Money Laundering – A Newly Emerging Topic on the International Agenda

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SPECIAL ISSUE: TACKLING MONEY LAUNDERING

Money laundering - bringing illicit proceeds from drugs, fraud and other crime, back into the legal economy - owes its name to Al Capone's use of launderettes for hiding illegal alcohol revenues during the US Prohibition in the 1930s. It has become an issue of international concern, however, only in the last twenty years; and it is only since 9/11 that it has figured as a prominent issue of national and international safety on the agenda of international organizations, such as the Financial Action Task Force, the International Monetary Fund, the United Nations, the Bank of International Settlement, and the European Union. Since then, the need to know more about the volume of laundering and laundering techniques, about the behavior of launderers, the effects of laundering on crime and on the economy, and the potential for successful anti-money laundering policy, has dramatically increased.

In academia, money laundering is still an unexplored field, in particular in economics. So far, the economics of crime has not devoted much attention to

financial crime. And the economics of finance has not dealt with criminal behavior.[1] Cooperation with other disciplines such as law, criminology, and anthropology, and with international organizations and practitioners of crime enforcement remains almost absent in this area.

Seeing the importance of the topic and the increasing need to bring this issue to the attention of economists, the Utrecht University School of Economics (USE) organized a conference on Tackling Money Laundering in November 2007 in Utrecht, the Netherlands. With its focus on multidisciplinary and interdisciplinary economics, USE was ideally suited to be a center of study for a topic which necessitates the combination of disciplines and expertise.[2] For the first time in history, scholars of diverse disciplines, representatives of international organizations, of lawmaking, investigation and enforcement from all over the world came together for two days in order to discuss the major issues of money laundering.[3]

Two main topics of this conference concerned the scale of money laundering and anti-money laundering policy possibilities. What can economics contribute to estimate the amounts of money laundering and to evaluate anti-money laundering policy measures? The first three papers presented in this issue will show three very different ways of making use of economics to estimate money laundering. The last three papers show how the law and economics literature especially can be used to analyze the role of anti-money laundering policy.

1. METHODS USED SO FAR TO ESTIMATE THE SCALE OF MONEY LAUNDERING

In measuring the scale of money laundering, different methods are possible.[4]

Field and Case Studies - Outside of economics, particular mention should be made of ethnographic field study efforts to "research into the shadows" (Nordstrom, 2004), and criminological case studies about launderers who have been caught. In the Netherlands, criminologists Meloen et al. (2003) analyzed 52 criminal cases wherein property had been confiscated (*ontnemingszaken* in Dutch). Unlawful advantages in these cases had been estimated at more than one million Dutch

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[1] One recent exception is Masciandaro, Takáts, and Unger's *Black Finance: The Economics of Money Laundering*, published in 2007.

[2] I am very grateful to the former dean of USE, Peter de Gijsel, to the new dean Clemens Kool, and to the Tjalling Koopmans research Institute of USE, for providing the funding for this conference. Joras Ferwerda was a great help in organizing it.

[3] I am very grateful to all the conference speakers and to the audience which made this promising first start possible.

[4] For a complete overview, see Unger, 2007:chap.3

guilders (about $500,000 US) per case. The problem with this kind of approach is that it is unclear how representative the data are. Do the 52 money launderers who were caught represent 0.5 percent, 5 percent, 10 percent or 50 percent of the money launderers in the Netherlands? Are those money launderers caught representative of all money launderers, or are only specific offenders caught?

Case studies provide a good indication of the extent of money laundering at the smaller end of the scale. The amounts estimated form the bottom line of what can possibly be laundered. They are also very helpful in order to understand the behavior of launderers, what they consume, where they launder, how they launder and so on. However, in order to be more than just descriptions of 52 cases, they must make some assumptions about the underlying population of money launderers. While interpretations based on these case studies are compelling in their own right, they also exclude the full range of money laundering practices, networks and behavioral assumptions. It is these assumptions about representative behavior and cooperation patterns that have to be incorporated into theories that are as yet still missing.

