoretical models of acceptance of technology



Source: Proposed for this study

Information systems

There are several other theoretical models which offer alternatives to the psychological method. They define acceptance using the following concepts: (1) diffusion of innovation (DOI); (2) social cognitive theory (SCT); (3) the motivational model (MM); (4) the model of PC utilisation (MPCU); (5) TAM and (6) the unified theory of acceptance and use of Technology (UTAUT). Table 2 summarises these models:

Table 2: Comparison of theoretical models

Theories/Model	Descriptions	Seminal Authors
Motivational Model (MM)	Demonstrates general motivation theory; extrinsic and intrinsic motivation are indicative of human behaviours towards technology.	Vallerand (1997)
Social Cognitive Theory (SCT)	The most powerful theory of human behaviour; it consists of the following variables: performance outcome expectations, personal outcome expectations, self-efficacy, attitude and anxiety.	Bandura (1986)
Model of PC Utilisation (MPCU)	Developed and used to predict the utilisation of personal computers (PC). Defined by the following variables: job-fit, complexity, long-term consequences, attitude towards use, social factors, and facilitating conditions.	Triandis (1977)
Unified Theory of Acceptance and Use of Technology (UTAUT).	A recent theoretical model formulated from the above theoretical models. It adopts a holistic approach to better explain user acceptance and usage of new technology. It has four variables: performance expectancy, effort expectancy, social influence and facilitating conditions. Its variables are gender, age, experience and willingness to use the technology.	Venkatesh et al. (2003)

Source: Venkatesh et al. (2003)

Organisational measures

Furthermore, Figure 3 shows that, in organisational terms, IS research can be categorised under two headings – success and impacts – which are based on two theoretical models: IS-success and IS-impact, respectively. These models are explained below.

IS-success model

Using the findings of Shannon and Weaver (1963) and Mason (1978) as a basis, DeLone and McLean (1992) reviewed 180 conceptual and empirical studies and from them extracted 100 measures used to evaluate IS-success. These were used to create the IS-success model which is most widely cited today (Heo & Han 2003).

The IS-success model is the most popular model for researchers evaluating or measuring the success of IS (Myers et al. 1998; Sedera & Gable 2004). It consists of six interrelated and interdependent dimensions of success: ‘system quality’, ‘information quality’, ‘use’, ‘user satisfaction’, ‘individual impact’ and ‘organisational impact’. This model has contributed to the success of IS research by summarising common factors in prior studies of IS-success (Gable, Sedera & Chan 2008).

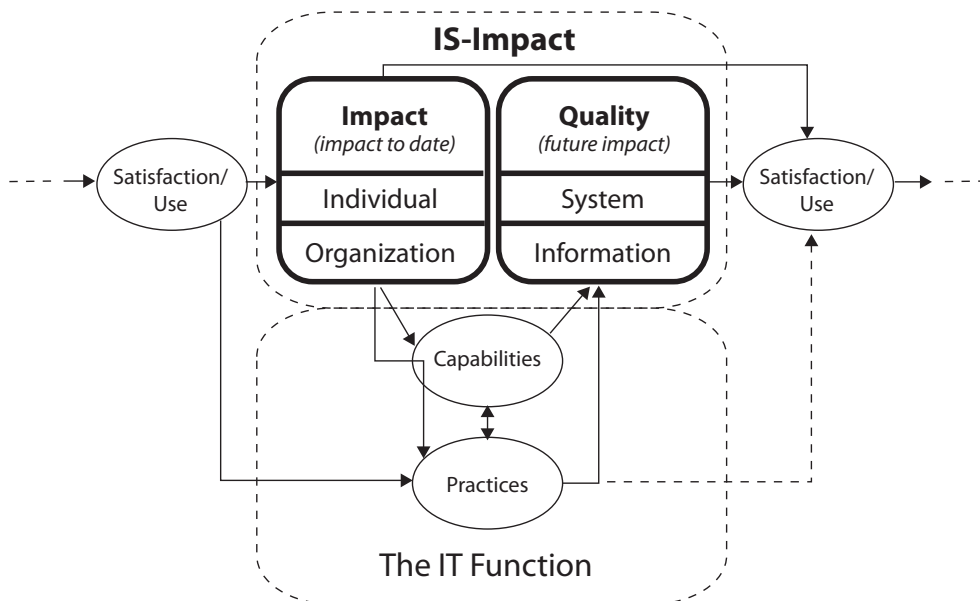
Prior to DeLone and McLean’s work, IS-success was often measured in isolation, and so their work allows a better understanding of the research as a whole. Indeed, the IS-success model has been criticised by various researchers who argue that its combination of the process model and other references is confusing. Moreover, it inappropriately conceptualises the concept of ‘use’ (Seddon 1997; Seddon et al. 1999).

