# Trade Statistics Data Gathering – A Concept for the Future

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## Abstract

The gathering of data for trade statistics purposes has a long-standing reliance on the Customs declaration. Research by UK and Dutch Customs has identified weaknesses in the international trade supply chain leading to potential inaccuracies of the data captured by Customs. Many of the systems associated with international trade are disconnected from each other and designed for old, outdated, paper based processes and procedures. And there are other threats to the capture of accurate data for statistical purposes. Initiatives within the European Union could mean Customs declarations for goods entering and leaving one country are processed by Customs in another country. Or companies may be able to make periodic assessment of their Customs responsibilities making real time gathering of data very difficult. Customs has opportunities for a fundamental and radical re-appraisal of the way the supply chain is managed which could lead to a web based, seamless integrated data pipeline that links the buyer with the seller and joins together the commercial and regulatory players in between. This paper proposes a review of the statistical requirement for economic decision making so as to enable statisticians to influence Customs developments and ensure that real data needs are met.

## The Case for Trade Statistics

International trade statistics are compiled to serve the needs of many users, including governments, business community, compilers of other economic statistics such as balance of payments and national accounts, various regional and international organizations, researchers and the public at large. They are used to identify new trade opportunities for products across the world, to measure market share, to identify growth areas, to forecast trade and to analyse patterns. Different users need different data, ranging from detailed to aggregated figures.

One of the key uses of trade data is as a component to a country's Balance of Payments and National Accounts. Trade statistics are regarded as an important economic indicator. Export data in particular is used as an indicator of the state of health of the manufacturing industry.

National Accounts statisticians, trade economists and trade policy officials are well aware of the importance and utility of trade statistics. However, this is not always the case for those who run the administrative systems which provide the source data for international trade statistics. Customs and border colleagues are focussed on collecting the appropriate duties and safeguarding the movement of restricted or dangerous goods. While they should be aware of the needs of trade statisticians, they are less likely to appreciate the importance of these statistics to a country's

economic performance. This has the potential to affect the quality of data delivered and the facilitation of meeting new data requirements.

***Trade Statisticians should work with Customs colleagues to promote the importance and utility of Trade Statistics, so that statistical requirements are better defined and met in the international trade process.***

**Quality risks associated with Customs Source Data**

In most countries, trade-related data is collected from the Customs import and export declarations which are made electronically or on paper. Either Customs or the national statistical department produce and publicise the detailed overseas trade statistics. Generally it is the Customs automated entry processing system that captures the data against which the statistical department will perform regular credibility checks and amendments to ensure that the trade statistics base information is accurate. Validity and credibility checks make sure the data is accurate, within quality standards, and as comprehensive as possible.

The gathering, processing and dissemination of Trade Statistics are generally done within a legal and quality framework, including precise legal texts, definitions and procedures. However these are separate from the legal frameworks that govern Customs procedures and other matters concerning the international movement of goods.

***International legislation / frameworks should cover the data/information requirements associated with the international movement of goods in a unified, coherent framework.***

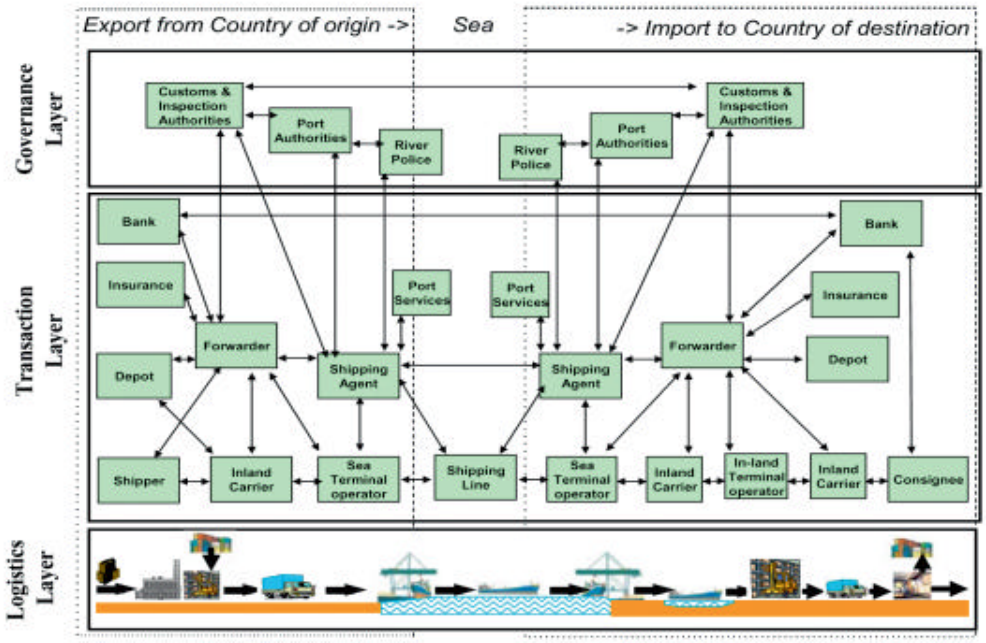
Whilst it is the Customs declaration that, traditionally, has become the data capture vehicle, the data itself resides in commercial transaction and logistics systems. The Customs declaration simply adds another bureaucratic layer, often requiring re-work, duplication of data capture, transposing data, re-keying and data which, in turn, can lead to errors, mis-description and significant inefficiencies. For many years Customs have concentrated mainly on goods arriving into a country. Traditionally Customs have used the ship or aircraft manifest as the basis for safety, security and admissibility and used the Customs declaration as the basis for regulation and collecting revenue and Trade 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. For imports, the importer is required to make a legal declaration about goods they have never seen using data they cannot verify. The Customs declaration repeats information from commercial transactions and a supply chain which lends itself to data errors at various stages.