Surveys and Interviews - Another way to measure the amount of money laundering is to use surveys and to interview business people and experts from police and government departments and ministries. In 1992 John Walker was commissioned by the Australian Financial Intelligence Unit, AUSTRAC, to undertake the first-ever survey of expert opinion to determine the percentages laundered from the proceeds of each type of crime (Walker, 1995).

As with all surveys, this approach is limited by diverse biases. The sample might not be representative and the people interviewed or questioned might have had their own perception biases. In addition, interpretation biases, biases from non- response and sample biases might be found in these data.

Suspicious or Unusual Transactions - Another method of estimating money laundering is by analyzing suspicious or unusual transactions reported to financial intelligence units (FIUs), which have been established in most countries to control money laundering. There are variations between countries regarding reporting requirements, particularly thresholds that will trigger a report and the extent to which non-monetary payment instructions (such as bearer instruments) should be included. Moreover, information overload can lead to delays in follow-up investigations into suspicious transactions. Strategic dilution of information by the private sector respondents can also bias this indicator quite a lot (see Takáts, 2007, Dalla Pellegrina and Masciandaro, 2009) and can make country comparison difficult (see Unger and van Waarden, 2009).

Statistical Discrepancies - Another way of measuring money laundering is to use statistical discrepancies or unusual statistical movements as an indicator of money laundering. For money laundering, the following discrepancies in

statistics are relevant: errors and omissions in the balance of payments, differences in capital inflows and outflows, and differences in money supply and money demand. Errors and omissions in the balance of payments are used in the *hot money method*. The assumption is that errors and omissions arise primarily because of a failure to measure certain movements of private short-term capital, and that it is appropriate to add them to the recorded flows of short-term capital in order to get an estimate of total flows of "hot money" (see Schneider and Windischbauer, 2008). The *residual approach* measures capital flight by looking at the difference between inflows (sources) of funds and the outflows (uses) of funds, which is unrecorded, and is considered to be the amount of capital flight (see de Boyrie et al., 2005). The question here is how well the residual reflects capital flight and does not include other discrepancies such as time lags and different calculation conventions. And to what extent capital flight, which consists of both laundered money and tax evasion, measures money laundering. The *currency demand approach* measures the discrepancy between the regular and excess demand for currency. Tanzi (1996, 1997) used this approach to demonstrate both the shadow economy and money laundering. He assumed that hidden transactions are undertaken using cash in order to avoid observable traces for the authorities. An increase in the shadow economy or money laundering will therefore necessitate more cash, and hence increase the demand for currency. By comparing the amount of money printed and the amount of money circulating in the US in 1984, Tanzi (1997) calculated that 5 billion US dollars per annum was appropriated in cash through the illegal drug trade.

  A major problem with this approach is that it cannot clearly distinguish between the shadow economy and money laundering. Furthermore, part of cash holding can simply be due to the fact that in some countries people hoard the dollar or the Euro because of fear of devaluation of their own currency. Furthermore, it cannot be applied to countries within the Euro-zone, since it is no longer known how much of each country's money supply is circulating in which euro-zone country. The same deficiency holds for Quirk (1997) who attempted to estimate the correlation between money laundering and the demand for money for the IMF. He suggested that money laundering, through its effects on demand, affects interest rates and exchange rates. An increase in the money demand resulting from the need for cash to buy drugs will make money more expensive. This means that the price for money – the interest rate – will go up. Higher interest rates will attract foreign investors and can lead to more capital inflow and hence an appreciation in the exchange rate.

