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**THE RISK BASED APPROACH IN THE NEW EUROPEAN ANTI-MONEY  
LAUNDERING LEGISLATION:  
A LAW AND ECONOMICS VIEW**

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THE RISK BASED APPROACH IN THE NEW EUROPEAN ANTI-MONEY LAUNDERING  
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Lucia Dalla Pellegrina<sup>♦</sup> and Donato Masciandaro<sup>▲</sup>

Abstract

In 2005 the European Commission has adopted the so called Third Directive on Anti-Money Laundering (AML), which was to be implemented into the national laws at the latest in December 2007. The key feature that characterizes the Third Directive is the idea that the regulatory framework should be risk-based (RBA). The aim of the regulation is to elicit a high level of outcome in terms of AML effectiveness from self-interested financial institutions (Fis) who possess private information. But how to design the role of FIs and regulators, and their relationships, in order to increase the effectiveness of the AML rules?

In this paper we analyze the problem using a principal-agent framework to describe the AML setting when a RBA is applied, focusing on incentive problems arising in a three-layer hierarchy, which includes public authorities, financial institutions, and regulators.

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Keywords: Money Laundering, Regulation, Risk Based Approach, EU Third Money Laundering

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## 1. Introduction

In October 2005, the European Commission has adopted the Directive on the prevention of the use of financial intermediaries (FIs) for money laundering purposes and terrorism financing, the so called Third Directive on Money Laundering. The Directive was to be implemented into the national laws at the latest in December 2007 (Katz 2007, Mitsillegas and Gilmore 2007).

Table 1 describes the state of play in 22 EU countries on December 2007. A complete assessment of the new European laws on anti-money laundering (AML) is still premature. Nevertheless, we can evaluate the overall design of the AML, based on a new approach in combating the criminal phenomena.

The key feature that characterizes the Third Directive is the idea that the regulatory framework should be risk-based. The risk-based approach (RBA) adopted in the Third Directive is part of a general tendency which is taking place at both the international and the national level (Pieth 2004, FAFT 2007 and 2008, Proctor 2005). Risk was, in fact, explicitly mentioned when the Financial Action Task Force (FATF) issued its Revised Forty Recommendations in 2003, and afterwards, it became a distinguishing feature in the regulatory setting at the international as well as at the national level. From then on, the concepts of risk assessment and risk management became key elements in the recent definition of anti-money laundering (AML) regulation.

How to explain the adoption of the risk-based approach (RBA) in designing the AML regulation? As it has been correctly pointed out (Ross and Hannan 2007), this evolution is part of a general trend towards risk based regulation (Hutter 2005) arising from the shortcomings that characterized the traditional rule-based approach.

So far, the rule-based approach in the AML framework produced insufficient information to fight and prevent the money laundering phenomena (Reuter and Truman 2004, Takatz 2007). The low outcome in combating money laundering is measured through the number and value of true suspicious transactions (TSTs), i.e. financial transactions which are actually useful to identify money laundering operations.

The empirical evidence on this issue tells us that the outcome of the AML is low. In the US (Takatz 2007), as well as in Italy (Costa 2008), FIs have reported an increasing number of transactions - Figure 1 depicts the Italian situation - but the number of those considered useful to start investigations, and eventually to promote money laundering prosecutions, has fallen or remained low. The overflow of useless AML information has been identified in the US case (Pieth and Aiolfi 2003) and in United Kingdom as well (KPMG 2003, Gold and Levi 1994). In general, the impact of the AML policies on organized crime markets so far seems to be low (Levi 2002, Naylor 2002).

By introducing a RBA, the aim of the AML regulation is to calibrate measures to the risk: greatest money laundering risk should receive the highest attention in terms of resource allocation in order to increase the outcome of the regulation (FATF 2007). Under the RBA, the design of the relationship between regulators and FIs becomes even more important in order to produce effectiveness in regulation (FAFT 2007). The RBA makes the regulation more flexible, but it also heightens the responsibilities of the FIs (Draghi 2007, Ross and Hannan 2007). It is not a case that this is the first time that the main international organization aimed at combating and preventing money laundering –the Financial Action Task Force– has

provided guidance lines using a public-private sector partnership approach, focusing on FIs and risk based supervision (regulators) and at the same time distinguishing between them (FAFT 2007).

The reason is simple. Under a RBA the legislator delegates to the FIs both the design and the implementation of a model of AML controls, which will be monitored and assessed by the regulators. The aim of the regulation is thus to elicit a high level of outcome in terms of AML effectiveness from self-interested FIs who possess private information. But how to design the role of FIs and regulators, and their relationships, in order to increase the effectiveness of the AML rules?

In this paper we analyze the problem using a principal-agent framework to describe the AML setting when a RBA is applied. We focus on incentive problems arising in a three-layer hierarchy, which includes public authorities (lawmakers), financial institutions, and regulators. The agency problem between the financial institutions and the lawmakers has been formerly investigated by Takatz (2007) who sets up a framework with two players only, focusing on the fact that excessive fines in a rule-based approach may end up with a large number of useless reports (reporting overload). More recently, the principal-agent approach has been used to tackle the design of the AML regulation both at a general level (Masciandaro, Takatz and Unger, 2007) and in the analysis of a specific case study (Costa 2007). Furthermore, it has been analyzed the failure of the traditional sanctions and the corresponding development of forfeiture of illegal gains for offences linked to money laundering (Bowles, Faure and Garoupa 2005).