Furthermore, Shang and Seddon (2000) introduced an enterprise system (ES) benefit framework, which lists the benefits that can result from an ES. The framework divides benefits into five dimensions: operational, managerial, strategic, IT infrastructure and organisational. This is an ES-specific success model and accommodates multidimensional and relevant ES success measures which focus on the organisation rather than the system itself. However, Gable, Sedera and Chan (2008) perceive these measures as ‘overlapping across dimensions’.

IS-impact measurement model

After reviewing the literature pertaining to the measurement of the success of IS performance, we found that the IS-impact measurement model was the one which was most comprehensive and up-to-date. It was also the model which contained the most recognised indicators for measuring the impact of IS. This IS-impact model includes 27 measurements distributed across four distinct dimensions, namely: system quality (SQ), information quality (IQ), individual impact (II) and organisation impact (OI). Furthermore, according to Gable, Sedera and Chan (2008), ‘the IS-impact model is a holistic index representing the stream of net benefits; the ‘impact’ half measuring net benefits to date, while the ‘quality’ half, forms our ‘best’ proxy measure of probable future impacts, with ‘impacts’ being the common denominator’. This is depicted in Figure 3.

Figure 3: The IS-impact measurement



Source: Adapted from Gable, Sedera & Chan (2008)

According to Gable, Sedera and Chan (2008), IS-impact is ‘a measure at a point in time, of the stream of net benefits from the IS, to date and anticipated, as perceived by all key-user groups’. Furthermore, Gable, Sedera and Chan (2003) point out that the IS-impact model deviates from the IS-success model in the following ways: it depicts a measurement model rather than the causal process of success; it omits the use of construct; satisfaction is treated as an overall measure of success, rather than as a construct of success; new measures have been added to reflect the contemporary IS context and organisational characteristics; and it includes additional measures to provide a more holistic organisational impacts construct.

In addition, compared to the original IS-success model, Gable, Sedera and Chan (2003) have eliminated the use and user satisfaction dimensions via multistage data collection and statistical analysis (Ifinedo 2006, 2008). The IS-impact model has been extensively validated statistically and employs mainly perpetual measures. According to Petter, DeLone and McLean (2008), 'this IS-impact model has started to develop standardised measures that can be used to evaluate the various dimensions of success as specified by DeLone and McLean's model', rather than examining one or more relationships using the qualitative technique of meta-analysis. As a result, it can lead to a better understanding of how to measure success.

Performance measurement for customs information systems

Evaluating the performance of IT via its organisational impacts is one of the critical issues in IS literature (Kim & Kim 1999) since the impacts of IT are often indirect and influenced by human, organisational, and environmental factors (Petter, DeLone & McLean 2008). In the literature, it is recognised that a myriad of measures and dimensions for IS success/impact exist. However, there are only a few structured and robust models that capture the whole IS success/impact scenario (Petter, DeLone and McLean 2008). Referring to analytical theory (Gregor 2006), Gable, Sedera and Chan (2008) argue that a reference model or theoretical framework should display the characteristics of a strong analytical theory that fulfils the criteria in terms of utility, intuitiveness, mutual exclusivity, completeness and (where relevant) appropriate hierarchy.

Gable, Sedera and Chan (2008) also suggest that, beyond those qualities of analytical theory, a framework of IS success/impact should reflect the full range of IS-impact and accommodate all views of the multiple internal stakeholder group. We have identified several salient models that surpass the others in terms of the relevance of their measures, their completeness and appropriate model structure.

Customs Information System

The CIS was implemented in RMCD in 1995 and proved to be a major undertaking. It formed part of the Malaysian Government's trade facilitation initiative carried out under the auspices of the Ministry of Transport. The project was a joint venture between a single provider – Dagang Net Technology (DNT) – and RMCD and was referred to as 'Sistem Maklumat Kastam (SMK)-DagangNet'. However, it was only available on a nationwide basis by 2002, once DNT had completed the implementation and upgrading of new hardware, software, and network equipment in order to reinforce the existing system.

This initiative reflects the trend among Asian nations of using Electronic Data Interchange (EDI) to sustain economic growth (UNECE 1996). Since 1994, RMCD has spent over RM300 million on its IT initiative and has earmarked an annual RM4 million budget for using the e-commerce solutions provided by DNT's EDI facilities (BNet 2004). All IT initiatives by RMCD follow the same track: in 2007, the Malaysian Government spent around US\$413.3 million (approximately 12 per cent of the nation's IT expenditure) replacing traditional IS in government agencies with more sophisticated IS (Hussein et al. 2007; Hussein, Selamat & Karim 2005).

The need for including an EDI system in customs modernisation, particularly at Malaysian airports and sea ports, is universally accepted. Many ports in Europe and developed countries in the Asia-Pacific region (for example, Australia and Singapore) have long reaped substantial benefits from the EDI system (BNet 2004). Thus, in 1993, Port Klang became the first Malaysian sea port to be equipped with EDI – the Port Klang Community System (PKCS) – as part of the government's trade facilitation initiative. Under this initiative, DNT was awarded an exclusive contract to provide the RMCD with an EDI solution. With the inception of PKCS, the SMK-DagangNet was established and has enabled various other government agencies (OGA) to be linked to the customs' clearance process on a national basis.