  Latent Variable Approach - Another more recent way of measuring money laundering is to use a latent variable approach. To this group belongs the *DYMIMIC (dynamic multiple-indicators multiple-causes) model*, which uses two sets of
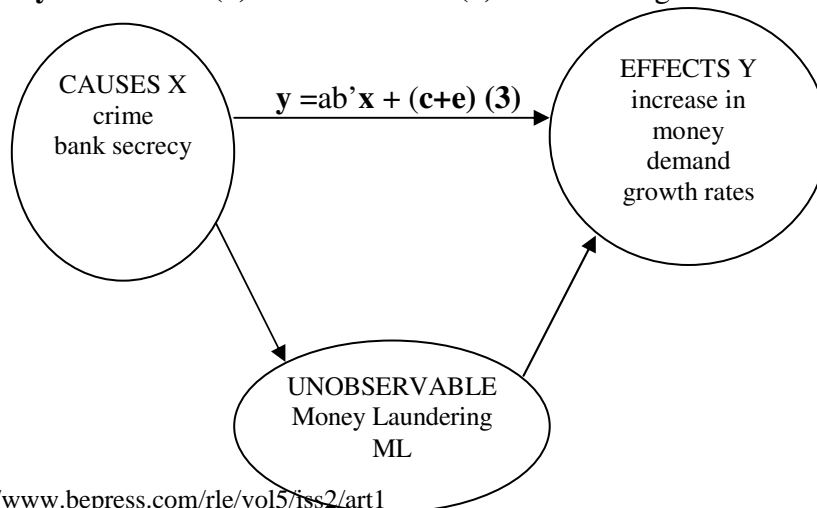
observable variables and links them as a proxy to the unobservable variable. One set of variables is the causes (for the shadow economy or for money laundering) such as regulations, taxation and prosecutions. The other set is called indicators, which measure the "effects" or "indicators" of the shadow economy or money laundering. These observable variables parallel money laundering and include the growing demand for money, less official growth, and/or increases in crime rates. Schneider (2007) uses this approach to estimate the shadow economy for 145 countries. Schneider and Windischbauer (2008) apply it to money laundering. One problem with this approach is that the choice of cause and indicator variables is arbitrary and not reinforced theoretically. The DYMIMIC model uses factor analysis to determine how well the different cause variables explain the unobservable variable and those that can be grouped together. The same is then done for the indicator variables. This means statistics decide which indicators form the relevant bundle for causes and indicators of a shadow economy (or money laundering). But statistics cannot replace theory.

Tedds and Giles (2000) and Schneider (2006) give a description of this model. A MIMIC model is formulated mathematically as follows: ML is the scalar (unobservable) "latent" variable (the size of money laundering); $\mathbf{y}' = (y1, y2, ..., yp)$ is a vector of "effects" or "indicators" for ML; $\mathbf{x}' = (x1, x2, ..., xq)$ is a vector of "causes" of ML (see Figure 1). DYMIMIC refers to changes in these variables.

Under the assumption that all of the elements are normally distributed and uncorrelated, one can estimate money laundering by regressing the observable causes (or change in causes) on the observable effects (or change in effects).

Figure 1: The DYMIMIC Model – A Latent Variable Approach

$\mathbf{y} = a\text{ML} + e$ **(1)**   ML $= b'\mathbf{x} + c$ **(2)**   Substituting 2 in 1:

$\mathbf{y} = ab'\mathbf{x} + (c+e)$ **(3)**

CAUSES X
crime
bank secrecy

EFFECTS Y
increase in
money
demand
growth rates

UNOBSERVABLE
Money Laundering
ML

The advantage of this model is that it can be measured for all countries and jurisdiction in the world. Its major weakness is that one cannot test the extent to which the model specification is correct and has anything to do with money laundering.

2. THREE PROMISING METHODS TO ESTIMATE THE SCALE OF MONEY LAUNDERING

In this special issue, three promising recent methods to estimate the amount of money laundering globally will be presented: a model from international trade theory, the gravity model (Walker and Unger, 2009); an analysis of unusual trade data (Zdanowicz, 2009); and a dynamic equilibrium two-sector model from macroeconomics (Bagella et al., 2009).

2.1. A GRAVITY MODEL

The pioneer of measuring money laundering is the British Australian economist and criminologist John Walker, who in 1994 did the first global estimate of money laundering, by measuring illicit flows of money in and out of 220 countries. In 2006, Unger et al. applied a modified Walker model to estimate money laundering in the Netherlands. The contribution of Walker and Unger to this volume shows that a theoretical foundation for this sort of estimate can be found in the gravity model of Newton. A recent boom of this type of models in international trade theory has resulted in some very interesting findings about the role of distance and borders, and about the attractiveness of countries for trade, which can also be applied for improving estimates of money laundering. Using triangulation, the article demonstrates that the "Walker Gravity Model" estimates are compatible with recent findings on money laundering. Once the scale of money laundering is known, its macroeconomic effects and the impact of crime prevention, regulation and law enforcement effects on money laundering and transnational crime can also be measured. An IMF Working Group is at the moment trying to improve the attractiveness indicators of this model and to establish a threat analysis to show which countries are more attractive for launderers due to their specific features (such as financial expertise).