Following the classic exercise à la Posner (Posner, 2000) we show which theoretical issues must be resolved in order to correctly implement the approach, and consequently which are the institutional conditions that must be satisfied if AML regulations are to work effectively. The paper is structured as follows. In section two we describe the RBA in the AML regulation using the economic framework, then in sections three-five we discuss the theory. Section six concludes talking about policy implications and future research agenda.

## **2. Risk-Based Approach, Financial Institutions and Regulators: the Economic Framework**

The origins of the AML regulation are to be found in US, where in 1986 the Money Laundering Control Act was the first law in the world explicitly enacted to face money laundering. Over the last twenty years the fight against money laundering have become increasing important in the agenda of much national and international law enforcement agencies, notwithstanding the features of the money laundering activities are far to be well identified. In particular few efforts to assess the dimension of money laundering around the world can be quoted (Quirk 1996, Walker 1999, Tanzi 2000, Chong and Lopez de Silanes 2006, Schneider 2008, Barone and Masciandaro 2008).

In this paper we examine the problems that arise with the existence of unwilling FIs, whose transactions may hide money laundering. In fact, money-laundering operations can leave traces and produce suspicious transactions in the documents of the FIs. Therefore the latter are required to cooperate in a conscientious way (Thomas 2001). The more effective the cooperation, the lower the risk of money-laundering. The authorities can implement an AML setting using either the rule-based approach or the risk-based approach.

In the rule-based approach cooperation is essentially passive and static. Professionals apply a set of rules in all contexts and all cases: if something meets the conditions specified in the rule, then the action –also specified in the rule– is taken (Ross and Hannan 2007). One main problem can arise in this setup.

Since money launderers can have a complete knowledge of an AML regulation set up on a rule-based approach, they can adjust and adapt their money laundering techniques in order to comply with the codified rules, and consequently making illegal operations indistinguishable from legal ones. At the end of the story, FIs will identify all transactions as regular ones. Hence, the likelihood of having useful FIs' reports decreases and eventually becomes useless.

Furthermore, the actual punishment scheme can also produce shortcomings. In the actual AML model the fines are levied for false negative, i.e. for not reporting transactions which are prosecuted as money laundering operations later, while the FIs are not fined for false positive, i.e. for reporting legal transactions as if they were money laundering affairs. Given that the law asks the FIs to report suspicious transactions, the incentive to implement excessive but useless reporting may arise, in order to avoid sanctions (Takatz 2007). The number of reports is likely to increase, but their quality is low. Again the likelihood of having useful FIs' reports decreases.

In the risk-based approach, instead, cooperation becomes active and dynamic. Professionals have to design an AML model in order to make the use of financial structures and networks more difficult for money launderers. In this setup FIs should adopt a risk management process to identify and manage money laundering risks in a flexible and less predictable way, using their judgment, knowledge, and expertise to develop the appropriate AML model for their particular organization, structure and business activity (FAFT 2007).

Moreover, while in the rule-based approach the notion of “suspicious” is relatively vague –in order to reduce money launderers' capacity to understand the AML framework (Takatz 2007)– with the RBA, the discretion of the FIs in designing their own AML model is complete. In this way, the social outcome of the regulation becomes clearer, that is maximizing the number of true suspicious transactions, increasing the FIs discretion in organizing the AML internal controls. Is the regulatory design consistent in pursuing both goals?

Given that building up a risk management process is costly, in order to obtain the cooperation of the FIs, the AML regulation should design a correct interest alignment. Such an alignment condition represents a general principle to all regulations, and therefore also to AML laws, namely: “avoid generating ineffective, or even counterproductive, behavior on the part of FIs, by altering in the wrong way their incentives structure”.

It is worth noting that the cooperation required to FIs in terms of reporting and monitoring has gradually become more demanding as money-laundering techniques have advanced. It has been noticed, indeed, that money launderers have a deep knowledge of detection risks, and thus take extreme measures to hide their financial activities (FAFT 2007).

In order to evaluate the difficulty of the FIs in defining an effective AML model, it is useful to remember the key elements of the economic definition of money-laundering (Masciandaro 1998 and 1999), in which an agent sets up a procedure for transforming a given amount of potential purchasing power into actual purchasing power, in order to minimize incrimination risks.

Now, if a financial transaction is implemented for money-laundering purposes, it will involve an illegal action, intertwined with a legal one. Therefore, given that the transaction is responding to an illegal purpose, it can be distinguished by elements of irregularity as compared to its standard physiological features. The transaction can become suspicious. What will the sources of the suspect be? The suspect could refer to at least one of the three key elements –the agent, the procedure, and the amount– which characterize a money laundering operation.