Performance measures

Measures for performing impact analysis are based on the dimensions of the original IS-impact and its extension, which are portrayed in Table 3 below.

Table 3: The distribution of impact statements

	Dimensions	Measures	In relation to customs procedures and modernisation
Original IS-impact measures and dimension	Individual Impact	Learning Awareness/recall Effectiveness of decisions Individual productivity	Learning a new system
	Organisational Impact	Organisational costs Staff requirement costs Overhead costs Overall productivity Improved outcomes and output Increased capacity Organisational process Business process change	Risk management Clearance and licensing procedures Re-engineering BP
	System Quality	Data accuracy and relevancy Data currency Database integrity Ease of use Ease of learning Access User requirements System features System accuracy Interface flexibility Reliability Efficiency Sophistication Integration Customisation	Tariff User-friendliness
	Information Quality	Importance Availability Usability Understandability Relevance Format Content accuracy Conciseness Timeliness Uniqueness	Data is important Data always available
Extended impact	User Satisfaction	Overall satisfaction Dissatisfaction Preferences	
	Organisational Factors	Centralised decisions Certified by top management Top management support Resources adequacy Objectives Responsibility	
	Overall performance	Positive impacts Individual positive impact System quality satisfaction Information quality satisfaction Excellency Organisational performance Problems Advantages	

Source: Proposal based on the IS-impact model

Research model

The research model adopted in this study is based on the IS-impact (Gable, Sedera & Chan 2003, 2008), as previously described. The model and approach employ perceptual measures and offer a common instrument covering all relevant stakeholder groups. This will enable stakeholder perspectives to be combined or compared. In particular, current research into the adaptation of the model to new contexts employs 37 IS-impact measures based on the a priori model developed by Gable, Sedera and Chan (2008).

Future research

At this stage, data is being collected from users who deal with customs personnel involved in the CIS with regard to various services (for example, internal taxes, customs, technical service, and preventive measures). We expect to have 200 valid responses from the survey.

The survey instruments have to be constructed according to the measures defined in Table 3 in order to evaluate the CIS in RMCD in terms of IS-performance. The data gathered from the survey will be analysed using the sequential equation modelling (SEM) technique in connection with the partial least square (PLS) analysis. The use of PLS offers one method of statistically validating the proposed model and testing the relationship between those constructs (for example, individual impact, organisational impact, system information quality and information quality).

Conclusions

The overall aim of our research is to adapt one of the most rigorous and comprehensive theoretical models relating to IS – the IS-impact model – in order to measure the performance of CIS. This paper has attempted to explain how the performance of customs information systems can be measured in terms of IS-impact and create a framework for doing so. The next step in the research will focus on the measurement of impact, data and statistical analysis using PLS. It will also seek to adapt the IS-impact model to the CIS context.

References

- Abran, A & Buglione, L 2003, 'A multidimensional performance model for consolidating balanced scorecards', *Advanced Engineering Software*, vol. 34, no. 6, pp. 339-49.
- Ajzen, I & Fishbein, M 1980, *Understanding attitudes and predicting social behavior*, Prentice-Hall, Englewood Cliffs, NJ.
- Ajzen, I & Fishbein, M 2005, *The handbook of attitudes*, Mahwah, NJ.
- Ajzen, I & Madden, F 1973, 'Attitudinal and normative variables as predictors of specific behavior', *Journal of Personality and Social Psychology*, vol. 27, no. 1, pp. 41-57.
- Amaratunga, D, Baldry, D & Sarshar, M 2001, 'Process improvement through performance measurement: the balanced scorecard methodology', *Work Study*, vol. 50, no. 5, pp. 179-89.
- Baird, M & Stammer Jr, R 2000, 'Measuring the performance of state transportation agencies: three perspectives', *Transportation Research Record: Journal of the Transportation Research Board*, [10.3141/1729-04], vol. 1729, no. 1, pp. 26-34.
- Ballantine, J, Bonner, M, Levy, M, Martin, A, Munro, I & Powell, PL 1998, 'Developing a 3-D model for information systems success', in *Information Systems Success Measurement*, series in Information Technology Management, Idea Group Publishing, pp. 46-59.

