Corruption and Money Laundering as a Threat to Financial Stability: “lava jato” case study
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Abstract
In order to demonstrate that the crime of money laundering may lead to financial instability, this paper is going to use the economic theory of crime and address the issue as one deriving from information asymmetry. It is intended to demonstrate how the crime of corruption could trigger contagion effect for the entire financial system. Due to the lack of statistics on the topic, we are going to suggest an approach based on a risk matrix to assess the money laundering threats to the stability of the domestic or global financial system. By the end of this paper, we plan to have clearly shown how serious this issue is and the need for special attention to the collection of statistic data; monitoring focused on mapping the micro and macroprudential problems, both in the financial sector and the real economy sector; intrusive, skeptical, comprehensive, adapted, proactive, and conclusive oversight; regulation adjustments, as the case may be; and dissuasive punishment.

Key words: financial stability – risk-based approach – money laundering – corruption - contagion
JEL codes: G01 - G32 - K42

1 Introduction
The purpose of this article is to theoretically explain how the money laundering crime may compromise an economy's financial stability. The problem would be related to the money launderer's economic rationale as opposed to that of regular investors. Money launderers maximize their return and minimize their risks in non-financial terms. In other words, such optimization is achieved by decreasing the odds of having the provenance of their resources found and thus of being exposed and punished. Therefore, at given times the flows may follow directions contrary to those expected and muddle the risk/financial return rationale. In the case of corruption, part of the proceeds of such crime should transit the formal economy in an attempt to give you legitimate appearance. The set of transactions carried out with this purpose is called money laundering. Probably this money will go through the financial system and, depending on the way and volume of handling may generate financial instability.

1 The views expressed in this work are those of the authors and do not necessarily reflect those of the company where they work for or its members
2 PhD in Economics
To the extent possible, it would be up to regulators and supervisors to sort the transactions according to their rationales. Or at least keep always in mind that not all transactions follow the same reasoning.

To reach our goal, we are going to apply the economic theory of crime and the principal-agent approach to show the impact from market contamination by this type of criminal activity and its risks to financial stability. In order to illustrate the linkage between money laundering and financial stability the section IV analyses a case study occurred recently in Brazil. This paper also suggests the risk-based approach (RBA) as a method to assess the money laundering risks in an economy. To do that, we are going to use a risk matrix draft.

It is important to keep in mind that, although most papers cited are related to money laundering as a cross-border crime, such crime may take place within the borders of any country and cause losses similar to the ones discussed in the course of this paper.

II Theoretical Foundation: Economics of Crime and Principal-Agent Approach

People respond to incentives, that is, they make decisions by comparing costs and benefits. Thus, their behavior can change when this ratio changes. This line of thinking can be applied to any human endeavor, including criminal actions, since they deal with human activities. Gary Becker (1968), in his seminal paper "Crime and punishment: an economic approach", established a landmark in relation to the determinants of crime by developing a formal model in which a criminal act is the product of a rational assessment of the expected benefits and costs involved, as compared to the results from the person investing their time in the legal job market. Basically, the decision to commit a crime or not arises from a process of maximizing the expected value, where the individual weighs, on the one hand, the potential gains resulting from the criminal act, the amount of punishment and the probabilities of arrest and imprisonment and, on the other, the opportunity cost of committing the crime, defined by the alternative wages that could be obtained in the labor market.

According to Becker, economists have become increasingly convinced that economic incentives may be the deciding factors in regards to individuals engaging in crime (at least in terms of property offenses). Burdett (1999), within the research tradition of Gary Becker, puts forth the cost-benefit concept of crime, giving it center stage in his work. The central idea is that the illicit activities of career criminals presume an individual evaluation, on their part, of the cost-benefit ratio in committing the offense. According to this theory, engaging in a criminal act depends on three factors: the size of the recompense from committing the crime (assuming the criminal act is successful); the probability of being arrested and convicted; and the severity of the sentence that would be served (assuming the criminal act is unsuccessful). In other words, the greater the potential
recompense in committing the offense, the higher the crime rate, and, conversely, the higher the probabilities of arrest and stern punishment, the lower the crime rate.

From the standpoint of the economic theory of crime, the criminal is almost always a normal person who reflects and makes decisions within a given structure of incentives or determining factors. Therefore, the criminal act is viewed as a decision which takes benefits and costs into account, as well as an intertemporal exchange between immediate benefits and a likely future cost (punishment). The benefits consist of the monetary and psychological gains afforded by the crime. In turn, the costs encompass the probability of the individual who commits the crime being convicted, the loss of future income due to serving time in prison, the direct costs of the criminal act (planning time, tools, etc.) and the costs associated with the moral censure of the group and community in which they live. A possible representation of this equation would be: Crime = b - p x c, where “b” is the benefit of the crime, “p” is the probability of imprisonment and “c” corresponds to costs, measured by the loss of income during time in prison, plus direct and moral costs. Thus, the greater the perception of the probability of the individual being arrested and sentenced, the higher the cost of the crime. This principle represents the deterrence of crime through the restraining and symbolic effect engendered by the certainty, swiftness and severity of the prison sentence. The deterrent effect kicks in when the punishment transmits to others that if they commit crimes they will also be punished. The argument is that a higher perception of risk increases the “p” variable in the equation, thus elevating the cost side. In short, policies should be implemented that reduce the benefits for criminals and increase their costs.

The approach of the Principal-Agent model has proven to be very productive in understanding the findings, through the interplay of relationships between groups. One group, the principal, establishes a set of incentives, and the other, the agent, responds to these incentives. In the economic theory of crime, the government plays the role of the principal, by establishing incentives for the agent, via “P” (probability of being caught and punished), “S” (severity of the punishment), and so on, while the agent is the criminal, who responds by committing crimes that are a logical response to the incentives existing in society. The government determines the severity of the punishment and the intensity of the crime-fighting efforts. The level of the latter will be the determining factor in the probability of identifying and punishing criminals. (BRENNER, 2009, p. 50) In the Principal-Agent model, the government seeks to achieve two objectives: a) keep down the level of crime and b) minimize the costs of crime-fighting organizations.

Agency theory therefore serves to identify the issue and find solutions for the converging interests as much as possible, avoiding that agents behave in an opportunistic way, especially when they have better information - quantity and quality – than principal. Importantly, the greater the discricionarity allowed to the agent the greater the risk faced by the principal.
Indeed, whenever we observe the replacement of the agents or the optimum products for lesser quality because of a market failure (which is what happens with the problem of money laundering), we are faced with adverse selection, usually caused by asymmetric information (Akerlof, 1970).

Access to information in the production process, on the part of the agent, is increased and, on the part of the principal, it progressively decreases in relation to the first. Now, if the agent is able to combine private (or specific) information with new technologies, the result of which is unknown or cannot be measured by the principal, the opportunity costs identified by the agent via his specific ability to work with this technology and the set of information resulting from the process, give rise to a typical problem of information asymmetry, which finds theoretical support in the Principal-Agent literature for the formulation of the proposals contained in this study. To prevent or reduce the likelihood of the agent appropriating the surplus that he creates in the name of the principal, the process requires an incentive structure.