2.2. OBSERVING ABNORMAL PRICES FOR TRADE-BASED MONEY LAUNDERING

Using trade for transferring illicit funds is a very old technique. Launderers can, for example, create fake invoices for high amounts and ship merchandise of low value or reverse this procedure as a way of concealing ill-gotten gains. These techniques have recently gotten attention under the heading of trade-

based money laundering. In June 2006, the Financial Action Task Force (FATF), an intergovernmental body founded by the G-7 (now G-8) countries, released the first comprehensive report on Trade-Based Money Laundering which stated that "The international trade system is clearly subject to a wide range of risks and vulnerabilities that can be exploited by criminal organizations and terrorist financiers" (Financial Action Task Force, 2006). In June 2008 the FATF published "Best Practices of Trade-Based Money Laundering."

How can one detect trade-based money laundering? Economic analysis of trade data can help to develop risk indicators for identifying suspicious trading countries and suspicious merchandise, and for determining the scale of trade-based money laundering.
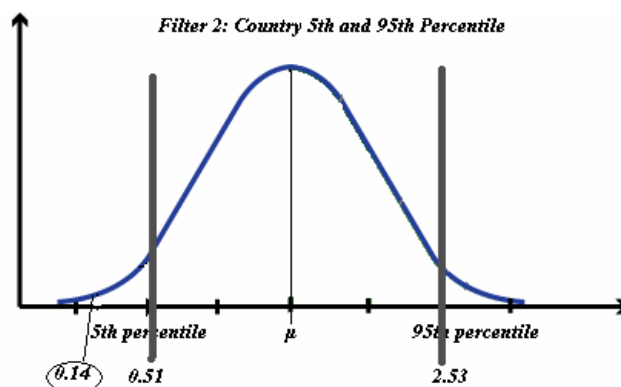
John Zdanowicz' paper in this issue analyzes monthly data contained in the United States Merchandise Trade Data Base. This database is produced by the U.S. Commerce Department, Census Bureau and is used to determine the U.S. balance of trade. He identifies suspicious merchandise, the share of trade subject to money laundering for each country, and the amount of money laundering between the US and countries on the Al Qaeda watch list. He can provide both country risk and merchandise risk indices, helping to identify the countries and products most threatened by money laundering.

Zdanowicz' method is valid under the assumption that product prices (and product weights) are normally distributed and that unusual prices have a criminal intention and are not, for example, just booking errors by custom officials.

Figure 2 shows a product, say ketchup, which at an import price of 0.14 cents lies below the margins of this country's usual ketchup prices, which are 0.51 cents and 2.51 cents. All transactions with a price below the 5% margin or above the 95% margin are classified as trade-based money laundering. Zdanowicz uses not only country prices, but also world prices and variance measures to determine unusual transactions.

A still-unresolved weakness of the model is that no matter how great the price fluctuations, 10% of all transactions are always classified suspicious (the upper and lower 5%). If, for example, the ketchup price fluctuation presented in Figure 2 were drastically reduced (e.g., because of less trade-based money laundering in ketchup), so that the bell shape becomes narrower, say the new margins would lie between 1 and 2 dollars, then 10% of the transactions would still be counted as suspicious. Transactions which under the old distribution were classified as non-suspicious would suddenly become suspicious, though the true reason might be a reduction in trade-based money laundering and not an increase.[5]

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[5] I owe this point to Joras Ferwerda.

Figure 2: Unusual Product Price for Identifying Trade-Based Money Laundering

Zdanowicz' method is at the moment in high demand in Europe. A pilot project of the EU done by the Joint Research Center of the EU in Ispra, Italy under the leadership of Spiros Arsenis and the University of Parma, in cooperation with the European Anti Fraud Office, OLAF, started in 2008. Three EU countries – the Netherlands, Belgium and Austria – delivered their customs trade, which were classified according to the International Price Profiling System presented in Zdanowicz' contribution here.