Nowadays, the evolution in money-laundering techniques has made their detection and monitoring devices more complicated, precisely because they have made the separation and concealment of the three components of the laundering transaction increasingly effective. Compare, for example, a traditional money-laundering operation –the “smuggler”– with a more sophisticated version –the offshore and/or on-line financial money-laundering operation. The growing difficulty of recognizing money-laundering is straightforward. At the same time, it is worth stressing that a transaction may present forms of irregularity but still not involve attempted money-laundering. The irregularity can therefore be regarded neither as a necessary nor as a sufficient condition for detecting money-laundering. Handling the money laundering risk is becoming even more challenging for the FIs. Therefore, we wonder how to design the correct incentive scheme for the FIs.

We claim that in defining the characteristics of an AML regulation based on a RBA, the behavior of at least three agents must be taken into account: the lawmaker, the supervisor, and financial institutions. Governments –including legislature and executive– are typically identified as the main actors in defining the national AML regulation. As far as the supervisor is concerned, competent authorities should be identified in each country to be responsible for overseeing AML controls, which should seek to adopt a RBA to supervision (FAFT 2007). The financial institution is an economic organization characterized by the fact that, because of its business activity, has private information over a set of economic agents. This information can be a useful asset to implement an AML model that assesses and evaluates money laundering risks. But the effectiveness in collecting relevant AML information depends on the effort that the FIs spend in that action, an effort that the public authorities cannot observe and that is costly.

On the one hand, the complex task of observing intermediaries' effort associated with the obligation of cooperation is a crucial point in AML laws. Intermediaries are asked to produce good information whose characteristics are quite difficult to recognize *ex ante* and to verify *ex post*.

On the other hand, the RBA requires resources and expertise to gather and analyze information on money laundering risks, to develop procedures and systems, and for staff training (FAFT 2007). At the same time, it may also generate uncertainty, as well as lack of understanding by customers (FAFT 2007). In other words, the definition and implementation of an AML model implies at least two types of costs for the FI: investments in capital (physical and human) and diminished secrecy with respect to clients. The two types of costs deriving from anti-money laundering activity can be called simply economic costs and reputational costs respectively (Filotto and Masciandaro 2001). The adoption of a RBA can yield benefits in terms of avoiding sanctions, given that the AML regulation typically includes penalties (FAFT 2007).

### 3. Lawmakers, Financial Institutions and Supervisors

In order to analyze the design of an AML regulation which is consistent with the RBA we propose a simple economic framework, using a standard principal-agent setup (Baron and Myerson 1982, Tirole 1986, Maskin and Riley 1984, Kofman and Lawarree 1993). Three players are modeled: the lawmaker, the FI and the supervisor, who shape a hierarchical principal-agent relationship. All players are risk neutral. The lawmaker maximizes social welfare, while the FI and the supervisor maximize their private revenues.

By adopting a RBA, a country wishes to improve the outcome of the AML regulation in preventing and contrasting money laundering phenomena. How do we measure the AML outcome? In this paper we focus on the keystone of the AML regulation: reporting suspicious transactions. This feature is critical to a country's ability to use financial information in order to fight money laundering (FAFT 2007). In each country the national law requires the FIs to file a report when a suspicious transaction has been formed and the RBA is suited for the purpose of identifying suspicious transactions (FAFT 2007). Obviously, while the identification of suspicious transactions can be advanced using a RBA, reporting such transactions, once identified, is compulsory (FAFT 2007).

In other words, the country is interested in maximizing the number of *true* suspicious transactions (TSTs). Qualifying this crucial variable with the word "true" is a way to emphasize that the effectiveness of an AML regime can be measured through a two-stage process: it is not enough that the number of reports increases, since they must also concern financial phenomena that are actually illegal. Suspicious transactions<sup>1</sup> are filed to the public authorities for further investigation in order to verify their usefulness in discovering money laundering operations. If the suspicious transaction is *used for further investigation* can be considered "true" in our terminology. How many transactions can be considered true?

For example, considering the Italian data and using a restrictive identification of the investigative body—the National Anti-mafia Investigative Directorate—the evolution of the TSTs from 1997 to 2006 seems very modest: on average the percentage of TSTs on total suspicious transactions is 3.1%, while the annual values range from 0.35% to 6.5% (Figure 2). Using more recent data—2007 second semester—given 5647 suspicious transactions, only 123 (2%) can be considered true. Moreover, the percentage of suspicious transactions and of TSTs are different among Italian regions. Figure 3 shows the percentage of suspicious transactions in each Italian region relative to the overall amount of transactions at a national level, while Figure 4 shows the percentage of TSTs for each Italian region as compared to total suspicious transactions. It is interesting to observe that—as reported in Figure 5—the percentage of TSTs seems positively correlated with the number of suspicious transactions. Furthermore the risk of money laundering can depend on the predicate crimes. Let us consider the most harmful predicate crime—i.e. the organized crime—and its presence in the Italian regions (Figure 6): the percentage of TSTs seems to be positively correlated with the risk of organized crime.