It is hoped that the introduction of positive and punitive incentives will motivate individuals to abide by institutional objectives and not break the rules established inside and outside of institutions. Such being the case, we can affirm that it is through institutions (NORTH, 1990) that contracts are regulated, rules are agreed on and uncertainties are reduced, providing structure and order to the daily life of societies, delineating new ways of operating and curbing unethical behavior among the parties, while also reducing economic and social transaction costs.

Contractual or economic regulations aim to curb, for example, the non-fulfillment of obligations by any of the parties, the non-delivery of the product or provision of the service (default), the benefit being acquired without due counterpart (free rider), or the incorporation of benefits not listed in the agreement (rent seeking), or, also, the distortions caused by the divergence between the conduct of the manager and the shareholder resulting from the information asymmetry between them (principal-agent problem). The theory of incentives seeks to build a framework that takes into account three basic problems caused by asymmetric information: adverse selection, moral hazard and the impossibility of verification.

A moral hazard problem exists when the action of the agent is not verifiable or when the agent receives private information after the relationship has begun. Arrow (1985) classified moral hazard problems as being of the hidden action type, which are actions that cannot be fully observed or inferred by others, therefore making it impossible to establish or stipulate complete contracts on the basis of such actions.

Regulatory measures can and must also be for the purpose of increasing information, and need to include the requirement to provide information regularly. Since the government has an incentive to try and reduce the moral hazard problem created by asymmetric information, it should
establish laws forcing firms to comply with principles and maintain internal controls that help check their conduct.

Monitoring is one of the ways the principal can reduce the agency dilemma, engaging in the production of information through greater monitoring of the activities of agents, such as via frequent audits to certify the strength of the information. The problem with this method is that the monitoring process can be costly in terms of money and time – that is – verification costs are high.

Solving the problem of informational flaws would help improve results, providing a better knowledge (meaning measurement) of criminal or unusual/suspicious activity, as well as its costs and benefits. After this would be the adjusting of regulatory measures and monitoring, in addition to increasing the transaction cost of criminals and their perception of the likelihood of being punished.

Ferwerda (2008) demonstrates in a theoretical model that the probability of getting caught, the sentence for money laundering, the probability of being convicted for the crime and the transaction costs of money laundering carry a negative weight in relation to the value generated by the crime.

**III How the issue has been addressed**

The goal of this section is to show how international financial institutions have incorporated the crimes of money laundering (ML) and terrorism financing (TF) to their financial stability governance framework. As we are going to detail below, ML and TF are deemed global, priority concerns for several reasons, including this type of crime's destabilizing potential.

Money laundering and measures to counter it have become the focus of an intense international effort. Evaluation of the resource costs and benefits of the countermeasures depends in part on an understanding of the macroeconomic effects of money laundering. The wide range of activities and financial instruments involved in money laundering is not directly observable, and comprehensive, microeconomic-based estimates are difficult to compile. Indirect macroeconomic-based techniques that involve estimating the extent of money laundering are, therefore, the focus of most empirical work.

Money laundering can have devastating economic consequences. Fighting it should be a priority for all countries and is not incompatible with financial market liberalization. By the nature of the subject there is difficulty inherent in obtaining any measure of money laundering, however defined. There is a broad range of activities and financial instruments involved in money laundering, which is not directly observable, and comprehensive and meaningful estimates are difficult to compile. This difficulty has been reflected in the extensive literature that examines the measurement of the illegal or "underground" economic transactions in which transactors attempt to conceal their sources of income. Given the seriousness of the problem, there is clearly a need for better data. On
the one hand, while estimates based on macroeconomic data can provide indications of both direct and indirect influences of money laundering, the inclusion of indirect influences creates uncertainty as to exactly what is being measured. On the other hand, a micro-based approach requires the creation of a very large amount of data specifically for measurement purposes. Sampling and survey approaches offer a means of extrapolating to otherwise unobservable aspects of money laundering, although care needs to be taken to ensure that a comprehensive methodology is applied in the sampling and in-depth follow-up of transactions. A consistent international methodology would offer economies of scale as well as the sharing of insights across countries. The measurement problems extend beyond the lack of statistics. They cover also conceptual questions such as when money that has been laundered in the past stops being considered "laundered". (TANZI, 1996, p. 4 footnote)

The fight against the money laundering and terrorism financing crimes is supported by and shows the political will to act by the G-20, the top group in international politics, as revealed in their Toronto summit declaration. Backed by the G-20, the Bank for International Settlements (BIS) has granted powers to the Financial Stability Forum (FSF), turned the latter into the Financial Stability Board (FSB), and reinforced the guidelines from the principles set by the Basel Committee on Banking Supervision (BCBS) with respect to the matter. The International Monetary Fund and the World Bank have also emphasized their concerns about ML/TF and consider including the issue in peer-reviews of the national financial systems led by those institutions whenever there is evidence that such practice may endanger the integrity of domestic financial markets. All of the aforementioned agencies support and operate in collaboration with the FATF-GAFI, the international body specializing in AML/CFT.

The leaders of G-20 agreed to build a more resilient financial system that serves the needs of all economies, reduces moral hazard, limits the build up of systemic risk, and supports strong and stable economic growth. They have strengthened the global financial system by fortifying prudential oversight, improving risk management, promoting transparency, and reinforcing international cooperation. A great deal has been accomplished. (G-20, Toronto Declaration, 2010)

At the G-20 meeting in Toronto (2010) the agenda of commitments was organized around four pillars. The first pillar is a strong regulatory framework. It was taken stock of the progress of the Basel Committee on Banking Supervision (BCBS) towards a new global regime for bank capital and liquidity and we welcome and support its work. The second pillar is effective supervision. The leaders agreed that new, stronger rules must be complemented with more effective oversight and supervision. (G-20, Toronto Declaration, 2010)

Capital movements induced by attempts at laundering money are not promoted by differences in economic fundamentals, such as differences in after-tax rates of return to real investment or, in real interest rates. Rather, they are largely induced by differences in controls and
regulations which make money laundering a safer activity in some countries than in others. (Tanzi, 1996, p. 6)

The third pillar is resolution and addressing systemic institutions. All members of the group committed to design and implement a system where we have the powers and tools to restructure or resolve all types of financial institutions in crisis, without taxpayers ultimately bearing the burden, and adopted principles that will guide implementation. To reduce moral hazard risks, there is a need to have a policy framework including effective resolution tools, strengthened prudential and supervisory requirements, and core financial market infrastructures. (G-20, Toronto Declaration, 2010)