- Bandura, A 1986, *Social foundations of thought and action: a social cognitive theory*, Prentice Hall, Englewood Cliffs, NJ.
- Bandura, A 1997, *Self-efficacy: the exercise of control*, http://books.google.com/?id=eJ-PN9g_o-EC.
- Behn, R 2003, 'Why measure performance? Different purposes require different measures', *Public Administration Review*, vol. 63, no. 5, pp. 586-606.
- BNet 2004, 'Customs keen on IT implementation', *Malaysian Business*, 16 February, http://findarticles.com/p/articles/mi_qn6207/is_20040216/ai_n24907300/pg_2/?tag=content;coll.
- BPIR 2010, 'What is performance measurement?', www.bpir.com/what-is-performance-measurement-bpir.com.html.
- Cameron, KS & Whetten, DA 1983, 'Some conclusions about organisational effectiveness', in *Organisational effectiveness: a comparison of multiple models*, Academic Press, New York, NY, pp. 261-77.
- Davis, FD 1989, 'Perceived usefulness, perceived ease of use and user acceptance of information technology', *MIS Quarterly*, vol. 13, no. 3, pp. 319-40.
- DeLone, WH & McLean, ER 1992, 'Information systems success: the quest for the dependent variable', *Information Systems Research*, vol. 3, no. 1, pp. 60-90.
- Dillon, A 2001, 'User acceptance of information technology', in W Karwowski (ed.), *Encyclopedia of human factors and ergonomics*, Taylor & Francis, London.
- El-Masri, M 2009, 'A model of IS project success', <http://asac2009.somethingon.com>.
- EPM 2010, 'Driving focus and alignment with the balanced scorecard', *EPM Review*, www.epmreview.com/Resources/Articles/Driving-Focus-Alignment-with-the-Balanced-Scorecard.html.
- Fortner 2010, 'Key performance indicators (KPIs)', www.fortner.com.my/Consulting_KPI.htm.
- Gable, G, Sedera, D & Chan, T 2003, 'Enterprise system success: a measurement model', Paper presented at the *Twenty-Fourth International Conference on Information Systems*, 14-17 December 2003, Seattle, WA.
- Gable, G, Sedera, D & Chan, T 2008, 'Re-conceptualising information system success: the IS-impact measurement model', *Journal of the Association for Information Systems*, vol. 9, no. 7, pp. 337-408.
- Goodhue, DL & Thompson, RL 1995, 'Task-technology fit and individual performance', *MIS Quarterly*, vol. 19, no. 2, pp. 213-36.
- Graham, H 2009, 'Measuring organisational performance: beyond the triple bottom line', *Business Strategy and the Environment*, vol. 18, no. 3, pp. 177-91.
- Gregor, S 2006, 'The nature of theory in information systems', *MIS Quarterly*, vol. 30, no. 3, pp. 611-42.
- Gunasekaran, A, Patel, C & McGaughey, RE 2004, 'A framework for supply chain performance measurement', *International Journal of Production Economics*, vol. 87, pp. 333-47.
- Heo, J & Han, I 2003, 'Performance measure of information systems (IS) in evolving computing environments: an empirical investigation', *Information & Management*, vol. 40, pp. 243-56.
- HM Revenue & Customs 2007, *Departmental Strategic Objectives: Comprehensive Spending Review*, HMRC, London.
- Hussein, R, Karim, NS, Mohamed, N & Ahlan, AR 2007, 'The influence of organisational factors on information systems success in E-government agencies in Malaysia', *Electronic Journal on Information Systems in Developing Countries*, vol. 29, no. 1, pp. 1-17.
- Hussein, R, Selamat, H & Karim, NS 2005, 'The impact of technological factors on information systems success in the electronic-government context', Paper presented at the *Second International Conference on Innovations in Information Technology*, 26-28 September 2005, Dubai, UAE.