However, nothing can be said a priori about the relationship between the number of reports and their relevance. It might be that this relationship depends on rules effectiveness in influencing the FI in the

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<sup>1</sup> The available evidence for Italy tell us that reports have exploded in the last decade. The number of suspicious transactions has increased in the period 1997-2007—as evidenced in Figure 1—from 840 to 12169.

right direction. If the regulatory design produces an interest alignment between public authorities and professionals, it is likely that there is a direct relationship between the number of reports and their relevance. The public authorities can evaluate ex post if a suspicious transaction is true, i.e. if it is useful for investigations. We assume that the number  $X$  of true suspicious transactions depends on two factors: the effort of the FI and the features of the money laundering technology.

Effort  $e$ , is private information of the FI. It not observable by public authorities. The situation of asymmetric information stems from the fact that the FI, unlike public authorities, is perfectly aware of its effort in designing and implementing the RBA model. However, in the model we propose, some –although imprecise– information on the effort is achieved through a supervisory scheme, where the supervisor is a subject who is able to gather better information on effort as compared to what public authorities are able to do (see below) .

In a perfect information setup, the effort of the FI would be the only determinant of the FIs' compensation scheme, the level of effort could be inferred from the number of TSTs, and the relative compensation scheme applied. The difficulty is that the number of TSTs is likely to be affected by other factors, which are outside the control of both public authorities and FIs, which we indicate with the general word “money laundering technology”. These are represented by a stochastic variable  $T$ . In fact it has been recognized that the money laundering risks can depend on heterogeneous factors (as country or geographical risk, customer risk, product/services risk) and combinations of these (FAFT 2007).

We assume that the effectiveness of the AML scheme depends on the degree of sophistication – economic and/or legal– of the money-laundering techniques used by the agents involved in the criminal business. The variable  $T$  may reflect the level of simplicity that characterizes the technology of the launderer. To simplify the analysis we assume that the variable representing the money-laundering technology can assume only two values:  $T1$  and  $T2$ , with  $T2 > T1$ . We assume that  $T = T2$  with probability  $(1-q)$ , i.e. the money-laundering is rudimental, while  $T = T1$  with probability  $q$ , i.e. the money-laundering is sophisticated<sup>2</sup>.

In the first case, the money laundering technology is favorable to an effective AML action: the number of TSTs is likely to rise, for a given level of FI effort, given that the money-laundering operations are carried out with rudimentary techniques and are thus easier to be detected. In the second case, the money laundering technology is adverse: the number of TSTs tends to decline, given that the attempts at money-laundering are carried out using sophisticated procedures and thus not easy to detect. We assume that the  $T$  is also private information of the FI. Therefore, when information is asymmetric, the FI can have an incentive to dissimulate the true state of the money laundering technology –for example claiming the existence of very sophisticated money laundering techniques– in order to obtain from the TSTs activity private benefits.

Hence, we assume that the number of TSTs are a linear function of both the effort of the FI and the technology of the launderers:

$$X = e + T$$

<sup>2</sup> Alternatively, with a given and constant money laundering technology, we can suppose that the frequency of the predicate crimes - for example the activity of the organized crime - can be variable. We could assume that  $T = T2$  if the predicate crimes are frequent, and then the money laundering operations are more likely to occur, while when  $T = T1$  the predicate crimes are rare, and consequently the money laundering risk.

The FI maximizes its utility,  $\pi_{FI}$ . First, the FI's disutility is assumed to be quadratic in effort:

$$g(e) = \frac{e^2}{2}$$

Second, as far as the compensation scheme is concerned, we propose a sticks and carrots scheme. On the one hand, the public authorities (lawmaker) defines a rating system  $J$  (carrots), which evaluates the degree of compliance of the FI to the AML regime. The rating system is linked to the FIs' reward. Imagine for example a system of tax reimbursement: higher grades of AML reporting means higher levels of tax reimbursement<sup>3</sup>.

On the other hand, the AML regulation can specify a punishment fee  $P_{FI}$  (stick) that can be applied to the FI (where  $P_{FI} \leq P_{FI}^{\max}$ , given a compatibility constraint on the amount of punishment fees, defined below). The objective function of the FI becomes:

$$E(\pi_{FI}) = J - g(e) - E(P_{FI}) \quad (2)$$

As usual, we assume that the utility of the FI cannot drop below a minimum level, or reservation utility, which we label  $\Pi_0$ . In other words, we claim that the FI is able to make no true signaling action. One radical interpretation of the participation constraint ( $E(\pi_{FI}) > 0$ ) is the FI closure: if the monitor action is too costly –for example in situations (regions, customers) where the money laundering technology is very sophisticated– the FIs can simply close their services.

Now we can define the objective function of the public authorities. Public authorities are politicians, which are held accountable at the elections for how they have pleased the voters (Alesina and Tabellini 2004). We assume that voters dislike money laundering, and that FIs cannot influence the elections. Therefore, public authorities wish to maximize social utility by means of AML rules. Therefore, social utility,  $\pi_A$ , coincides with the number of TSTs. Increasing the number of true suspicious transactions increases social welfare the more harmful money laundering is. Public authorities also take into account both the rewards paid to well reporting FIs and the sanctions based on the supervisor's report, i.e. punishment imposed to intermediaries who hide their weak effort by mimicking those facing sophisticated money laundering techniques<sup>4</sup>.

