

REVERSING THE TREND

Low cost and low risk methods for
assuring proper duty payments

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Background

- Despite the overall trend towards lower tariffs and freer trade, customs duties remain a significant source of income for most countries. During the period 2001-2006, the share of trade tax revenue in total tax receipts amounted on average to 2.5% in high-income countries, 18.1% in middle-income countries and 22% in low-income countries. In nine countries, tariff receipts accounted for more than half of all tax revenue in at least one year during this period (Baunsgaard and Keen, 2009).
- For many countries, collecting duties has been a challenge. In Africa, the tariff collection rate (i.e. the ratio of actual tariff revenue to hypothetical tariff revenue had the statutory tariff rate been applied) is frequently under 70%, and in some cases does not reach 50%.
- Misclassification of commodities is widely recognized as the single greatest cause of non-compliance, but it is often ignored as a source of significant revenue. This is largely due to the perception that:
 - classification errors do not account for very much revenue, and
 - detecting classification errors requires too much effort and expense.

Quantifying Revenue Losses due to Misclassification

- 30% of Customs entries are misclassified (Auditor General of Canada, 1994, 1997, 2001, 2007, 2010)
- **\$22 billion** per year is owed to government treasuries worldwide because of misclassification alone.*

* (Extrapolated from WTO Country Profiles; IMF "Survey to determine the percentage of national revenue represented by Customs duties", 2011; and Auditor General of Canada reports 1994, 1997, 2001, 2003, 2007, and 2010)

Country	Value of Imports (in US\$ billions)	Average Rate of Duty (Trade weighted)	Ratio of Duties to Total Gov't Revenues	Duty Collections (in US\$ millions)	Duty Underpayments (in US\$ millions)
Kuwait	21.3	5.00 %	63.56 %	1,065.0	26.94
Bahamas	3.0	22.80 %	47.19 %	684.0	17.31
Bangladesh	17.3	9.20 %	35.64 %	1,591.6	40.27
Sudan	9.8	14.00 %	34.55 %	1,372.0	34.71
Uganda	4.5	11.10 %	29.40 %	499.5	12.64
Ghana	9.1	8.60 %	24.08 %	782.6	19.80
Philippines	50.0	5.90 %	22.45 %	2,950.0	74.64

Causes of Misclassification

- **HS Complexity**
 - Hierarchical Structure, Rules of Interpretation, Legal Notes
- **Gaps in terminology**
 - HS commodity descriptions are often extremely technical, legalistic and sometimes impenetrable by anyone other than a domain expert
 - E.g. “Electric toothbrush” = “Electromechanical domestic appliances, with self-contained electric motor, other than vacuum cleaners of heading 85.08; Other appliances”
- **Outsourcing to 3rd parties**
 - Expediency trumps compliance
- **Improper tools**
 - Keyword engines lack precision and are error-prone
- **Lack of Oversight**
 - Voluntary compliance transfers responsibility and risks from Customs to trader

Attempts at Solving the Problem

- **Risk Management / Risk Assessment**
 - Promoted as a best practice because it allows Customs to focus its limited resources on areas of concern while at the same time facilitating trade.
 - Employ selectivity factors such as tariff differentiation, industry or product segment, historical/anecdotal accuracy, or rate of duty to flag potential classification errors.
 - Extremely susceptible to “garbage-in-garbage out”.
 - “Use of HS code for targeting purposes remains limited mainly because of officer concerns about the accuracy of the information being provided by the trading community.” (Canada Border Services Agency, 2006)
 - Flags merely point the way - errors ultimately detected through manual audits.

- **Incentives / Penalties**
 - Monetary penalties represent a low cost approach to promoting compliance in voluntary compliance regimes.
 - Low rates of examination, and high rates of successful appeal have made brought into question their effectiveness on compliance.

Attempts at Solving the Problem

- **Post entry audit**
 - Most effective, yet most expensive way of assuring proper classification and duty remittance.
 - Manual review can only be effective as the size and knowledge of the audit staff.
 - Audit efficacy is undermined by importers providing “cloned” HS descriptions instead of normal trade descriptions. These descriptions are often generated automatically by customs management systems.
- **Pre-shipment inspection**
 - PSI is a corollary to the audit approach, but such fee for service arrangements cannot be considered an attractive, long term solution to the problem of compliance monitoring and enforcement since it represents an outsourcing of Customs’ responsibility.

Use of Artificial Intelligence in HS Error Detection

- In 2008, a project involving the Zambian Revenue Authority (ZRA) and 3CE Technologies was conducted to determine whether or not 3CE's artificial intelligence based HS audit software could automatically detect HS classification errors, duty underpayments, and commodity reporting deficiencies.
- 3CE processed 856,501 customs entry lines (representing approximately 71,000 man-hours) in approximately 8 hours.
- Fundamentally, the audit proceeded as follows:
 - Narrative product information (i.e. goods descriptions) was fed to 3CE's natural language query processor and inference engine.
 - 3CE attempted to classify the goods independently from the declarant's goods description.
 - 3CE then compared its result with the HS code declared.
 - Classification errors were detected by comparing the observed data (3CE classification results) with expected values (declared HS codes).

Use of Artificial Intelligence in HS Error Detection

- **Audit highlights:**
 - Only 124,738 records (14.56%) contained enough product detail to enable validation of the declared HS commodity code to 6-digits. 25,980 records (3.03%) had no narrative goods description whatsoever.
 - Within the set of 124,738 fully specified records, 37,066 records (29.72%) were found to be incorrectly classified at HS 6-digit level.
 - Within the set of 37,066 records that were found to be incorrectly classified, 3,175 records (8.56%) were found to have a likely duty payment loss.
 - The average applied rate of duty for incorrectly classified records was 3.30%, whereas the average rate of duty for these records should have been 10.81%. This created a duty payment gap of 7.51%.
 - The estimated duty underpayments due to misclassification in 2008 amounted to US\$ 8.724 million.

Considerations

- **100% verification is desirable when:**
 - the flow of trade is not impeded;
 - the processes used are reliable;
 - there is a demonstrable improvement in compliance and data quality.
- **100% automated monitoring can provide the following benefits:**
 - Optimal allocation of audit personnel.
 - Recovery of revenues.
 - Demonstration to the importing community of the ability to monitor and willingness to enforce.
 - Elimination of discretion at the border.

Considerations

- **Artificial Intelligence enabled automated monitoring**
 - **Facilitates trade by:**
 - automating labor intensive procedures;
 - improving risk scoring, minimizing false positives.
 - **Builds capacity by:**
 - protecting institutional knowledge assets;
 - automating routine tasks, freeing expensive personnel;
 - eliminating discretion in compliance enforcement;
 - assuring consistency in the application of Customs rules.

Conclusion

- Commodity classification errors remain an untapped source of revenues, yet they go undetected and uncollected because of a lack of resources and capabilities within Customs organizations.
- Unobtrusive monitoring and enforcement technologies - particularly those that employ artificial intelligence and natural language processing techniques - can be used to identify monies owed because of misclassification.

Thank You!