2.3. USING THEORY FOR MEASUREMENT

A third very promising way to use economics to measure money laundering is by using economic theory to determine how much economic rationally acting launderers would launder. It can be seen as a benchmark model for comparing actual estimates with this theoretical model of "optimal" laundering.

Michele Bagella, Francesco Busato and Amedeo Argentiero, who in 2008 developed a theoretical model for estimating money laundering in Italy (see Argentiero et al., 2008), expand this dynamic two-sector equilibrium model and simulate it for the US and the EU-15 countries in this contribution.

This approach comes originally from the shadow economy. Agents have the option to work partly in the legal economy and partly in the illegal economy. They face transaction costs in the legal sector and costs of being detected in the illegal sector. Two types of firms produce with two different technologies a legal good and an illegal good. The government sets fines, can influence the probability of detection, and can influence the liquidity (money supply) of the economy. There is a liquidity constraint. If households want more liquid funds, they must engage in the illegal sector. The "optimal" money laundered depends

on the labor services allocated to the legal and illegal sector and on the prices and on the quantities of both goods.

The model forecasts the development of the legal and the illegal sector. Since the development of the model's legal sector can be compared to the development of the actual GDP of a country, one can see how well the model predicts the observable part of the economy. Assuming that the same good fit holds for the unobservable part of the illegal sector, one can use the theoretical finding for the illegal sector as a measure of money laundering.

This very promising approach has the advantage of having a solid micro-foundation, helping to identify rational laundering behavior. What is surprising and still missing in this theoretical model is the role of interest rates. Money laundering, which after all is a financial crime, does seem to depend only on real sector variables. Furthermore, without liquidity constraint in the economy, there would be no money laundering according to this model.

This brings us to the second major issue of the conference on Tackling Money Laundering.

3. THE ROLE OF ANTI-MONEY LAUNDERING POLICY

Anti-money laundering policy has become a major issue in the Western world. Basically, all countries are now more or less forced to cooperate in the global fight against money laundering. However, little is known so far about the effects of this policy. Is it being done effectively, at lowest cost and highest benefit? Does it reduce money laundering and/or crime?

3.1. ANTI-MONEY LAUNDERING POLICY EFFECTS ON CRIME RATES

Joras Ferwerda (2009) in this issue develops a theoretical model following the Becker tradition in order to find out whether anti-money laundering policies reduce crime. In his model, a) the probability of being caught for money laundering, b) the sentence for money laundering, c) the probability of being convicted for the predicate crime, and d) the transaction costs of money laundering are negatively related to the amount of crime. If all of these factors are positively influenced by a stricter policy, then anti-money laundering policy deters potential criminals from illegal behavior and therefore lowers the crime rate.

For testing this hypothesis, Ferwerda has constructed a promising new indicator for anti-money laundering policy from the mutual evaluation reports on money laundering of the FATF, IMF and World Bank. This unique dataset is used in an empirical estimation based on a Mundlak specification to show that anti-money laundering policy is indeed negatively correlated with crime rates. According to his findings, international cooperation is more important

for reducing crime rates than law-making and other domestic anti-money laundering policy areas.

3.2. REPORTING TRANSACTIONS SUSPECTED OF MONEY LAUNDERING

An important pillar on which anti-money laundering policy rests is the correct reporting of suspicious transactions by the private sector. Both in the US and in Europe, the private sector is required to report suspicious transactions to the Financial Intelligence Unit. Reporting agents were originally only banks and financial institutions. Lately also traders in large values, accountants, notary publics, real estate agents, etc. are under reporting duty in some countries.

Europe followed the US by switching from a rule-based to a risk-based approach of reporting in 2005. Under the rule-based approach, every transaction which exceeded a certain threshold had to be reported as being suspicious of money laundering. This threshold was set by the government. Under the risk-based approach, private agents have to determine for themselves what they consider as suspicious behavior and report according to their own judgment. However, if they overlook a suspicious transaction and the government finds out, they have to pay a fine. Takáts (2007) was the first to point out the danger of strategic over-reporting, which might emerge, when switching from a rule-based to a risk-based approach. Private agents might, from fear of overlooking a money launderer and having to pay a fine, simply dilute information, by reporting too much and therefore deliver more but qualitatively useless information. Private sector agents will behave like in the fairy tale, where the little boy repeatedly cries wolf, wolf, and when the wolf (a launderer) really comes, no one believes him anymore.