The fourth pillar is transparent international assessment and peer review. It was strengthened the commitment to the IMF/World Bank Financial Sector Assessment Program (FSAP) and pledge to support robust and transparent peer review through the FSB. Non-cooperative jurisdictions will be addressed based on comprehensive, consistent, and transparent assessment with respect to tax havens, the fight against money laundering and terrorist financing and the adherence to prudential standards. (G-20, Toronto Declaration, 2010)

The Finance Ministers and Central Bank Governors agreed to prepare policy options to strengthen global financial safety nets and to build a more stable and resilient international monetary system. Corruption was considered as a threat to the integrity of markets, undermines fair competition, distorts resource allocation, destroys public trust and undermines the rule of law. The leaders called for the ratification and full implementation by all G-20 members of the United Nations Convention against Corruption (UNCAC) and encourage others to do the same. They encouraged the fully implementation of the reviews in accordance with the provisions of UNCAC. Building on the progress made since Pittsburgh to address corruption, it was established a Working Group to make comprehensive recommendations on how the G-20 could continue to make practical and valuable contributions to international efforts to combat corruption and lead by example, in key areas that include, but are not limited to, adopting and enforcing strong and effective anti-bribery rules, fighting corruption in the public and private sectors, preventing access of corrupt persons to global financial systems, cooperation in visa denial, extradition and asset recovery, and protecting whistleblowers who stand-up against corruption. (G-20, Toronto Declaration, 2010)

Leaders of G-20 pledged to support robust and transparent independent international assessment and peers review of financial systems through the IMF and World Bank’s Financial Sector Assessment Program and the FSB peer review process. The mutual dependence and integrated nature of our financial system requires that we all live up to our commitments. Weak financial systems in some countries pose a threat to the stability of the international financial system. International
assessment and peer review are fundamental in making the financial sector safer for all. (G-20, Toronto Declaration, 2010)

G-20 fully support the work of the Financial Action Task Force (FATF) and FATF-Style Regional Bodies in their fight against money laundering and terrorist financing and regular updates of a public list on jurisdictions with strategic deficiencies. They also encourage the FATF to continue monitoring and enhancing global compliance with the anti-money laundering and counter-terrorism financing international standards. (G-20, Toronto Declaration, 2010)

Thus the G-20 endorsed technically and politically guidelines issued by various international organizations involved in AML/CFT politics. Furthermore, it played the role of coordinator of policies giving greater transparency to the roles of each one.

Being aware of the risks incurred by banks of being used, intentionally or unintentionally, for criminal activities, the Basel Committee on Banking Supervision issued guidelines, whose main aim is to describe how banks should include money laundering (ML) and financing of terrorism (FT) risks within their overall risk management. The Committee's commitment to combatting money laundering and the financing of terrorism is fully aligned with its mandate “to strengthen the regulation, supervision and practices of banks worldwide with the purpose of enhancing financial stability”.

In its role of stipulating guidelines of good practice for the financial system BIS recommends sound ML/FT risk management, recognizing it as of particular relevance to the overall safety and soundness of banks and the financial system and the main objective banking supervision, the extent that:

- it contributes to the protection of the reputation of both banks and national banking systems by preventing and deterring the use of banks to launder illicit proceeds or to raise or move funds in support of terrorism; and

- it preserves the integrity of the international financial system as well as the work of governments in addressing corruption and in combating financing of terrorism. (BIS, 2013, pg.1-2)

The Committee believes that the inadequacy or absence of sound ML/FT risk management can increase the exposure of banks to serious risks, especially reputational, operational, compliance and concentration risks. Recent developments, including robust enforcement actions taken by regulators and the corresponding direct and indirect costs incurred by banks due to their lack of diligence in applying appropriate risk management policies, procedures and controls, have highlighted those risks. These costs and damage could probably have been avoided had the banks maintained effective risk-based AML/CFT policies and procedures. (BIS, 2013, pg.2)

It is worth noting that all these risks are interrelated. However, in addition to incurring fines and sanctions by regulators, any one of them could result in significant financial costs to banks (eg
through the termination of wholesale funding and facilities, claims against the bank, investigation costs, asset seizures and freezes, and loan losses), as well as the diversion of limited and valuable management time and operational resources to resolve problems. (BIS, 2013, pg. 2)

With respect to the scope of application, the guidelines should be read in conjunction with other standards and guidelines produced by the Committee which promote supervision of banking groups on a consolidated level. This is particularly relevant in the context of AML/CFT since customers frequently have multiple relationships and/or accounts with the same banking group, but in offices located in different countries. (BIS, 2013, pg. 3)

In accordance with the updated Core Principles for Effective Banking Supervision (2012), all banks should be required to “have adequate policies and processes, including strict customer due diligence (CDD) rules to promote high ethical and professional standards in the banking sector and prevent the bank from being used, intentionally or unintentionally, for criminal activities”. This requirement is to be seen as a specific part of the banks’ general obligation to have sound risk management programmes in place to address all kinds of risks, including ML and FT risks. Therefore, “adequate policies and processes” in this context requires the implementation of other measures in addition to CDD rules and compliance with the banks’ own risk assessment of ML/FT risks. (See BCP 29 in Core Principles for Effective Banking Supervision, September 2012). (BIS, 2013, pg. 3)

Banking supervisors are expected to comply with FATF Recommendation 26, which states in part: “For financial institutions subject to the Core Principles, the regulatory and supervisory measures that apply for prudential purposes, and which are also relevant to money laundering and financing of terrorism, should apply in a similar manner for AML/CFT purposes. This should include applying consolidated group supervision for AML/CFT purposes.” The Committee expects supervisors to apply the Core Principles for Effective Banking Supervision to banks’ ML/FT risk management in a manner consistent with and supportive of the supervisors’ overall supervision of banks. Supervisors should be able to apply a range of effective, proportionate and dissuasive sanctions in cases when banks fail to comply with their AML/CFT requirements. (BIS, 2013, pg. 16)

Supervisors should adopt a risk-based approach to supervising banks’ ML/FT risk management. Such an approach requires that supervisors i) develop a thorough understanding of the risks present in the jurisdiction and their potential impact on the supervised entities; ii) evaluate the adequacy of the bank’s risk assessment based on the jurisdiction's national risk assessment(s); iii) assess the risks present in the target supervised entity to understand the nature and extent of the risks in the entity’s customer base, products and services and the geographical locations in which the bank and its customers do business; iv) evaluate the adequacy and effectiveness in implementation of the controls (including CDD measures) designed by the bank in meeting its AML/CFT obligations and risk mitigation; and v) utilise this information to allocate the resources, scope the review, identify the
necessary supervisory expertise and experience needed to conduct an effective review and allocate these resources relative to the identified risks. Supervisors have a duty to ensure their banks maintain sound ML/FT risk management not only to protect their own safety and soundness but also to protect the integrity of the financial system. (BIS, 2013, pg 17)

Supervisors should also consider a bank’s overall monitoring and oversight of compliance at the branch and subsidiary level as well as the ability of group policy to accommodate local regulatory requirements and ensure that where there is a difference between the group and local requirements, the stricter of the two is applied. Supervisors should also ensure that in cases where the group branch or subsidiary cannot apply the stricter of the two standards, the reasons for this and the differences between the two should be documented and appropriate mitigating measures implemented to address risks identified as a result of those differences. (BIS, 2013, pg 18)

The IMF undertook to make the connection between the existence of not recommendable practices keeping in mind that money laundering and the financing of terrorism are financial crimes with economic effects. They can threaten the stability of a country’s financial sector or its external stability more generally. Effective anti-money laundering and combating the financing of terrorism regimes are essential to protect the integrity of markets and of the global financial framework as they help mitigate the factors that facilitate financial abuse. Action to prevent and combat money laundering and the financing of terrorism thus responds not only to a moral imperative, but also to an economic need. (FMI, 2013, factsheet).