- Ifinedo, P 2006, 'Extending the Gable et al. enterprise systems success measurement model: a preliminary study', *Journal of Information Technology Management*, vol. XVII, no. 1, pp. 14-33.
- Ifinedo, P 2008, 'Impacts of business vision, top management support, and external expertise on ERP success', *Business Process Management Journal*, vol. 14, no. 4, pp. 551-68.
- Kaplan, RS & Norton, DP 1992, 'The balanced scorecard: measures that drive performance', *Harvard Business Review*, January-February, pp. 21-29.
- Kim, Y & Kim, Y 1999, 'Critical issues in the network area', *Information Resource Management Journal*, vol. 4, no. 4, pp. 14-23.
- Lee, Y, Kozar, KA & Larsen, KRT 2005, 'The technology acceptance model: past, present, and future', *Communications of the Association for Information Systems (CAIS)*, vol. 12, no. 50, pp. 752-80.
- Lewis, G 2003, 'The impact of ICT on customs', *World Customs Journal*, vol. 3, no. 1, pp. 3-11.
- Martinsons, MG, Davison, RH & Tse, D 1999, 'The balanced scorecard: a foundation for the strategic management of information systems', *Decision Support Systems*, vol. 25, no. 1, pp. 71-78.
- Mason, RO 1978, 'Measuring information output: a communication systems approach', *Information and Management*, vol. 1, no. 4, pp. 219-34.
- McLinden, G 2005, 'Integrity in Customs', in Luc De Wulf & José B Sokol (eds), *Customs modernization handbook*, World Bank, Washington, DC, pp. 67-89.
- Murphy, KE & Simon, SJ 2002, 'Intangible benefits valuation in ERP projects', *Information Systems Journal*, vol. 22, no. 4, pp. 301-20.
- Myers, BL, Kappelman, LA & Prybutok, VR 1998, 'A comprehensive model for assessing the quality and productivity of information systems functions: toward a theory of information systems assessments', in EJ Garrity & GL Sanders (eds), *Information Systems Success Measurement*, series in Information Technology Management, Idea Group Publishing, pp. 94-121.
- Petter, S, DeLone, WH & McLean, ER 2008, 'Measuring information systems success: models, dimensions, measures, and interrelationships', *European Journal of Information Systems*, vol. 17, no. 3, pp. 236-63.
- Seddon, PB 1997, 'A respecification and extension of the DeLone and McLean Model of IS success', *Information Systems Research*, vol. 8, no. 3, pp. 240-53.
- Seddon, PB, Staples, S, Patnayakuni, R & Bowtell, M 1999, 'Dimensions of information systems success', *Communications of the Association for Information Systems (CAIS)*, vol. 2, article 20.
- Sedera, D & Gable, GG 2004, 'A factor and structural equation analysis of the enterprise systems success measurement model', Paper presented at the 25th International Conference on Information Systems, Washington, DC.
- Shang, S & Seddon, PB 2000, 'A comprehensive framework for classifying benefits of ERP systems', Paper presented at the 6th Americas Conference on Information Systems, Long Beach, CA.
- Shannon, CE & Weaver, W 1963, *Mathematical theory of communication*, University of Illinois Press, Urbana, IL.
- Stacie, P, DeLone, W & McLean, E 2008, 'Measuring information systems success: models, dimensions, measures, and interrelationships', *European Journal of Information Systems*, vol. 17, no. 3, pp. 236-63.
- Triandis, HC 1977, *Interpersonal behavior*, Brooke Cole, Monterey, CA.
- United Nations Economic Commission for Europe (UNECE) 1996, Electronic Data Interchange – a management overview (Electronic Commerce Initiatives), submitted by the Economic and Social Commission for Asia and the Pacific, item 3, provisional agenda of the Meeting of Experts on Data Elements and Automatic Data Interchange, fifty-fourth session, 16-20 September 1996, [Trade/WP.4/5.1222], Geneva.

- Vallerand, RJ 1997, 'Toward a hierarchical model of intrinsic and extrinsic motivation', in M Zanna (ed.), *Advances in experimental social psychology*, Academic Press, New York, NY, pp. 271-360.
- Venkatesh, V, Morris, MG, Davis, GB & Davis, FD 2003, 'User acceptance of information technology: toward a unified view', *MIS Quarterly*, vol. 27, no. 3, pp. 425-78.
- Wixom, BH & Todd, PA 2005, 'A theoretical integration of user satisfaction and technology acceptance', *Information Systems Research*, vol. 16, no. 1, pp. 85-102.
- Zhu, K, Kraemer, KL, Xu, S & Dedrick, J 2004, 'Information technology payoff in e-business environments: an international perspective on value creation of e-business in the financial service industry', *Journal Management of Information Systems*, vol. 21, no. 1, pp. 17-54.

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Section 3
Special Reports

WCO has a new Committee for Capacity Building!

*Capacity Building Directorate
World Customs Organization*

The Momentum for Customs Capacity Building is still there and the agenda is strongly endorsed and supported by WCO Members.

Around 300 high-level participants from more than one hundred and twenty countries travelled to Brussels for the historical first session of the new Capacity Building Committee, held from 25–27 September 2010. In addition, more than forty partner and stakeholder organisations from academia, the private sector and the donor community participated as observers at the meeting.

Ministers, ambassadors, commissioners general, commissioners, directors general and other high-level participants discussed the future agenda of capacity building in the World Customs Organization (WCO). The first session was originally planned to be held in April this year but the ash cloud from the Icelandic volcano, Eyjafjallajökull, forced the meeting to be postponed.

The WCO is a committee-structured organisation with much of its work done through committees and working groups. It is rare that new committees are formed and the creation of a Capacity Building Committee is significant. The background is that leaders of the WCO, at the Council session in 2005, decided to implement a new capacity building strategy and set up an organisation to provide implementation support. As a result of this decision, a new Capacity Building Directorate was shaped under the elected Director, Lars Karlsson from Sweden.

The new Directorate was to build an infrastructure for capacity building delivery and at the same time, transfer the strategy into operational programs. This was achieved through a number of initiatives, for example, the Columbus Programme and the PICARD Programme. After five years, all building blocks of the infrastructure have been developed and implemented. The WCO has established and implemented capacity building visions and strategies, operational policies, standard operating procedures (SOP), a donor network platform, a language fund, and a regional structure with six regional offices for capacity building (ROCB) and twenty-two regional training centres (RTC). The migration of the previous High Level Working Group to a fully fledged permanent WCO committee was a historical landmark taking the topic of capacity building from being a development project to a prioritised day-to-day business line of the WCO.