Dalla Pellegrina and Masciandaro in this issue extend Takáts' principal-agent problem to obtain relevant information by introducing a third player in addition to the government and the private sector agents: the supervising authority. They develop a law and economics approach that reduces the crying wolf problem and improves the quality of information that the government gets, through a supervising agency that can help to identify risky transactions and cheating reporting agents.

While both Takáts (2007) and Dalla Pellegrina and Masciandaro (2009) in this issue theoretically and empirically prove that the amount of reporting will increase and the quality of reporting will decrease under the new risk-based approach, Unger and Van Waarden (2009) show that there is one exception to this rule: the Netherlands.

Under the new risk-based approach, reporting in the Netherlands drastically decreased and the quality of information increased or at least did not deteriorate. Explanations given for this new Dutch miracle, or curious

deviation from the trend, are the fact that the Dutch government plays a different role by setting very low fines and by cooperating with the private sector when developing new standards. With this the Dutch government seems to have anticipated Takáts' advice to lower fines in order to reduce the crying wolf problem. However, the paper argues that sanctions cannot easily be changed within a given legal system.

The articles presented here are a first demonstration of how to introduce money laundering into economic academia. Many questions are still unanswered and a good deal of work still has to be done in this field, which will hopefully further develop and prosper.

Apart from the authors of articles in this volume, Raymond W. Baker, Henk van de Bunt, Paolo Costanzo, Peter-Jan Engelen, John Howell and David Artingstall, Killian McCarthy and Hinnerk Guttmann, Marieke de Goede, Geerten Michielse, Peter Reuter, Friendrich Schneider, Dina Siegel and Elöd Takáts made very valuable written contributions, which can be downloaded under: http://www2.econ.uu.nl/users/unger/conference.html.

References

Argentiero, Amedeo, Michele Bagella, and Francesco Busato. 2008. "Money Laundering in a Two-Sector Model: Using Theory for Measurement," 26(3) *European Journal of Law and Economics* 341-359.

Baker, James. 2005. *Capitalism's Achilles Heel.* John Wiley.

Bagella, Michele, Francesco Busato, and Amedeo Argentiero. 2009. "Money Laundering in a Microfounded Dynamic Model: Simulations for the U.S. and the EU-15 Economies," 5(2) *Review of Law and Economics* Article 4.

Bhagwati, J.N. 1964. "On the Underinvoicing of Imports," 26 *Bulletin of the Oxford University Institute of Economics and Statistics.*

Cuddington, J.T. 1987. "Capital Flight," 31 *European Economic Review* 1987.

Dalla Pellegrina, Lucia, and Donato Masciandaro, 2009. "The Risk-Based Approach in the New European Anti-Money Laundering Legislation: A Law and Economics View," 5(2) *Review of Law and Economics* Article 6.

De Boyrie, Maria, Simon Pak, and John Zdanowicz. 2005. "The Impact of Switzerland's Money Laundering Law on Capital Flows Through Abnormal Pricing in International Trade," 15 *Applied Financial Economics* 217-230.

EC, Regulation (EC) No 1889/2005 of the European Parliament and of the Council of 26 October 2005 on controls of cash entering or leaving the Community.

Ferwerda, Joras. 2009. "The Economics of Crime and Money Laundering: Does Anti-Money Laundering Policy Reduce Crime?" 5(2) *Review of Law and Economics* Article 5.

FFIEC BSA/AML, Federal Financial Institutions Examination Council. 2007. "Bank Secrecy Act Anti-Money Laundering Examination Manual," August 24, 2007, http://www.ffiec.gov/bsa_aml_infobase/pages_manual/OLM_079.htm.

Financial Action Task Force. 2006. "Trade Based Money Laundering," June 23, 2006, available at www.fatf-gafi.org.