The international trade supply chain and commercial business systems within it are often overly complex, un-joined-up and in need of improvement. Data deficiencies and gaps together with an outdated paper trail are resulting in financial, safety, visibility and planning risks. The consignor has limited legal accountability for properly describing and despatching goods into the supply chain and existing transport conventions place too much emphasis on limiting carrier liability rather than accurately describing the goods being shipped. Identifying and managing the data in

the international supply chain 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.

The complexities of the current international trade supply-chain are shown in Figure 1 below. Data is required at many points along the supply chain; it is often supplied by different parties and is not necessarily consistent.

*Figure 1: Logistics, Transaction and Governance Layers in the International Supply Chain*




*Source:* Marcel van Oosterhout 2008.

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 in assuring goods presented to Customs. For sea cargo Customs accept the inwards (import) manifest as an import summary declaration.

However, despite the legal requirement to provide accurate data to Customs, about 60% of vessel manifests show 'agent to agent' rather than 'seller to buyer' making the data unfit for regulatory risk assessment or Trade Statistics purposes.

**The MSC Napoli: Evidence of data errors**

The grounding of the vessel MSC Napoli in January 2007 off the UK South Devon Coast highlighted the problem of mis-declaration of goods and led to growing pressure for ship's manifests to contain more detailed cargo information.

When the salvors and insurer's examined the recovered cargo it was clear that, in some instances, the Carrier had no reasonable means of ascertaining who was

responsible for the containers and their contents. Of the 660 dry containers stowed on deck the weights of 137 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 due to many shippers deliberately under-declaring containers in order to minimise import taxes.

The position is better with air cargo. After the destruction of Pan Am flight 103 over Lockerbie in December 1988 and after the attacks of September 2001 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 on-line or certainly prior to departure[i]. For Cargo, identification labels will show information which corresponds to the manifest and a tracking number which can be used to check the status of delivery and current position of the shipment.

It can be seen that 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 generally separated 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.

Even if the primary source of the cargo related data (generally the consignor) provides accurate information this can be re-keyed, duplicated, transposed, simplified and reduced. The conclusion, therefore, could be that the data provided to Customs through cargo manifests and export and import declarations lacks a certain degree of accuracy and integrity.

**Improving Supply Chain information**

Jay Wright Forrester,[ii] 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.[iii] While the information required by the many players in the chain is different, the source of the information related to the goods centres on the seller (or shipper or consignor). Information about the transport of the goods comes from a number of logistic service providers along the route.

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. 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 Harmonised System and all costs and means of carriage can be estimated to ensure, as far as possible, the agreed delivered price.

The WCO SAFE Framework of Standards, published in 2007, promotes the seamless movement of goods, the harmonisation of advance electronic cargo information and advocates partnerships between Customs and the private sector to ensure the safety and security of the international trade supply chain.

SAFE 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.[iv] This places the onus on the consignor and logistics providers to supply accurate data relating to the goods.

Modern legislation in the European Community and in the United States 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 often out of the legal reach of the importing authorities.

The consignor - the person sending a shipment to be delivered whether by land, sea or air - is responsible for making a legal export declaration to Customs before the goods leave the country. At the stage of consignment, the consignor has accurate information covering most of the data that Customs need to know for both export and import control and which are required for Trade Statistics purposes.

***Capturing consignment information from the Consignor/ Exporter is key to accurate Trade Statistics for both exports and imports.***

**Towards an integrated data pipeline**

Discussions in Customs circles are looking at changing the way the international trade supply chain is managed and the way it captures and provides data. This is to improve the efficiency and security of the international movement of goods but it provides opportunity for trade statisticians to influence developments to the benefit of trade statistics requirements.