In 2000, the IMF responded to calls from the international community to expand its work in the area of anti-money laundering (AML). Money laundering can undermine the integrity and stability of financial institutions and systems, discourage foreign investment, and distort international capital flows. It may have negative consequences for a country’s financial stability and macroeconomic performance, resulting in welfare losses, draining resources from more productive economic activities, and even have destabilizing spillover effects on the economies of other countries. The work of the FATF, as well as the IMF’s in AML/CFT efforts, has been supported by the G-20, most recently in the context of initiatives to address the 2008-9 international financial crises and the aftermath. (FMI, 2013, factsheet)

In line with a growing recognition of the importance of financial integrity issues for the IMF, the AML/CFT program has evolved over the years. In 2004, the Executive Board agreed to make AML/CFT assessments and technical assistance a regular part of IMF work. On June 1, 2011, the Executive Board discussed a report reviewing the evolution of the IMF’s AML/CFT program over the past five years and provided guidance as to how to move forward in this area. The key outcomes of the discussion can be found here. On December 14, 2012, a Guidance Note on the inclusion of AML/CFT in surveillance and financial stability assessments (FSAs) was issued. It provides a
framework to deal with cases where money laundering, terrorism financing, and related crimes are so serious as to threaten domestic stability, balance of payments stability, the effective operation of the international monetary system—in the case of Article IV surveillance, or the stability of the domestic financial system—in the case of FSAs. (FMI, 2013, factsheet)

After all formal expressions of several international organizations regarding their concerns about the potential destabilizing of money laundering and financing of terrorism, the FATF/GAFI have seen further strengthened in their duties to stipulate guidelines and policies in their AML/CFT reviews of implementation of these recommendations. In addition, such manifestations demonstrate the key to give greater effectiveness in addressing the problem international cooperation.

The FATF-GAFI considers that implementation of its recommendations has a number of benefits, connecting those who adhere to international obligations, and avoid the risk of sanctions or other measures by the international community. They also ensure a more transparent and stable financial system that is more attractive to foreign investors. Corrupt and opaque financial systems are inherently unstable. Excessive money laundering can cause increased volatility of international capital flows and exchange rates, market disparities, and distortions of investment and trade flows. (FATF/GAFI, 2010)

Furthermore, they ensure that financial institutions are not vulnerable to infiltration or abuse by organised crime groups. Financial institutions that are exploited in this manner are exposed to reputational risk, financial instability, diminished public confidence, threats to safety and soundness, and direct losses. Implementation helps to build the capacity to fight terrorism and trace terrorist money.

At last, meet binding international obligations, and avoid the risk of sanctions or other action by the international community and avoid becoming a haven for criminals. Countries with weak AML/CFT systems are attractive to criminals because they provide an environment in which criminals can enjoy the profits of their crimes and finance their illicit activities with little fear of facing punishment. (FATF/GAFI, 2010)

The IMF has determined three keys to risk assessment — threat, vulnerability, and consequences — and their application to LD and FT. International risk management standards define risk as a function of the likelihood of occurrence and the consequence of risk events, where likelihood of occurrence is a function of the coexistence of threat and vulnerability. In other words, risk events occur when a threat exploits vulnerability. Formally, R, a jurisdiction’s level of LD risk, can be represented as: \( R = f \{T \}, \{V\} \times C \), where \( T \) represents threat, \( V \) represents vulnerability, and \( C \) represents consequence. Accordingly, the level of risk can be mitigated by reducing the size of the threats, vulnerabilities, or their consequences. (IMF, 2011 pg. 64)
In ML, a “threat” is largely related to the nature and scale of the potential demand for LD, i.e., the pool of illegally-acquired assets that need to be laundered. Thus, LD risk assessment implies understanding and generating indicators for the proceeds of crime (POC) that are generated in or brought to a jurisdiction. For the purposes of FT risk assessment, threat is mainly related to the nature and scale of the funds raised for use by terrorists that are in a jurisdiction in need of processing. (IMF, 2011 pg. 65)

“Vulnerability” in ML or FT risk assessment encompasses the products, services, distribution channels, customer bases, institutions, systems, structures, and jurisdictions (including weaknesses in systems, controls, or measures) that enable ML or FT abuse. The vulnerability indicators are numerous but they can be grouped into categories such as geographic location, financial services and products, levels of informality in various sectors, weaknesses in the AML/CFT systems and the adequacy of existing AML/CFT controls, general levels of corruption, the effectiveness of law enforcement agencies (LEAs) and the criminal justice system (CJS), and other characteristics of the jurisdiction that could facilitate successful ML or FT. In the staff’s framework, vulnerability indicators are aggregated and combined with the threat indicators to produce an overall analysis of the likelihood of substantial ML or of FT occurring successfully. (IMF, 2011 pg. 65-6)

“Consequences” relate to the outcomes that result from the occurrence of risk events. Consequences can relate to cost, damage caused, or the significance of outcomes. From one perspective, ML and FT processes generate two types of consequence: first, those associated with laundering itself; and, second, those associated with the use of the assets after they have been successfully laundered. (IMF, 2011 pg. 66)

Dirty money tends to flow to countries with less stringent controls. The international laundering of money has the potential to impose significant costs on the world economy by (a) harming the effective operations of the national economies and by promoting poorer economic policies, especially in some countries; (b) slowly corrupting the financial market and reducing the public’s confidence in the international financial system, thus increasing risks and the instability of that system; and, (c) as a consequence of (a) and (b), reducing the rate of growth of the world economy. (TANZI, 1996, p. 2)