<sup>3</sup> The AML rating can also be linked to the overall prudential regulation, based on the capital requirements. Furthermore, the link between the AML rating and the prudential supervision is even easier where the AML supervisor is a banking or a financial regulator with responsibilities other than those related to the AML regulation.

<sup>4</sup> Given that money laundering is a crime of facilitation, its harmfulness is likely to be country sensitive. Therefore, harmfulness depends on the social damage of the predicate crimes. It has been recognized that each country and its national authorities need to identify the most appropriate AML regime, tailored to address individual country risks. Countries will need to identify the main vulnerability, and accordingly to the FIs, need also to identify higher risks in their business (FAFT 2007). If the harmful of money laundering is low, the related risk is low and then simplified or reduced AML controls should be applied. Therefore, the existence of national guidelines is a necessary condition to implement the principal-agent relationship. The information on the social harmfulness of money laundering is essential for the FIs to define their AML controls –to calibrate the private risk model it is necessary to know the public loss function– and for the supervisor to implement the monitoring action. The provision of good practice guidance is required, given that each country's judgments about the risk are unique (FAFT 2007).

Hence, since compensating the FI through the reward system  $J$  is costly, while the application of the punishment fee,  $P_{FI}$ , represents a revenue for the public authorities –it is a transfer from the FI to the government– then we have:

$$E(\pi_A) = E(X - J + P_{FI}) \quad (3)$$

Finally, we suppose that public authorities can establish a supervisor, paying a cost  $Z$ . As we already mentioned, the supervisor, through his professional skills, is able to imperfectly detect how sophisticated the money laundering technology is, and by this make inference on the level of effort exerted. He observes a signal,  $s$ , that is correlated with  $T$  –then  $s_2 > s_1$ – and produces a report  $\Sigma$ , where  $\Sigma \in (s_1, s_2)$ .

We assume that  $\text{Pr ob}(s_1 | T_1) = \text{Pr ob}(s_2 | T_2) = r$ ;  $\text{Pr ob}(s_1 | T_2) = \text{Pr ob}(s_2 | T_1) = (1 - r)$ , where  $r > \frac{1}{2}$ . In other words, the probability that the supervisor detects the right money laundering technology is  $r$ ; therefore  $r$  represents the quality of the supervisory work (precision of the signal it gathers). The supervisor can thus reduce the asymmetric information between the public agencies and the FIs. As we will see in section 5, when a supervisor is established, the lying FI faces a risk of detection. If the public authorities ask the supervisor to monitor the AML regulation, assessing the risk of money laundering, and obtaining evidence on the true state of the money laundering technology. The FI will be fined for false negative, i.e. for not reporting suspicious transactions in a favorable money laundering environment.

Having defined all the basic assumptions, we can seek to identify the optimal incentive scheme.

#### 4. Designing the Regulation

In a perfect-information framework, sanctions and supervisors have no role. Authorities select just the incentives scheme  $J$ , given the following timing of the model:

- a) Nature chooses the money laundering technology  $T$ ;
- b) The FI learns  $T$ ;
- c) Public authorities design the AML regulation, specifying a benefit for the FI by offering a rating system  $J$  as a function of the effort exerted by the FI;
- d) The FI chooses its effort  $e$  and produces a number of TSTs;
- e) Rating  $J$  is assigned and rewards are paid.

With perfect information the authorities can define an incentive scheme that depends on all the relevant variables, i.e. the effectiveness  $X$ , the effort  $e$  and the level  $T$  of money-laundering technology:

$$E(\pi_A) = q(T_1 + e_1 - J_1) + (1-q)(T_2 + e_2 - J_2) \quad (4)$$

subject to the participation constraint of the FI. If we normalize the reservation utility to zero, the participation constraint means that  $J_i > g(e_i)$  with  $J=1,2$ . In the optimal regulation under symmetric information, public authorities equate the marginal private cost of the FI effort in producing TSTs with the marginal public value of its number of TSTs ( $e_1 = e_2 = 1$ ) and reward the FI just enough to make it fully rules compliant, independently from the state of the money laundering technology:

$$J(X_1) = J(X_2) = \frac{e^2}{2} = \frac{1}{2} \quad (5)$$

The rating reward is fixed, and each FI will produce the optimal effort in every situation. The compliance to the RBA is complete.

The situation radically changes if we assume, mimicking the real world, that public authorities are outsiders to the financial industry, and can observe neither the ML technology nor the effort of the FI. In this setup, the rating scheme depends only on the number of the TSTs. The design of the AML regulation must thus fulfill the two incentive compatibility constraints:

$$J_2 - \frac{e_2^2}{2} > J_1 - \frac{(e_1 - dT)^2}{2} \quad (6)$$

$$J_1 - \frac{e_1^2}{2} > J_2 - \frac{(e_2 - dT)^2}{2} \quad \text{where } dT = T_2 - T_1 \text{ and assuming } e_1 > dT$$

In this case the information advantage of the FI produces a rent: when the money laundering technique is rudimental, the FI can exert a suboptimal effort, claiming that a low number of TSTs is due to the adverse (sophisticated) environmental situation. The possibility for the FI to exploit the informational rent is clearly greater when the AML regime adopts a RBA rather than a rule-based approach.