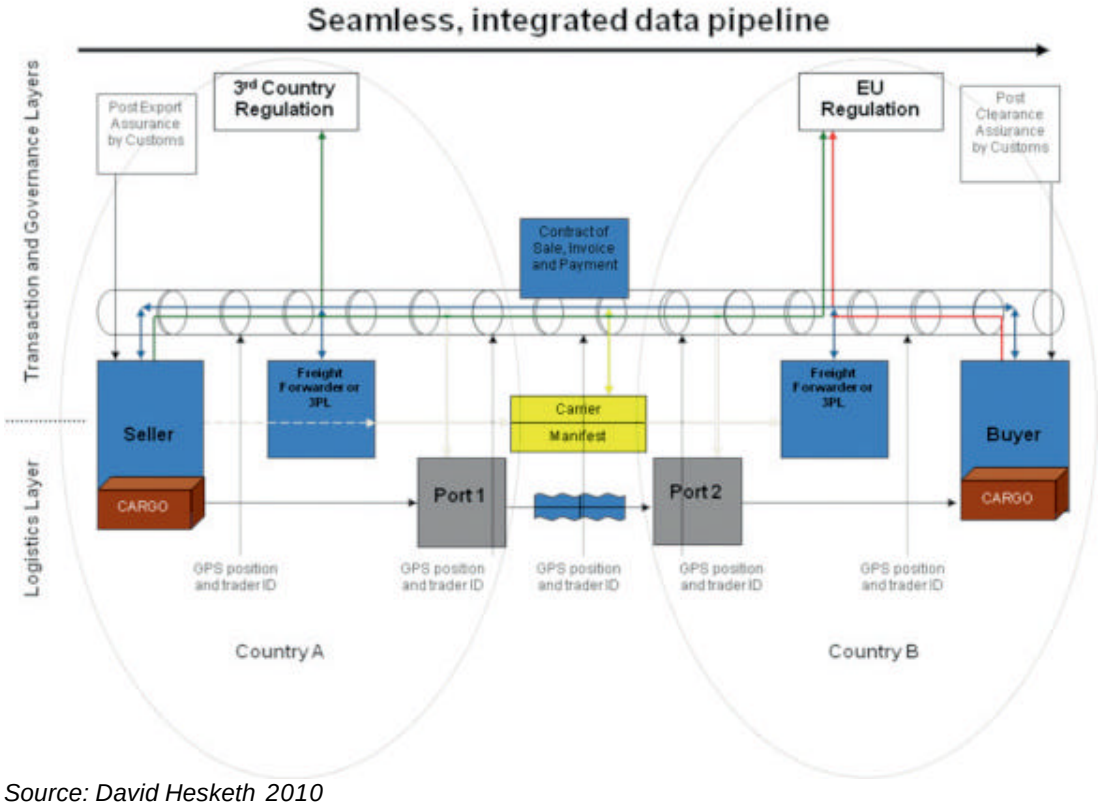
Ultimately the emphasis has to shift from limiting carrier liability and an outdated paper trail to supply chain visibility and predictability through accurate data provision and management. The objective is to eliminate redundancies and duplication in the submission of data, provide real-time supply 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[v].

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 electronic equivalent of the packing list, shipping note and way bills and the information can be supplemented by 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 international supply chain.

Only the data needed for a particular purpose will be provided to those who need it. 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.
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[vi]. This conforms to the WCO, UNECE, EU and Trade call for seamless, electronic processes between Customs Administrations and between Customs and business in facilitating legitimate trade[vii].

Such a data model can be demonstrated through an integrated data pipeline shown in Figure 2.

*Figure 2 Seamless, integrated data pipeline*




*Source: David Hesketh 2010*

**Testing the Technology: The Cassandra Project**
The European Union funded Cassandra project is to commence in March 2011. Cassandra stands for Common Assessment and Analysis of Risk in Global Supply Chains. It is a consortium of mainly commercial and academic bodies including research institutes, port authorities, terminal operators, technology and IT solution providers, freight forwarders and logistic service providers. HM Revenue and Customs has been asked to participate, together with Netherlands Customs, to represent the interests and requirements of the European Customs community.

The project addresses two significant challenges described above within the international trade supply chain;

- the production of accurate consignment and transport data using state of the art information and communications technology, and

- risk management in private and public sector international trade activities.

The role of UK and Dutch Customs is to advise on regulatory data requirements and IT standards and influence the development of IT and risk systems for the benefit of both trade and Customs.

CASSANDRA will seek to integrate existing visibility solutions and data capture technologies with the intention of enabling risk assessment and a risk based approach for both business and government. The risk based approach will be embedded in a security vision of 'secure consignment, secure entity and secure location'.

In practical terms Cassandra will build the seamless, electronic data 'pipeline' linking the seller/consignor and the buyer/consignee and holds the potential to provide accurate data for trade statistics purposes based on a value-for-money requirement by statisticians and supported by legislation.

However, piloting a technical solution is just one part of the process of streamlining and integrating the international supply chain. Underpinning the technology there needs to be 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.