At the meeting in Brussels, Canada was elected chair of the Capacity Building Committee with China as Vice Chair. Three major themes emerged, the importance of *People, Partnerships* and *Political will* (3P). The delegations stressed the need for leadership, strategic planning, coordination and evaluation at all levels for successful delivery of capacity building on the ground. Three new WCO initiatives were launched: the WCO Management Programme, the new e-learning platform and the first ever Fellowship program in Spanish.

The Committee, under the able leadership of Chris Henderson, Director General, International and Partnerships Directorate, Canada Border Services Agency, developed a roadmap for the way forward, including tangible deliverables. Before the next session of the Committee, to be held in May 2011, a number of concrete initiatives/activities are expected based on requests raised by Members and stakeholders, for example, a model career development plan, a model for documentation of best practice examples, more research on customs reform and modernisation (case studies), pilot joint private sector-

customs capacity building initiatives, participation in the Aid-for-Trade initiative, organisation of a WCO ministerial event to raise the profile of the agenda, development of a WCO C21 capacity building package for decision-makers, and the development of capacity building evaluation indicators. Further development and implementation of the WCO Management Development Programme, based on the PICARD professional standards, is also expected.

It was agreed that Result Based Management and performance measurement will be top priorities on the Committee's agenda, starting with cooperation with academia at the WCO 2010 PICARD conference to be held in Abu Dhabi in November. Many delegations, in solidarity with the overall aims of the agenda, pledged continued financial and human resource support for the WCO capacity building programs and activities.

Helen Clark, Administrator Head of the United Nations Development Programme (UNDP), and Chair of the UN Development Group, a committee consisting of the heads of all UN funds, programs and departments working on development issues, came directly to the Committee meeting from the successful 2010 Millennium Development Review Summit held in New York the week before. In her keynote speech on the progress achieved in New York, Mrs Clark stated:

I was delighted to learn some months ago that the World Customs Organization was looking at how its work could help the achievement of the MDGs. In my view, it can help a great deal. For the MDGs to be met, countries' economies will need to grow sustainably and revenue will need to be collected from that for investments in services and infrastructure. A modern customs service can play a key role in both trade facilitation which is conducive to growth, and revenue collection from it. There is certainly scope for further strengthening linkages between our organisations. I commend the WCO and this Committee for taking its capacity building work seriously, and for developing a number of instruments, programs and tools to enhance customs operations.

Other keynote speeches were delivered by the Jordan Minister of Transport, HE Mr Alaa Batayneh, and the Ambassador of Cote d'Ivoire to Belgium and the European Union, HE Mrs Marie Gosset. A number of Customs Commissioners and Directors General gave presentations about the considerable capacity building progress and results achieved over the last few years in customs reform and modernisation.

In addition, several tripartite capacity building twinning agreements between African countries were signed during the meeting. The tripartite model is a simple but very effective way of structuring capacity building support and cooperation with concrete deliverables and expected outcomes. It is a significant step forward that developing countries, having received support in the first stages of the WCO Columbus Programme, are now transferring their experience to other countries in the region. Africa is building Africa. The model will be promoted to be used more frequently in other parts of the world.

The WCO signed a Memorandum of Understanding with the South African Customs Union, and Professor David Widdowson was acknowledged for his work in strengthening the partnership between Customs and academia.

Feedback and evaluation surveys from participants showed that the meeting was a great success. There is no doubt that the permanent Capacity Building Committee is already a cornerstone that will make capacity building a priority area within the organisation and that all necessary components are now in place for continued successful capacity building delivery in the future.

As was said about capacity building during the committee meeting:

...capacity building is about reform and modernisation, how to build one's own sustainable capacity to manage change over time. Capacity building is not technical assistance and training, which are important components of development; it is more than that. We are not building a road, but the place the road leads to. Integrity is the way we travel.

World Customs Forum 2010



6-7 October 2010, Istanbul, Turkey

Executive Summary – Conference Outcomes

Prepared by Dr Christopher Dallimore, Trusted Trade Alliance

The fourth World Customs Forum (WCF) dealt with the topic of partnership with particular regard to Globally Networked Customs (GNC) and the needs of the private sector. The basis for discussions was the World Customs Organization's (WCO) strategic policy document 'Customs in the 21st Century'. As in previous years, the WCF was very well attended with over 350 delegates from 70 countries on all continents. Hosted by Turkish Customs under the auspices of the WCO in conjunction with the Trusted Trade Alliance, the conference was sponsored by the following international companies: GTI (national partner), KGH, SICPA-ASSAN (gold sponsors), Smart CM and MIC Solutions (silver sponsors), and featured an equal number of speakers from the public and private sectors as well as representatives from international organisations. There were seven sessions which dealt with six different topics related to partnership. A keynote speech outlined the major themes of each session which were then discussed by a panel of experts.