## 5. Introducing the Supervisor

Can the outcome of the regulation be improved introducing the Supervisor? The role of the latter is to produce a report that is useful to evaluate the RBA adopted and implemented by the FI, improving the possibility to disentangle the contribution of the money laundering techniques from that of the effort in determining the AML outcome. In practice, the supervisor should monitor the FIs in order to evaluate the risk management system and allow relevant comparisons between the FIs (FAFT 2007). The supervisory action should be based on a comprehensive understanding of FIs' activity as well as of the money laundering risks to which they are exposed (FAFT 2007).

Suppose that the procedure goes as follows. If the number of TSTs is high, the public authorities are satisfied, reward the FI with high rating, and there are not further actions. If the number of TSTs is low, the Supervisor is asked to monitor in depth the FI, using both off site and on site inspections, in order to

evaluate how difficult is to assess and manage money laundering risk in each specific situation. If the Supervisor concludes that the money laundering risk is relatively easy to detect (rudimental money laundering techniques) the low number of TSTs depends on the suboptimal behavior of the FI in building up its AML model; therefore the FI suffers the punishment  $P_{FI}$ .

Now the timing is:

- a) Nature chooses  $T$  and the signal  $s$ ;
- b) The FI learns  $T$  but has not yet observed  $s$ ;
- c) The public authorities design the AML regulation, specifying a benefit for the FI by offering a rating system  $J$  as a function of the number  $X$  of TSTs but also a punishment  $P_{FI}$ , depending on the result of the report  $\Sigma$  of the supervisor ;
- d) The FI chooses its effort  $e$  and produces a number  $X$  of TSTs;
- e) The public authorities ask the Supervisor to intervene with probability  $\gamma(X)$ ;
- f) The supervisor realizes the report  $\Sigma$ ;
- g) All transfers are realized.

Under which conditions the public authorities can obtain better results in the AML regulation defining a supervisory structure? Given that in equilibrium with supervision a relationship between benefits and costs holds, it is possible to show (Kofman and Lawarree, 1993) that the establishment of the Supervisor is optimal, i.e.  $\gamma > 0$ , if the threat of fines for the FI,  $P_{FI}$ , is greater than a specific value  $k(r, z)$ , where:

$$k(r, z) = \frac{zq}{(1-q)(2r-1)} \quad (7)$$

We can interpret  $k(r, z)$  as the opportunity cost of establishing a Supervisor. This opportunity cost depends on: a) the revenue  $z$  of the Supervisor, where a higher revenue means lower convenience; b) the quality  $r$  of the report, where a lower quality means lower convenience; c) the likelihood  $q$  of the supervisory action, where a more frequent use –approximated by the probability of facing sophisticated money laundering techniques, given that the public authorities ask the Supervisor to intervene when the number of TST is low– increases the costs and then decreases convenience.

If the maximum level of the punishment fee is greater than the supervisory opportunity cost, i.e. if  $P_{FI} > k(r, k)$ , the existence of a Supervisor is likely to produce a more effective design of the AML regulation.

Therefore, in equilibrium the given level of public utility,  $\pi_A^o$ , is a function of the features of the punishment fee  $P_{FI}$ , the quality of the supervision  $r$ , and the cost of supervision  $z$ . Using a linear expression normalized to the level of public utility does not have relevant consequences and simplifies our presentation. Then:

$$1 = \alpha_1 P_{FI} + \alpha_2 r - \alpha_3 z \quad (8)$$

The relationships between the three crucial variables are represented in Figure 7. Given the cost of supervision, the equilibrium relationship  $w$  between the quality of supervision and the punishment fee is inverse: an increase of the quality of the supervision decreases the level of the punishment. The correct interest alignment of the FI can be obtained with both better quality in supervision and less punishment. In the region YS the existence of supervision is optimal, while in the region NS the use of the supervisor is not convenient: give its cost, the quality of the signal is too poor, and vice versa. Furthermore, other things left equal, if the costs of supervision decreases the function  $w$  shifts down and the no-supervision region shrinks.

Finally, we can suppose that the cost of supervision depends on the quality: the public authorities should increase the payment  $z$  in order to improve the quality  $r$  of the supervisory action. If the relationship between cost and quality is simply  $z = a_4 r$ , the equilibrium relationship  $w$  between the quality of supervision and the punishment fee depends on two different parameters: the simple weight  $a_2$  of the quality and the composite weight  $a_3 a_4$  of the cost. In fact, only if  $a_2 > a_3 a_4$ , the relationship between the quality of supervision and the punishment fee remains negative. This inequality implies an efficient condition in the supervisory setting: if an increasing level of supervisory quality can be achieved with a less than proportional increase in the overall cost, the effect on regulatory effectiveness is positive.

## 6. Conclusions

A RBA in AML regulation is not an easy option, and there may be barriers to overcome when implementing the necessary measures (FAFT 2007). This exercise can be useful given that the new European AML legislations –which are consistent with the RBA– have been established but not yet fully implemented; therefore pointing out its potential pros and cons can provide general guidelines in evaluating steps forward.