_____. 2008. "Best Practices of Trade Based Money Laundering," June 2008.

Masciandaro, Donato, Elõd Takáts, and Brigitte Unger. 2007. *Black Finance: The Economics of Money Laundering.* Edward Elgar Publishing.

Nordstrom, C. 2004. *Shadows of War: Violence, Power, and International Profiteering in the Twenty-First Century.* California Series in Public Anthropology. Berkeley, CA: University of California Press.

Quirk, Peter J. 1997. "Macroeconomic Implications of Money Laundering," 2 *Trends in Organized Crime* 10-14.

Schneider, F. 2006. "Shadow Economies of 145 Countries All Over the World: What Do We Really Know?" revised May 2006, available at http://www.econ.jku.at/Schneider/ShadEconomyWorld145_2006.pdf.

_____. 2007. "Shadow Economies and Corruption All Over the World: New Estimates for 145 Countries," The Open Access, Open Assessment E-Journal, 2007-9, July 24 http://www.economics-ejournal.org/economics/journalarticles/2007-9.

_____ and Ursula Windischbauer. 2008. "Money Laundering: Some Facts," 26(3) *European Journal of Law and Economics* 387-404.

Tanzi, Vito. 1996. "Money Laundering and the International Financial System," IMF Working Paper (96/55), International Monetary Fund.

_____. 1997. "Macroeconomic Implications of Money Laundering," in E.U. Savona, ed. *Responding to Money Laundering: International Perspectives*, 91-104. Amsterdam: Harwood Academic Publishers.

Takáts, Előd. 2007. "A Theory of 'Crying Wolf': The Economics of Money Laundering Enforcement," IMF Working Paper No. 07/81, April 2007 http://ssrn.com/abstract=979035

Tedds, Lindsay M., and David E.A. Giles. 2000. "Modelling the Underground Economies in Canada and New Zealand: A Comparative Analysis," Econometrics Working Papers 0003, Department of Economics, University of Victoria.

Unger, Brigitte. 2007. *The Scale and Impacts of Money Laundering.* Edward Elgar.

_____, J. Ferwerda, W. de Kruijf, G. Rawlings, M. Siegel, and K. Wokke. 2006. "The Amounts and the Effects of Money Laundering," report for Dutch Ministry of Finance, Feb. 2006, http://www.minfin.nl/binaries/minfin/assets/pdf/old/06_011a.pdf.

_____ and Frans van Waarden. 2009. "How to Dodge Drowning in Data? Rule- and Risk-Based Anti Money Laundering Policies Compared," 5(2) *Review of Law and Economics* Article 7.

Walker, John. 1995. "Estimates of the Extent of Money Laundering in and through Australia," paper prepared for Australian Transaction Reports and Analysis Centre, September 1995. Queanbeyan: John Walker Consulting Services.

_____ and Brigitte Unger. 2009. "Measuring Global Money Laundering: 'The Walker Gravity Model,' " 5(2) *Review of Law and Economics* Article 2.

Zdanowicz, John. 2003. "Movie Inspires New Research Into Suspicious Import Weights," *Money Laundering Alert*, May 2003.

_____. 2004a. "Detecting Money Laundering and Terrorist Financing via Data Mining," 47(5) *Communications of the Association of Computing Machinery* 53-55.

_____. 2004b. "Who's Watching Our Back Door?," 1(1) *Business Accents Magazine,* Florida International University, Fall 2004.

_____. 2005. "Trade-Based Terrorist Financing Analysis: Suspicious Trade with Al Qaeda Countries," *International Trade Alert Working Paper*, available at www.internationaltradealert.com, June 16, 2005.

_____. 2007. "Mitigate Trade Financing Risks with Proper Documentation, Analysis," *Money Laundering Alert,* April 2007.

_____. 2009. "Trade-Based Money Laundering and Terrorist Financing," 5(2) *Review of Law and Economics* Article 3.

_____, Simon Pak, and Michael Sullivan. 1999. "Brazil-United States Trade: Capital Flight Through Abnormal Pricing," 13(4) *International Trade Journal* 423-443.