International law 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.

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 etc 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.

The benefits of delivering these technological and legislative solutions are clear within the commercial and governance context of international trade:

- reducing 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 will be of higher quality and possibly less costly to trade,
- data for safety, security, admissibility, compliance and statistics will be more accurate and provided earlier and in a timely manner;
- overall supply chain visibility, and
- information to protect profit and capture more market share.[viii]

However, there are also real benefits in data quality, timeliness and availability to be exploited for trade statistics.

## The Challenge for Trade Statistics

Currently the data collected from the Customs declaration is just one part of the information processed at various points in the international trade supply chain. With an integrated seamless data pipeline comes the opportunity to access more of that data for trade statistics purposes.

Some of our progressive trade statistics requirements, for example identifying intra-firm trade, are not available from existing Customs sources. There may be potential for obtaining this information from the data pipeline, for example by having common business identifiers for intra-firm trade. Other information requirements, such as tracking changes of ownership or global value chain transactions may not be possible in a system focussing on movement of goods.

The burden of introducing additional data elements into administrative systems is high. Various estimates suggest that the cost of trade procedures may range from 2% to 15% of the value of traded goods. It is also estimated that 77% of the administrative burden on businesses from international trade related regulation is attributed to Customs.[ix] But the burdens of data collection through statistical surveys are also high. When the Intrastat system was introduced in the EU following the creation of the single market, the data requirement was built around the existing detailed Customs data. Although the number of data items collected is much reduced from the Customs data set, and there have been further simplifications since its introduction, in the UK the response burden for Intrastat is greater than that of all government business statistics surveys combined.

**Identify the real data requirement** In these days of integrated electronic data systems there is a case for questioning the need for each piece of data collected, revisiting the source of that data and recognising the value for money and burdens on businesses when balancing the need for statistics against their cost of collection. We need to be considering which data items are required for all trade. It may be that

we extend the practice of collecting some data items on a sample or threshold approach and use statistical techniques to produce gross estimates.

**Get involved in Customs developments:** Customs are exploring radical changes in the international trade supply chain. This provides trade statisticians with the opportunity to collect better quality data from different points in the supply chain, rather than from the traditional Customs declaration. Customs initiatives within the European Union could mean Customs declarations for goods entering and leaving one country are processed by Customs in another country. Or companies may be able to make periodic assessment of their Customs responsibilities making real time gathering of data very difficult. We need to work with Customs colleagues at an international level to pursue innovative options for obtaining our data.

**Pursue combined data legislative frameworks**: International agreements covering Customs and Trade Statistics are quite separate. At best, both acknowledge the other, but there is little joint thinking. The integrated data pipeline development provides opportunity to develop an integrated legislative framework covering all the data requirements in the international trade supply chain.

## Conclusion

Customs procedures provide a rich, regular and comprehensive data source for trade statistics purposes. However, the complexities of the international supply chain mean that this data is not always of the best quality nor collected in the least burdensome way. Developments to improve the data flows within the international supply chain provide new opportunities for trade statistics. The challenge for trade statisticians is to:

- identify the real data requirement
- get involved in Customs developments
- pursue combined data legislative frameworks.

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*The paper draws from an article by David Hesketh published in the World Customs Journal:*
*http://www.worldcustomsjournal.org/media/wcj/-2010/2/Hesketh.pdf*

## Endnotes

[i] International Civil Aviation Organisation http://www.icao.int/icao/en/atb/fal/api.htm

[ii] Jay Forrester, 1961, Industrial Dynamics, Waltham, MA: Pegasus Communications

[iii] Hesketh D , World Customs Journal, Volume 3, number 1, page 30
http://www.worldcustomsjournal.org/media/wcj/-2009/1/Hesketh.pdf

[iv] WCO SAFE Framework of Standards, June 2007, p32

[v] UNECE background paper: UNECE/TRADE/CEFACT/2006/15, p5 paragraph 15
http://www.unece.org/trade/workshop/sw_2006/bk_doc.pdf

[vi] Hesketh.D, 2010,*"Weaknesses in the supply chain: who packed the box?"* World Customs Journal, *http://www.worldcustomsjournal.org/media/wcj/-2010/2/Hesketh.pdf*

[vii] UNECE and WCO, Customs in the 21st Century, p6, para 14 – Globally Networked Customs
http://www.wcoomd.org/files/1.%20Public%20files/PDFandDocuments/Annex%20II%20-%20Customs%20in%20the%2021st%20Century.pdf

[viii] Aberdeen Group, "*Supply Chain Visibility Roadmap*" http://www.aberdeen.com/aberdeen-library/3609/RA_Visibility_BE_3609.aspx

[ix] *Simplifying Trade Across UK Borders*, BIS, December 2009, p25 HMRC = 77% of the admin burden = £769 million