The income distribution effects of money laundering must also be considered. To the extent that the underlying criminal activity redirects income from high savers to low savers, or from sound investments to risky, low-quality investments, economic growth will suffer. The Quirk study (1996) also conducted empirical tests on the relationship between GDP growth and money laundering in 18 industrial countries for the first time. It found evidence that significant reductions in annual GDP growth rates were associated with increases in the laundering of criminal proceeds in the period 1983–90.
The channels identified in the paper through which macroeconomic consequences of money laundering are transmitted can be summarized as follows: a) policy mistakes due to measurement errors in macroeconomic statistics arising from money laundering; b) changes in the demand for money that seem unrelated to measured changes in fundamentals; c) volatility in exchange rates and interest rates due to unanticipated cross border transfers of funds; d) other country-specific distributional effects or asset price bubbles due to disposition of "black money"; e) development of an unstable liability base and unsound asset structures of individual financial institutions or groups of such institutions, creating risks of systemic crises and hence monetary instability; f) effects on tax collection and public expenditure allocation due to misreporting and under reporting of income; g) misallocation of resources due to distortions in relative asset and commodity prices arising from money laundering activities; and h) contamination effects on legal transactions due to the perceived possibility of being associated with crime. (QUIRK, 1996)

These social, economic, and political consequences of ML have been further elaborated in the literature into 25 categories as set out as follow: 1) Losses to the victims and gains to the perpetrator; 2) Distortion of consumption; 3) Distortion of investment and savings; 4) Artificial increases in prices; 5) Unfair competition; 6) Changes in imports and exports; 7) Effects on growth rates; 8) Effects on output, income, and employment; 9) Lowers public sector revenues; 10) Threatens privatization; 11) Changes in demand for money, exchange rates, and interest rates; 12) Increases in exchange- and interest-rate volatility; 13) Greater availability of credit; 14) Higher capital inflows and outflows; 15) Changes in FDI; 16) Risks for financial sector solvency and liquidity; 17) Effects on financial sector profits; 18) Effects on financial sector reputation; 19) Illegal business contaminates legal; 20) Distorts economic statistics; 21) Corruption and bribery; 22) Increases in crime; 23) Undermines political institutions; 24) Undermines foreign policy goals; 25) Increases terrorism.

The monitoring of regulated markets involves, among other actions, the detection of atypical movements and behavior. When checked atypicity of information provided and/or collected will be up to the supervisors to identify remotely (off site) or presentially (on site) whether these abnormalities relate to:

a) Causes within the economic rationality;
b) Circumvent regulatory limits;
c) Operational errors;
d) Fraud in an attempt to get extra financial gains;
e) Concealment or hiding of assets of illicit origin-money laundering.

In short, in most cases it is difficult to do without direct questioning or request documents and other information to conclude about the real causes of abnormalities. Accurate diagnosis is essential to assess the consequences and seek appropriate solutions.
The figure below summarizes the international framework for preventing money laundering and combating the financing of terrorism. The structure highlights the relevance of the subject to global governance.

![Diagram of international framework]

**IV Operation Lava Jato (Car Wash): corruption case study**

This section is based solely on information recently published in the press regarding the corruption scheme at Petrobras (Brazil’s state-run oil and gas company). The names of people and companies cited, as well as the figures mentioned, were taken from these articles, but may change on completion of the lawsuits since investigations are still underway.

If the goal is to fight crime then society as a whole must be in a position to refute it and, more specifically, regulatory agencies must be engaged in this objective. It is important to note that although money laundering is a crime, combatting it is not an end in itself, but a means of preventing other crimes that precede it. Money laundering is considered a crime because it harms both third parties and society as a whole.

The case of the Petrobras scandal clearly illustrates how crimes of an economic nature can cause instability in the financial system beyond elements of legal and reputation risks. The legal risk related to criminal activity may involve credit and liquidity risk, thereby reducing productive activity and creating a vicious circle that may lead to a confidence, or even systemic, crisis. Moral hazard
may also occur when the lender of last resort is forced to inject liquidity into a market in which many agents have been negligent, remiss or complicit in the crime.

The Federal Police (PF) triggered a major operation to dismantle a number of gangs that used a money laundering scheme involving operations in the black market for foreign currency exchange. There are also 81 search and seizure warrants being executed, as well as the sequestration of high-end properties, asset seizure and the freezing of dozens of bank accounts and applications. Luxury cars, hotels, watches and works of art are also in the hands of the PF.

The operation was named “Car Wash” (Lava Jato) because one of those involved used a laundromat and gas station as fronts. The scheme carried out atypical transactions totaling BRL 10 million, laundering money for individuals and companies linked to crimes such as international drug trafficking, corruption of public officials, tax evasion, extraction, smuggling precious stones and misappropriation of public funds, among others.

The Federal Police initially suspected that engineer Paulo Roberto Costa, former Petrobras supply manager, and black market currency dealer Alberto Youssef (both targets of Operation Car Wash) were involved in setting up a complex scheme of offshore companies to hide assets and conceal illicit funds donated to politicians and political parties. Investigators suspect that most of the money was misappropriated from contracts between the state-run oil company, contractors and suppliers. These offshore (front) companies were used to send money abroad.

The course of events surrounding the Petrobras scandal highlights the connection between Money Laundering and Financial Stability, as demonstrated by the press articles analyzed. Money Laundering Risk occurs when there is a possibility of an institution being used by its clients to perpetrate this crime. Information published in the press to date identifies this type of relationship. In general terms, the corruption scheme created a non-financial company with a major investment project that convinces the banking system to finance it. The project attracted partners and suppliers (aware or not of the scheme) that expand and branch out activities to other sector and regions of the country, drawing other financial institutions that lend money to companies directly and indirectly involved in the production chain. When the corruption scheme is discovered the project’s “multiplying effect” becomes a “domino effect”, involving the financial system and affecting the capital market, generating systemic risk. Systemic risk is the risk of collapse of an entire financial system imposed by the interlinkage and interdependency between agents of a system or market.

Legal Risk forms part of Operational Risk, which is the possibility of losses due to flawed, deficient of inadequate internal processes, people and systems, or external events. It includes the risk associated with inadequate or deficient contracts signed by the institution, as well as penalties due to non-compliance with legal provisions and compensation for damages to third parties resulting from activities carried out by the institution. The article addressing the possible punishment applied by the
United States Securities and Exchange Commission (SEC) and Department of Justice exemplifies the problem. The financial burden of the alleged punishment could further impact Petrobras shares and reduce its ability to drive up costs to raise funds for its projects. Another factor is **Reputational Risk**, which is the formation of an unfavorable opinion of any aspect of the institution by the public it deals or relates with (clients, counterparts, employees, shareholders, investors and regulators) and the entities or sectors (media, trade unions and society in general) capable of influencing them, which can lead to loss of market share, reduced profitability, costly litigation and/or a fall in share prices. (ESTADAO, 19jan2015)

If the allegations are proved true and losses to foreign investors established, Petrobras may receive harsher punishment in the U.S. than in Brazil, since the company’s shares are traded in both countries. The U.S. system’s power to impose billion-dollar fines and settlements contrasts with limited scope of the Brazilian Securities Commission (CVM) and lack of protection for investors in Brazil. The agency has an administrative role and the amount of its fines is limited. The CVM is linked to the Ministry of Finance, which raises questions about its power to act in cases involving companies controlled by the federal government. (ESTADAO, 06apr2015)

The debt and financial problems experienced by the companies involved in Operation Car Wash or listed by Petrobrás as part of a cartel have begun to emerge more clearly in the judicial recovery suits coming to court. At least five companies already account for BRL 15 billion in restructured debts.