The conference was opened by a welcoming session which helped set the background for the ensuing panel discussions. **Hayati Yazici, the Turkish Minister for State**, drew attention to Istanbul's importance as a trading capital throughout history and underlined the necessity of trade to economic development and the elimination of poverty. **Mustafa Rifat Hisarciklioglu, President of the Union of Chambers and Commodity Exchanges of Turkey**, pointed out that the success of trade depended on effective transportation networks, regional integration and multilateral agreement on trade-related standards. **Kunio Mikuriya, Secretary General of the WCO**, stated that trade was gradually recovering from the economic crisis which increased the importance of reconciling security and facilitation. The strategic document 'Customs in the 21st Century' could help customs administrations meet this challenge. Finally, **Walter Deffaa, Director-General, Taxation and Customs Union, European Commission**, focused the delegates' attention on the central issue of squaring the vicious circle of security at the expense of facilitation and vice versa. This could only be achieved by employing global instruments such as the SAFE Framework and realising the concepts contained in the WCO's strategic policy document.

The first two sessions concentrated on the principles and goals contained in the WCO strategic policy document '**Customs in the 21st Century**'. This served to place partnership within the overall context of the customs modernisation process and focused attention on the overarching goals of the WCO. A major theme of the first session was the progress made by the WCO and Member states in implementing the GNC, the Single Window and Global Single Window concepts as well as the Safe and Secure Trade Lines Project. The second session looked at how customs authorities were progressing in their modernisation efforts as well as the changing agenda for customs reform. The representatives of Turkish and Mexican Customs outlined the practical steps their administrations had taken to improve customs controls and trade facilitation. A presentation by the INCU also challenged the traditionally prescriptive nature of border regulation and advocated a 'total supply chain approach' in order to improve the predictability and transparency of international supply chains.

The third session turned attention to the **partnership between Customs and business (C2B)**. The keynote speech provided an example of how a major infrastructure modernisation project in Turkey had been successfully completed on the basis of a private-public partnership at no cost to the state. Two representatives of leading trade associations analysed the current partnership paradigm from the perspective of the private sector. Both emphasised the need for trade to take ownership of compliance and for Customs to simplify border regulation. Two private sector representatives assessed the effectiveness of C2B partnership in light of their companies' needs. Whereas both speakers recognised the need for supply chain security, there was, on the one hand, a need for greater visibility in the supply chain in order to enhance security and efficiency and, on the other, a need for a tailored approach to take into account companies' operating conditions. At the end of the first day, the WCF had outlined the foundations and context for GNC, heard experiences in implementing C2B partnership programs and critically analysed the current progress in meeting the interests of both Customs and the private sector.

The second day looked towards the future development of the C2B partnership model by asking whether it was time for a **course adjustment in the partnership paradigm**. This session examined the concept underlying the Authorised Economic Operator (AEO) program and compared its implementation in practice in order to find out if partnership really was working in the way the WCO had envisaged in its SAFE Framework. The message was that customs authorities needed to trust compliant traders more and both sectors needed to work towards a genuine partnership. In this respect, the Finnish model of the AEO provided a good example. Two further presentations provided insights into the challenges involved in implementing the AEO – one from Japan where the AEO had already been successfully introduced, and one from Latin America which was just embarking on this project. Speakers drew attention to the need for effective performance measurements, common definitions and a mutual recognition scheme. Also, cultural differences meant that a one-size-fits-all approach to C2B partnership was inappropriate.

The next session dealt with **information and data in trade and transport logistics**. The introductory remarks by the moderator left no doubt that information and data form the life-blood of trade facilitation. Speakers included members of the private sector, transport associations and IT service providers. They presented overviews of modernisation measures taken with regard to transport (RO-RO lines and SAFE TIR) as well as ports (the EU's e-maritime initiative and port communication systems). These measures would not only bring trade-related advantages but also increase transparency, thereby reducing the risk of corruption and benefiting the environment. The underlying message of the session was that Customs and business could harness the winds of change for the benefit of society as a whole.

The penultimate session was directed towards resolving the issue of **how to make partnership work in the light of global practices**. The panel featured representatives from the administrations of the USA, Norway, Ghana, Austria and Macedonia. The keynote speech underlined the need to re-examine commonly-held assumptions about partnerships, benefits and information exchange. Each of the speakers provided impressive examples of what Customs and the private sector could achieve when working in tandem: issues such as IPR protection, AEO implementation and customs modernisation all benefiting from close collaboration. By sharing the burden of these challenges and ensuring effective channels of communication, it was possible to see that the interests of Customs and business often converged.