In this paper we assess the recent trend in Anti-Money Laundering (AML) regulation towards the Risk-Based Approach. By adopting the principal-agent methodology we manage the incentive problems that arise in a three-layer hierarchy, which includes public authorities, financial institutions (FIs) and supervisors. We show that if there is asymmetric information, a design of AML regulation which is consistent with the RBA depends on three crucial conditions.

First, FIs' participation constraint requires that the incentive scheme is well balanced, meaning that both rewards and penalties must be designed, in order to minimize the difference between the private costs in implementing a RBA model and the public gains in collecting useful information against money laundering. In order to link the private risk model with the public losses national guidelines it is required that the higher social harm caused by money laundering means higher risk to be assessed and managed by the private AML controls. Risks and priorities may vary from one country to another (FAFT 2007 and 2008).

In our view the national authorities have to explicitly disentangle the relative harmfulness of different predicate crimes. Actually several AML legislations cover any type of criminal offence, despite its anti-social gravity; we wonder if it should be better to have a list of the predicate crimes, depending on their relative social costs.

As far as the rewarding scheme is concerned, we propose a rating system, which is linked to the banking supervisory setting. The link between the AML rating and the prudential supervision is easier to define where the AML supervisors are either banking or financial regulators with responsibilities other than those related to the AML regulation.

The rewarding scheme hypothesis is a novel proposal, which hopefully deserves attention in the AML legislation design. On this respect an interesting laboratory could be the Italian case, where the sensibility toward a regulatory strategy that provides both sanctions and incentives is growing (Draghi 2007) and the AML supervisor is part of the authority which is in charge for prudential supervision. Excessive fines per se do not incentive the FIs to improve their action in AML. The result can be useful to evaluate the effectiveness of the enforcement setting of the new European legislations.

For example, in the Italian case the law strengthens the apparatus of sanctions and also confirms the criminal offence of non compliance with some binding requirements for FIs. We wonder if a decriminalization of the criminal offence (Draghi 2007) could improve the alignment of interest of the FIs, avoiding biased incentives.

Second, given the incentive scheme of the FIs, the quality of the supervision can be a good substitute for the severity of punishments: the more effective the supervisory action in monitoring ex post the money laundering risk, the more likely the effectiveness of the FIs in building up ex ante their AML models.

Third, other things being equal, if the cost of supervision depends on its quality, also the efficiency of the supervisory agencies matters. The importance of the quality and the efficiency of the supervision is particularly relevant again in the Italian case. With the Legislative Bill n.231, the Ufficio Italiano Cambi (UIC) –the public agency which represented the AML supervisor in the Italian institutional setting– is replaced by the Unità di Informazione Finanziaria (Financial Intelligent Unit), an autonomous body incorporated into the Bank of Italy. The UIF-Bank of Italy will face the challenge to implement the RBA in the AML supervision in order to assist and to monitor FIs in a more effective way while making the transition to a RBA system. At the same time, in the Italian context the UIF, being the crucial node in a complex web of relations (Draghi 2007), can become the main stakeholder in adopting a RBA in combating money laundering. The UIF- Bank of Italy can be the body which is best placed to provide technical guidance to the FIs and to promote the public action in defining the national guidelines in assessing and evaluating the country money laundering risks.

Finally, this theoretical framework can be usefully extended in different ways. First, the model is primarily addressed to the FIs. However, the Third Directive on Money Laundering and its RBA is appropriated for designated non-financial business and professions as well. Our approach can be applied in wondering how correct the interest alignment is when the AML regulation is applied to non financial firms and professionals.

At the same time, the AML regulation aims combating terrorism financing. The application of a RBA to terrorism financing has both similarities and differences as compared to money laundering regulation

(FAFT 2007). The application of the RBA to terrorism financing seems to be at least problematic (Pieth 2006). Again we can wonder if the regulation design is consistent with the principle of interest alignment when FIs and other non-financial professionals need to assess and manage the risk of terrorism financing, which is more difficult to evaluate due to considerations such as the estimation of the social harm, the features of the transactions involved in such criminal activities, and the fact that funds can come from legal sources as well.