The almost unanimous opinion among lawyers from ten different firms representing creditors or debtors, interviewed by O Estado de São Paulo newspaper, is that this list will continue to grow. The lawsuits have also expanded to involve other groups, such as shipyards and even filling station chains. This negative scenario is due to the fact that credit suddenly became more expensive or completely closed off for companies linked to the investigations. Another exacerbating factor in the lack of financing for companies is the expected contraction of the Brazilian economy, forecast to be the largest in 25 years.

As the debts of these companies reach maturity, cash flow disparities become more evident and judicial recovery more appealing. In the current scenario of financial shortages, groups with no assets to sell may go bankrupt.

Any recovery process automatically requires additional funds, either through new loans or the sale of assets. New loans are not only more limited within the scenario of tight credit, but avoided by banks, because for every real that is refinanced one real must be available in the balance sheet in the event of downgraded credit ratings or poor quality guarantees. An added difficulty in the judicial recovery of companies involved in the Car Wash scandal is that fines can be imposed on the basis of corruption or cartel allegations, which, depending on the amount, could prevent recovery.
Credit Risk is illustrated by the article on the government study that separates companies involved in Operation Car Wash into groups. It addresses the risk of losses associated with non-compliance on the part of the borrower or counterpart with the agreed financial obligations. (ESTADAO, 17jan2015)

Government-commissioned mapping on the financial situation of contractors involved in Operation Car Wash is measuring the exact size of the risk banks took on in granting these companies loans. Companies were divided into two groups: those with assets to sell to pay off their debts and those experiencing difficulties generating short-term cash. The government study found that private and public banks have lent BRL 130 billion to the sector. (FOLHA DE SÃO PAULO, 12jan2015)

Liquidity Risk was discussed in an article dealing with increased bank reserves. It addresses the risk of an imbalance between tradable assets and liabilities that can affect an institution’s ability to make payment. Banks can adjust the volume of reserves and lower risks in their portfolios for the fourth quarter balance sheet. This is a protective measure against a possible wave of defaults by contractors under investigation. (ESTADAO, 12jan2015)

Banks have significantly increased reserves since the onset of investigations in an effort to guard against surprises. (CORREIO BRAZILIENSE, 20mar2015)

Given the fact that Petrobras is at the center of a “cluster” of several partner companies and suppliers, the multiplier effect is pronounced and involves Financial Contagion, both in the financial and productive sectors (companies and families), as shown in the link to the article. Financial Contagion is the possibility of losses to institutions monitored by Bacen (Central Bank of Brazil) because of the risks involved in business activities not monitored by the authority.

The crisis could destabilize Brazil’s entire oil and gas sector, as well as petrochemical, fertilizer and biofuel chains for which Petrobras is the major partner or supplier of raw materials. In 2012 (last available data) the sector accounted for 13% of the country’s GDP, around BRL 560 billion. The state-run company has a network of more than 20,000 registered suppliers, including manufacturers of machinery, equipment and vessels and service providers of varying sizes, with contracts ranging from less than one year (short-term) to over 12 years (long-term). (ESTADAO, 18jan2015)

The article addresses the layoffs that companies involved were forced to make due to cash flow problems. These arose in phase seven of Operation Car Wash, which saw executives from several contractors taken into custody, and worsened with the news that Petrobras had released a list of 23 contractors forbidden to participate in new tenders by the oil company. With no credit in the market and their cash flow weakened by Petrobrás’ failure to make payments or recognize contract amendments worth billions of reais, contractors began to delay wage payment and lay off employees.
As a result, the banks have changed the way they do business with the companies involved. With this decision, the assessment of six banks interviewed by Valor Econômico newspaper is that doing business with these companies has become less secure for two reasons. First, a large part of contractors’ credit analysis stems precisely from their relationships with Petrobrás. Their exclusion from tenders calls into question not only future cash generation, but the backing of most contractors’ biggest client. The second reason is that questions have been raised in relation to the institution’s internal regulations, known as compliance.

Prosecutors investigating Operation Car Wash spoke to five major banks (Bradesco, Itaú-Unibanco, Banco do Brasil, HSBC and Santander) to find out why their systems only reported some of the atypical transactions to the Council for Financial Activities Control (COAF). The financial institutions are subject to fines if suspicions that they were negligent in monitoring transactions that allowed the maintenance of the parallel financial system. The investigation has already identified dozens of bank employees, including managers, who were co-opted by the scheme not to report transactions to the COAF. It seems clear that banks were lenient in controlling the activities of companies revealed by investigations to be fronts for crimes. There is no doubt that failures occurred in both Know Your Employee (KYE) and Know Your Customer (KYC) policies.

The Royal Bank of Canada (RBC), Canada’s largest bank in terms of market value, is abandoning once promising business in Latin American and the Caribbean after being involved in a series of global investigations into money laundering, including in Brazil. The bank’s profits in Latin America and the Caribbean do not compensate for risk associated with money laundering. (THE WALL STREET JOURNAL, 04feb2015)

RBC’s decision abolish its wealth management department in some markets highlights how the growing pressure by regulators to combat money laundering is affecting the way banks do business around the world. Regulators from several countries, including the United States and Canada, report they are tightening surveillance on money laundering, partly to suppress the financing of terrorism and other illegal activities.

The bank’s withdrawal from Brazil, Argentina and Uruguay, which it did not officially explain, came a year after the U.S. regulator deemed its money laundering controls unsatisfactory. In 2008, the Central Bank of Uruguay (BCU) fined RBC USD 50,140.00 for “omissions” in money laundering controls, according to the BCU’s website. The fine was imposed after a Columbian drug trafficker transferred around USD 2 million through an RBC account. Although RBC was not held criminally responsible, it was fined for not having proper controls in place for money transfers.

The RBC was recently involved in the Petrobrás scandal, in which authorities claim that contractors inflated the amounts charged in contract with the state-run company and paid bribes to some of its executives. According to legal documents seen by the Wall Street Journal, bribes totaling
USD 2.4 million were allegedly laundered under the name of Paulo Roberto Costa, former Petrobrás manager, through an RBC account in the Cayman Islands. Indeed, if the information reported by the newspaper is true, the bank overlooked its “know your customer” policy, was lenient with the recommendation pay special attention to operations involving “politically exposed people” and transfers to and from tax havens. (THE WALL STREET JOURNAL, 04feb2015)

The article in the link below is an excellent example of how the AML (Anti Money Laundering) is related to financial stability. While it does not address the issue directly, inferences can be made based on the information given.

The case study on Sete Brasil exemplifies an arrangement in which one can see a connection between money laundering, corruption and financial stability. The connection between these three elements exists when corruption distorts the best way to allocate resources, and money laundering consists of an also distorted way through which resources obtained by means of corruption return to formal markets. The involvement of financial institutions expand even more such distortions, generating financial instability and increasing the risk of contamination to other financial institutions, as well as to the productive sector.

