



BY JOHN S. ZDANOWICZ

# DETECTING Money Laundering AND Terrorist Financing VIA DATA MINING

*Using import-export information to improve financial transaction security.*

**T**he terrorist attacks of Sept. 11, 2001 confirmed the importance of open source intelligence. The passage of the USA Patriot Act and the creation of the U.S. Department of Homeland Security signaled a new era in applying information technology and data mining techniques to detecting money laundering and terrorist financing. Law enforcement agencies have traditionally focused on money laundering activities facilitated through transactions in the financial service sectors. Historically, banks and other financial service institutions were the main focus of law enforcement. Intelligence agencies are generally doing an adequate job curtailing money laundering through the front door (financial institutions) but have, to date, largely ignored money laundering through the back door (abnormal international trade pricing.)

ILLUSTRATION BY PETER AND MARIA HOEY

The use of international trade to move money, undetected, from one country to another is one of the oldest techniques used to circumvent government scrutiny. Either overvaluing imports or undervaluing exports can achieve this transfer. If an imported product is overvalued, the foreign exporter receives an inflated value for the product, and wealth is shifted from the domestic importer to the foreign exporter. Normally, this would not be a financially profitable transaction for the domestic importer. However, if the domestic importer and the foreign exporter are colluding partners in the transaction, then both share in the transfer of money to the foreign country. Overvalued import transactions may result in three crimes: customs fraud, income tax evasion, and money laundering. The transaction may also facilitate the movement of money to a foreign exporter who may be an operative of a terrorist organization. An example of such a transaction is detailed in Figure 1.

Assume a terrorist or criminal wants to launder \$1 million to a foreign country. He would need to have a foreign exporter to collude on the transaction. The set of transactions used to launder the money would include:
1. Foreign exporter purchases 10,000 razor blades for \$0.10 per blade. (\$1,000.00)
2. Foreign exporter exports 10,000 razor blades to a domestic importer for \$100.00 per razor blade. (Total invoice \$1,000,000.00)
3. Domestic importer receives 10,000 razor blades worth \$1,000.00 but pays the foreign exporter \$1,000,000.00.
4. Outcome: The domestic importer has moved \$1 million to the foreign country less the \$1,000.00 transactions cost of the razor blades.

**Figure 1. Example: Overvalued U.S. imports.**

An alternative method used to launder money out of a country to a foreign country is through the undervaluation of domestic exports. Research indicates a majority of the money laundered out of the U.S. is through undervalued exports, which is preferred by terrorists and money launderers for two reasons. First, most governments, including the U.S. government, do not adequately monitor their export transactions. The undervaluation of exports is also preferred because it allows the terrorist or money launderer to avoid the use of financial institutions, which may be monitored by government agencies. The money launderer converts his illegal money into products by purchasing products for cash at the market price of the product. The products are then exported to a foreign colluding importer at below market prices. The foreign importer receives the undervalued exports and resells them in the market at the real prices that reflect their true value. An example of such a transaction is detailed in Figure 2.

Money may be laundered into a country by importing products at undervalued prices or exporting products at overvalued prices. Recently, there has been concern these pricing schemes may be used to finance the illegal activities of Al Qaeda terrorist cells operating in various countries.

## Data Mining Methodology

The analysis evaluates the 2001 U.S. import and export transactions data produced by the U.S. Department of Commerce, Bureau of Census, and contained in the U.S. Merchandise trade database. This is the same database used to determine the U.S. balance of trade.<sup>1</sup>

The estimate of money shifted out of the U.S. is based on pricing norms, (interquartile range), as spec-

Assume a terrorist or criminal wants to launder \$1 million to a foreign country. He would need to have a foreign importer to collude on the transaction. The set of transactions used to launder the money would include:
1. Domestic criminal or terrorist uses his \$1 million to purchase 200 gold watches for \$5,000.00 per watch. (\$1,000,000.00) The watches would be purchased for cash.
2. Domestic exporter sells the 200 gold watches to a foreign importer for \$5.00 per watch. (\$1,000.00)
3. Foreign importer receives the 200 gold watches and is presented with an invoice for \$1,000.00, which he pays to the domestic exporter.
4. Foreign importer sells the gold watches at the market price of \$5,000.00 per watch and converts the 200 gold watches into \$1,000,000.00.
5. Outcome: The domestic exporter has moved \$1 million to the foreign country less the \$1,000.00 transactions cost of the invoice payment.