This discussion led naturally to the final session which concerned **building – and maintaining – momentum towards progress in attaining the goals of 'Customs in the 21st Century'**, the strategic policy document referred to throughout the conference. The message of this short but crucial session was simple: it was not enough for governments to be good at promising reform, they also had to be good at harvesting results. In addition, mutual recognition of AEO programs could only be achieved by multilateral and not bilateral agreement. In both respects, the WCO had a major role to play in setting global standards for mutual recognition and global KPIs for measuring progress. Realising the goals of 'Customs in the 21st Century' was a joint endeavour in which all members of the WCF had their role to play, be they customs administrations, business, academia or international organisations.

The conference concluded with summations by the organising committee: **Bryce Blegen, CEO of the Trusted Trade Alliance**, underlined the need for greater collaboration between Customs and trade with a view to creating global best practices whilst **Suzanne Aigner, Deputy Director of Compliance and Facilitation at the WCO**, noted the need for common understanding and the effective exchange of information. The **Secretary General of the WCO, Kunio Mikuriya**, expressed his belief that progress was being made in implementing the goals of ‘Customs in the 21st Century’ whilst acknowledging that this forum had given the WCO much food for thought. Inasmuch as the aim of the conference was to bring together the private and public sectors in meaningful dialogue, it had exceeded everyone’s expectations. Appropriately, the final word went to the representative of Turkish Customs whose city of Istanbul had proved so instrumental in the conference’s success. **Riza Mehmet Korkmaz, Director-General for the EU and External Relations at Turkish Customs**, applauded the opportunity afforded by the WCF for Customs and business to share their views and experiences on a wide range of topics and expressed his administration’s pleasure in having hosted the conference.



Section 4

Reference Material

Guidelines for contributors

The *World Customs Journal* invites authors to submit papers that relate to all aspects of customs activity, for example, law, policy, economics, administration, information and communications technologies. The Journal has a multi-dimensional focus on customs issues and the following broad categories should be used as a guide.

Research and theory

The suggested length for articles about research and theory is approximately 5,000 words per article. Longer items will be accepted, however, publication of items of 10,000 or more words may be spread over more than one issue of the Journal.

Original research and theoretical papers submitted will be reviewed using a ‘double blind’ or ‘masked’ process, that is, the identity of author/s and reviewer/s will not be made known to each other. This process may result in delays in publication, especially where modifications to papers are suggested to the author/s by the reviewer/s. Authors submitting original items that relate to research and theory are asked to include the following details separately from the body of the article:

- title of the paper
- names, positions, organisations, and contact details of each author
- bionotes (no more than 50 words for each author) together with a recent, high resolution, colour photograph for possible publication in the Journal
- an abstract of no more than 100 words for papers up to 5,000 words, **or for longer papers**, a summary of up to 600 words depending on the length and complexity of the paper.

Please note that previously refereed papers will not be refereed by the *World Customs Journal*.

Practical applications, including case studies, issues and solutions

These items are generally between 2,000 and 5,000 words per article. Authors of these items are asked to include bionotes (no more than 50 words for each author) together with a recent, high resolution, colour photograph for possible publication in the Journal. The Editorial Board will review articles that relate to practical applications.

Reviews of books, publications, systems and practices

The suggested length is between 350 and 800 words per review. The Editorial Board will review these items submitted for publication.

Papers published elsewhere

Authors of papers previously published should provide full citations of the publication/s in which their paper/s appeared. Where appropriate, authors are asked to obtain permission from the previous publishers to re-publish these items in the *World Customs Journal*, which will acknowledge these source/s. Copies of permissions obtained should accompany the article submitted for publication in the *World Customs Journal*.

Authors intending to offer their papers for publication elsewhere—in English and/or another language—are asked to advise the Editor-in-Chief of the names of those publications.

Where necessary and appropriate, and to ensure consistency in style, the editors will make any necessary changes in items submitted and accepted for publication, except where those items have been refereed and published elsewhere. Guidance on the editors’ approach to style and referencing is available on the Journal’s website.

Letters to the Editor

We invite Letters to the Editor that address items previously published in the Journal as well as topics related to all aspects of customs activity. Authors of letters are asked to include their name and address (or a pseudonym) for publication in the Journal. As well, authors are asked to provide full contact details so that, should the need arise, the Editor-in-Chief can contact them.

All items should be submitted in Microsoft Word or RTF, as email attachments, to the Editor-in-Chief: editor@worldcustomsjournal.org

Editorial Board

Professor David Widdowson



University of Canberra, Australia *Editor-in-Chief*

Professor David Widdowson is Chief Executive Officer of the Centre for Customs & Excise Studies at the University of Canberra. He is President of the International Network of Customs Universities; a member of the WCO's PICARD Advisory Group, and a founding director of the Trusted Trade Alliance. David holds a PhD in Customs Management, and has over 30 years experience in his field of expertise, including 21 years with the Australian Customs Service. His research areas include trade facilitation, regulatory compliance management, risk management and supply chain security.

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