What is the relationship between Sete Brasil/Corruption/Money Laundering/Financial Stability? There are indications that the real purpose behind Sete Brasil's creation was to conceal the deviation of public funds for private ends, whether this was for illicit enrichment or for funding political campaigns. Business dealings involving corruption and/or money laundering are imbedded with the issue of information asymmetry, since that the people committing the crime are evidently aware of its motivations while interacting with one or more counterparts who are not aware of such.

In 2007, driven by the discovery of the large pre-salt oil reserve, the project for the creation of Sete Brasil starts being discussed inside Petrobrás. Pre-salt is a vast area of oil reserves found under a deep layer of salt rocks, between seabed rock layers. The pre-salt oil basin is mainly located in Southeaster Brazil's coastline. The main purpose of this company was to act as a mediator in the manufacturing of drilling rigs for the pre-salt area, in order to develop the national industry.

Sete Brasil was founded by Petrobrá in 2010 to build and then hire out 29 drilling rigs for the state-run company’s oil and gas exploration activities. The investment was budgeted at USD 28 billion, with expected revenue of USD 89 billion in 2020 and partnerships with three private banks (BTG Pactual, Santander, Bradesco), pensions funds of state-owned companies (Previ and Funcef), FGTS and Petrobras itself (state-run). Petrobras joined in was a shareholder, holding 10% (or 5%?) of Sete Brasil's shares and appointing its directors.

In 2011, Sete Brasil signed its first seven agreements with the Atlântico Sul Shipyard (EAS), in Pernambuco. After these first agreements, other 21 rigs were commissioned. In total, 28 rigs were commissioned, which were to be delivered between 2015 and 2020. In order to stimulate the national
economy, Sete Brasil, Petrobras and the federal government also decided to distribute such order throughout Brazil.

The shipyards responsible for building the rigs are Atlântico Sul (Pernambuco state), Enseada (Bahia state), Jurong (Espírito Santo state), Brasfels (Rio de Janeiro state) and Rio Grande (Rio Grande do Sul state). Construction companies Odebrecht, UTC, Ecovix, Queiroz Galvão and OAS, among others, undertook to build three new shipyards. Its creditor banks are Bradesco, Santander, Banco do Brasil, CEF, Itaú and Standard Chartered. (FOLHA DE SÃO PAULO, 20mar2015)

In January 2014, the project gained momentum, with the guarantee that BNDES would fund the manufacture of the drills. The financial support approved by BNDES, through loans and contributions from BNDESPar totaled BRL 10 billion (USD 2.7 billion). With this, Sete Brasil took out a series of loans in order to put all these orders into motion.

The Lava Jato operation reveals the existence of the largest corruption scheme in the company's history. In November 2014, Pedro Barusco (Sete Brasil's executive manager of engineering, appointed by Petrobras) reveals, as part of his plea bargain deal, Sete Brasil's scheme. Among other revelations, Barusco reveals the corruption scheme involving shipyard representative in Sete Brasil and the payment of kickbacks. With the Federal Police investigations being conducted, the funding provided by BNDES, which was already behind schedule, was canceled. Without the funds from BNDES, Sete Brasil is forced to take out loans from other banks, totaling BRL 10 billion (USD 2.7 billion).

Sete Brasil had contracts with Petrobras worth USD 28 billion, but has been finding it difficult to honor short-term commitments since one of its directors, appointed by Petrobras, was indicted for suspected participation in the corruption scheme. As a result, Sete Brasil has resorted to emergency loans from CEF (Caixa Econômica Federal Bank) to honor these commitments, resulting in higher costs. The company has also requested a BRL 800 million bailout from BB (Banco do Brasil), despite having 3 major banks as partners. It is also expecting a loan from the BNDES (National Bank of Social and Economic Development) and a foreign bank, but the latter has not yet released the funds because disgruntled shareholders have not signed the contract. Some partners have abandoned the project due to reduced returns. At the end of 2014, Sete Brasil is in debt and suspends the payments to the shipyards.

Some of the company’s financial difficulties are due to its main shareholder’s involvement in a corruption scheme. In addition, it is important to note that the bailout comes from government banks (CEF, BB and BNDES) at a time when private partners are leaving the project because of lower returns. The case illustrates that monitoring unusual transactions can prevent not only risks to image/reputation, but financial risks (liquidity, credit and contagion).
The BNDES no longer wants to directly finance Sete Brasil, Petrobras’ main partner in exploration of the pre-salt layer. In fear of Operation Car Wash, the institution intends to carry the operation’s risk over to banks that are already creditors of the company. The proposal was presented to the five banks that loaned the company USD 3.6 billion: Banco do Brasil, Caixa Econômica Federal, Santander, Bradesco and Itaú. If they do not accept the solution and the BNDES does in fact decline to finance Sete Brasil, the company could go bankrupt, leaving the banks with a billion-dollar default. Since the company’s implication in Operation Lava Jato, the BNDES has begun to demand ever-increasing guarantees to approve long-term loans. (FOLHA DE SÃO PAULO, 13mar2015)

Without receiving payments, the shipyards are forced to initiate a severe layoff program, with over 25,000 being laid off throughout the country in 2015. In February 2015, Petrobras wished to scale down the agreements to 12-15 rigs, but was unsuccessful. And then the impasse continued. During negotiations, the number was reduced to only six. Some shipyards, such as Brasfels and Jurong, decided to keep investing in the manufacturing of the first rigs while they waited for a solution.

Without a solution, Sete Brasil, in debt and with short-term loans reaching their maturity, decided to file for judicial recovery in August 2016. Internally, recovery was not a consensus among Sete Brasil’s partners. Without being able to settle on the number of rigs to be contracted by Petrobras, Sete Brasil is not able to execute its judicial recovery plan.

The meeting of creditors has been rescheduled for a second time - this time, for February 2017. Sete Brasil’s partners started to request arbitration proceedings against Petrobras in order to recover their investments. In view of this impasse, there are people starting to advocate the company's liquidation.

Of the 28/29 rigs, only four will be delivered, but they are still being manufactured and none of them are over 65% finished. Also, another USD 600 million will be necessary to complete the works. When ready, these rigs will be sold in auctions and their estimated value is BRL 1.8 billion (USD 550 million). The amount raised will be distributed among creditors (BB, CEF, Itaú, Santander Bradesco). Of this amount, BRL 120 million will be destined for Sete Brasil's successor so it can manage its liabilities. The judicial recovery plan involves cuts (moratorium) of approximately 90% of the debt the company has with its creditors. The shareholders that invested BRL 8.3 billion in Sete Brasil would not be contemplated by this at this time. The bank debt now totals BRL 18 billion - BNDES would spearhead a funding structure covering 75% of the initial project.