**Figure 2. Example: Undervalued U.S. exports.**

ified in the section 482 regulations of the U.S. Internal Revenue Service tax code. The

IRS defines suspicious prices as those import prices that exceed the upper quartile import prices and those export prices that are less than the lower quartile export prices. They focus on abnormal transfer prices between corporations that may result in shifting tax-

Toilet/Facial Tissue	China	\$ 4,121.81/kg
Threaded Nuts	Belgium	\$ 2,426.70/kg
Tweezers – Base Metal	Japan	\$ 4,896.00/unit
Lawnmower Blades	Australia	\$ 2,326.75/unit
Razors	U.K.	\$ 113.20/unit
<b>Abnormally high import prices from Al Qaeda watch countries</b>		
Cotton Dishtowels	Pakistan	\$ 153.72/unit
Glass Mirror (less than 929 sq. cm.)	Indonesia	\$ 164.54/sq.cm.
Razors	Egypt	\$ 22.89/unit
Air Pumps (hand/foot operated)	Malaysia	\$ 5,000.00/unit
Camshafts and Crankshafts	Saudi Arabia	\$15,200.00/unit

**Table 1. Abnormally high U.S. import prices.**

able income and taxes out of the U.S. An observed price deviation may be related to income tax avoidance/evasion, money laundering, or terrorist financing. The observed price deviation may also be due to an error in the U.S. trade database.

**Calculation procedures and estimates of money moved out of the U.S.** The median price, lower quartile export price, and the upper quartile import price for every commodity exported and imported to and from every country were determined. There were 16,390 import commodity codes and 8,568 export commodity codes in 2001. There were 230 countries

<sup>1</sup>Data source: CDIM (2001–01 to 12) *U.S. Imports of Merchandise*, and CDEX (2001–01 to 12) *U.S. Exports of Merchandise*; [www.census.gov/foreign-trade/guide/](http://www.census.gov/foreign-trade/guide/).

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that traded with the U.S. in the same year. Every import record was evaluated and compared to the country-specific import upper quartile price to determine if it was overvalued. The dollar amount of overvaluation for every import transaction was determined.

Similarly, every export record was evaluated and compared to the country-specific export lower quartile price to determine if it was undervalued. The dollar amount of undervaluation for

Diamonds – Not Industrial	India	\$ 13.45/carat
Forklifts, Self-Propelled	Jamaica	\$ 384.14/unit
Bulldozers – Self-Propelled	Colombia	\$1,741.92/unit
Video Projectors – Color	Brazil	\$ 33.95/unit
Missile and Rocket Launchers	Israel	\$ 52.03/unit
<b>Abnormally low export prices to Al Qaeda watch countries</b>		
Color Video Monitors	Indonesia	\$ 22.43/unit
Color Video Monitors	Pakistan	\$ 21.90/unit
Sports Footwear (Athletic Shoes)	Jordan	\$ 0.40/pair
Radioactive Elements, Isotopes	Egypt	\$ 0.01/mbq

**Table 2. Abnormally low U.S. export prices.**

every export transaction was determined. The dollar amounts of all undervalued export transactions and all overvalued import transactions for every commodity, for every country were aggregated. The total estimated money moved out of the U.S. for 2001 was \$156.22 billion. The details of this study are contained in a report published by the Trade Research Institute (see [cba.fiu.edu/finance/zdanowic](http://cba.fiu.edu/finance/zdanowic)). Tables 1 and 2 contain a variety of examples of abnormally priced transactions from among thousands such transactions identified in the 2001 U.S. Merchandise Trade Database.

**Estimated amount of money moved to Al Qaeda watch list countries.** The amount of money moved from the U.S. to the 25 countries appearing on the U.S. State Department's watch list is estimated to be approximately \$4.27 billion. Trade with the top five Al Qaeda countries on the list resulted in \$3.65 billion moved out of the U.S. to these countries (see Table 3).

## Conclusion

These estimates of money laundering and terrorist financing are based on the analysis of historical price data. This analysis could be conducted in real time to determine which transactions should be audited and

COUNTRY	DOLLAR AMOUNT MOVED
Malaysia	\$2,220,978,718
Indonesia	\$ 564,597,632
Saudi Arabia	\$ 486,669,248
United Arab Emirates	\$ 232,737,819
Egypt	\$ 148,085,489
Total–Top 5 Countries	\$3,653,068,906
Other Countries–20	\$ 619,142,176
TOTAL	\$4,272,211,082

**Table 3. Money moved from the U.S. to Al Qaeda watch list countries.**

which cargo shipments should be inspected. The U.S. now requires that manifest information be sent to the U.S. Customs Agency 24 hours in advance of the shipment from a foreign port. This requirement will help facilitate real-time audits and inspections of abnormally priced imports and exports.

The efficient evaluation of data will be crucial to winning the war on terrorism. Intelligence is an inexact science, but the utilization of information technology and data mining techniques applied to financial transactions can contribute to increasing the quality of intelligence information. **C**

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