Money Laundering should be considered a risk to financial stability as opposed to merely a deviation in terms of purpose or conduct, or a failure in the internal control of financial institutions (FIs). FIs are not always willing to cooperate, justifying this in terms of the number of reports they make to the COAF or reports of questionable quality. In other words, they can claim they have
provided a high number (in absolute terms) of reports, or provide confusing reports on operations whose origins they know are illicit. This clearly demonstrates the presence of Operational Risk: Do they report all unusual transactions they are aware of? How can this be established?; b) Do suspicious transaction reports have sufficient quality to lead to conclusions?

Reporting unusual transactions to the COAF does not solve the problem of the SFN (National Financial System) being used to disguise and conceal funds from criminal activity. These failures may due to: a) incompetence; b) leniency; c) collusion; d) complicity.

In summary, this case study shows that there is a high probability that the intention was to divert funds from a public company through people occupying director positions who have been chose on a political basis, such appointments being suggested by the political parties in power. It also seems that private companies colluded among themselves, benefiting from the corruption scheme. There was also the relationship between public officials and private agents regarding corruption, which, in itself, constituted a money laundering scheme. Apparently the intention was to have Sete Brasil's unavoidable losses diluted into Petrobras's substantially large economic-financial transactions. Finally, it must be stressed that the case is still being analyzed in court and that there are many questions to be answered to the public in general.

V Risk-based approach

The financial markets' evolution, characterized by the globalization of banking activities and their deregulation, has made these activities and their risks more complex. Financial regulators have realized that risks have become harder to spot because they are found at all levels of an organization, harder to assess because of the combination of direct and indirect losses which are much more delicate to be quantified, harder to manage by increasingly more complex organizations operating in markets whose limits are not well defined. That is why regulators and the very financial institutions are seeking ways to detect, assess, and control operating risks. Events taking place in recent years have shown that banking risk management must go beyond credit and market risks. It is necessary to take operating risks into account.

Present a way to monitor the currency exchange market based on operating risk matrices and its possible impact. This paper is an adaptation meant specifically for the Brazilian currency exchange market of the Basel Committee's recommendations regarding the application of indirect supervision by means of a risk-based approach. It is a way to assess and assign a less subjective evaluation of the operating risks to which the currency exchange market is exposed. The proposed tool is meant to help assess risks by complementing the analysis made based on credit and market risks. Such tool may help define macroprudential measures and indicate occasional direct supervision efforts.
The Risk-Based Approach (RBA) system is a method to prioritize supervision activities, adopted by regulatory agencies in several countries, and meant to foster an efficient relationship between the use of available human resources and materials and the achievement of goals imposed to them by law. To that end, the system comprises the following stages:

(i) identifying the risks to which the market at hand is exposed;
(ii) sizing such risks and sorting them according to potential damage levels;
(iii) deciding how to mitigate the risks found and sized; and
(iv) controlling and monitoring risk events.

The RBA's main element is to sort out the risks found. The risks are divided according to their likelihood of occurring, and according to the potential impact caused in the event they do occur.

The risk-based approach (RBA) is recommended as a way to increase the effectiveness of FI-provided information through the application of risk matrices. Some authors (like Pellegrina-Masciandaro, 2009) say that, in the rule-based approach, the agents' cooperation is passive and static, while in the risk-based approach it is active and dynamic. It should be noted that these two approaches are more than competing ones: they are complementary. Additionally, both contain the subjective evaluation of transactions that may point to a deviation in purpose. Nothing guarantees that implementing the RBA is going to be more effective than the rule-based approach, considering that what makes the agents' cooperation active or passive is their willingness to cooperate, instead of the approach used. Besides, their willingness to cooperate is going to depend on the incentives created by a regulatory/supervisory body.

According to the Basel Committee, the RBA may help supervisors become more efficient by ensuring that the IFs' procedures and controls are consistent and suitable to their risk levels, as well as integrated with the overall approach contained in the Committee's various documents, including the core principles. According to principle 20 of the Basel Accord, supervisors are required to spot weaknesses by means of an effective direct and indirect supervision program and analyzing other available information.

The RBA must be built on solid foundations. To that end, one must make sure the risks are well understood. The national risk assessment must be related to a description of the essential information lending itself as a basis for supervisors, tax authorities, and other financial bodies and institutions to ensure that the decisions about the assignment of responsibilities and resources at the national level are based on a practical, updated understanding of the risks.

Developing and running an RBA involves making judgments. That is why for the RBA to be effective it must be based on sufficient, quality information complemented by intelligence. Efforts must be made to ensure risk assessments are based on current, accurate information. The risk matrix draft below suggests its application to each likely risk event.
In the first column, the analysts are to sort the possible events based on the best information available. Next, the concentration of operations carried out for each event would lead to an impact on the economy, industry or institution in case the event took place. Naturally, this matrix is just an initial idea that may be adapted according to the case and the quantity and quality of the available information by the supervisors.

### VI Final considerations

In conclusion, the first principle that needs to be established is the importance of preventing money laundering to assist in the fight against crime and the underground economy. From there, a legal, non-statutory and institutional apparatus needs to be set up that supports the legislation/surveillance/punishment triad. If the major problem in regard to decision making is the insufficiency or absence of statistics upon which to base them, then it is up to the regulatory and surveillance bodies to require the agents to produce the necessary quantitative and/or qualitative information in order to solve the problem of information asymmetry.

A second set of fundamental concepts entails the implementation of internal controls, both in the private and public sectors, as a means of identifying and tracking unusual and suspicious transactions in general. Not to be overlooked are the increased costs for implementing an internal control system, as well as the training and activities required to prevent and combat money laundering, both for the principal (the state) and agents (authorized institutions). Better controls would enable more cases to be detected and punished, thereby heightening the perception among criminals of the probability of getting caught and punished, and consequently increasing the deterrence of criminal actions.

Finally, standardized statistical data needs to be gathered from the institutions involved in order to put together time and cross-section series, which will make it possible to build and use econometric models that will feed and permit improving the design of the model presented in this paper – for the purpose of guiding the formulation of public policies and even for adjusting the statutes for combating crime in general and money laundering in particular, taking into account its costs and benefits to society. The very lack of statistics to measure the problem could be considered an
indication of leniency. Brazilian legislation on money laundering dates back to 1998, and after more than a decade a consistent statistical series has not yet been developed.

If the goal is to improve the financial system as an essential tool for the country's economic development, then it is up to all financial institutions, the government and citizens to make sure the system is not used by criminal organizations harmful to competition and which deteriorate healthy financial relationships. Allowing illegally-obtained resources to permeate the financial system may be a destabilizing factor for the entire economy and whose impacts may cross borders, given the global economy's interdependent character.

Regulation/supervision/punishment must lend themselves to decreasing the asymmetry of information, increasing the criminals' perception of the likelihood they will be punished and, thus, dissuading them. Preventative money laundering actions must alter the crime's equation by increasing the costs of performing the criminal activity and the likelihood of punishment.

References