## 7. References

- Alesina A. and Tabellini G. (2004), *Bureaucrats or Politicians*, NBER Working Papers, n.10141, Cambridge, Massachusetts.
- Becker G. (1968), *Crime and Punishment: An Economic Approach*, *Journal of Political Economy*, vol.76, p.169-217.
- Baron D. and Myerson (1982), *Regulating a Monopolist with Unknown Costs*, *Econometrica*, vol.50, p.911-930.
- Barone R. and Masciandaro D. (2008), *Worldwide Anti- Money Laundering Regulation: Estimating Costs and Benefits*. *Global Business and Economics Review*, (forthcomings).
- Bowles R. , Faure M. and Garoupa N. (2005), *Forfeiture of Illegal Gain: An Economic Perspective*, *Oxford Journal of Legal Studies*, Vol. 25(2), p.275-295.
- Chong A. and Lopez - de- Silanes F. (2006), *Money Laundering and its Regulation*, Working Paper n. 590, Research Department, Inter-American Development Bank, Washington D.C.
- Costa S. (2008), *Implementing the New Anti - Money Laundering Directive in Europe: Legal and Enforcement Issues. The Italian Case*, *Global Business and Economics Review*, (forthcomings).
- Filotto U. and Masciandaro M. ( 2001), *Money Laundering Regulation and Bank Compliance Costs. Economics and Italian Experience*, *Journal of Money Laundering Control*, 2001, vol.5, n.2, Autumn, pp. 133-145.
- Financial Action Task Force (2007), *Guidance on the Risk Based Approach*, Paris.
- Financial Action Task Force (2008), *Money Laundering and Terrorist Financing Risk Assessment Strategies*, Paris.
- Draghi M. (2007), *The Prevention and Suppression of Money Laundering* , Parliamentary Committee of Inquiry into Mafia-like Criminal Organizations, Bank of Italy, Rome.
- Gold M and Levi M. (1994), *Money Laundering in UK: An Appraisal of Suspicious - Based Reporting*, Police Foundation, London.
- Hutter, B.M. (2005), *The attractions of risk based regulation: accounting for the emergence of risk ideas in regulation*, Discussion Paper, LSE Centre for Analysis of Risk and Regulation, n.33, London.
- Katz E. (2007), *Implementation of the Third Money Laundering Directive. An Overview*, *Law and Financial Markets Review*, vol.1, n.3,
- Kofman F. and Lawarrée (1993), *Collusion in Hierarchical Agency*, *Econometrica*, vol. 61, n.3, p.629-659.
- KPMG (2003), *Money Laundering: Review of the Regime for Handling Suspicious Activity Reports*, National Criminal Intelligence Service, London.
- Levi M. (2002), *Money Laundering and its Regulation*, *The Annals of the American Academy of Political and Social Science*, Vol. 582, p.181-194.
- Masciandaro D. (1998), *Money Laundering Regulation: the Microeconomics*, *Journal of Money Laundering Control*, vol.2, n.1, pp. 49-59.
- Masciandaro D. (1999), *Money Laundering: the Economics of Regulation*, *European Journal of Law and Economics*, n.3, pp. 225-240.
- Masciandaro D. Takatz E, and Unger B. (2007), *Black Finance. The Economics of Money Laundering*, Edward Elgar, Cheltenham, UK.

- Maskin E., Riley J. (1984), Monopoly with Incomplete Information, *Rand Journal of Economics*, vol.15, p.171-196.
- Mitsillegas V., Gilmore B. (2007), The EU Legislative Framework against Money Laundering and Terrorist Finance: A Critical Analysis in the Light of Evolving Global Standards, *International and Comparative Law Quarterly*, Vol. 56 (1), p.119-140.
- Naylor R.T. (2002), *Wages of Crime: Black Markets, Illegal Finance and the Underworld Economy*, Cornell University Press, Ithaca.
- Pieth M. and Aiolfi G. (2003), *Anti - Money Laundering: Leveling the Playing Field*, Basel Institute of Governance, Working Paper, n.1.
- Pieth M. (2004), *A Comparative Guide to Anti-Money Laundering*, Edward Elgar, Cheltenham, UK.
- Pieth M. (2006). Criminalizing the Financing of Terrorism, *Journal of International Crime Justice*, Vol.4, p. 1074-0186.
- Posner E.A. (2000), *Agency Models in Law and Economics*, John Olin Law & Economics Working Paper n.92, University of Chicago.
- Proctor A. (2005), Supporting a risk - based anti - money laundering approach through enforcement action, *Journal of Financial Regulation and Compliance*, vol.13, n.1, p.10-14.
- Quirk, P.J. (1996), *Macroeconomic Implications of Money Laundering*, International Monetary Fund, Washington D.C.
- Ross S. and Hannan M. (2007), Money Laundering Regulation and risk-based decision making, *Journal of Money Laundering Control*, vol.10, n.1, pp. 106-115.
- Reuter P. and Truman E.M. (2004), *Chasing Dirty Money: the Fight Against Money Laundering*, Institute for International Economics, Washington, D.C.
- Schneider F. (2008), Money Laundering and Financial Means of Organized Crime: Some Preliminary Empirical Findings, *Global Business and Economics Review*, (forthcomings).
- Takatz E. (2007), A Theory of “Crying Wolf”: The Economics of Money Laundering Enforcement, IMF Working Paper, n.81, International Monetary Fund, Washington D.C.
- Tanzi, V. (2000), Money Laundering and the International Financial System, in *Policies, Institutions and the Dark Side of Economics*, Edward Elgar, Cheltenham, 186.
- Thomas S.B. (2001), “Goodbye Knowing Receipt. “Hello” Unconscientious Receipt, *Oxford Journal of Legal Studies*, Vol. 21(2), p.239-265.
- Tirole (1986), Hierarchies and Bureaucracies: On the Role of Collusion in Organizations, *Journal of Law, Economics and Organization*, n.2., p. 181-214.
- Walker J. (1999), How big is the Global Money Laundering? *Journal of Money Laundering Control*, vol.3, n.1.

## 8. Tables and Figures

**TABLE 1 - Implementation of the 3rd Anti-Money Laundering Directive – State of Play (December 2007)**

	Project establishment	Project before submission to the Government	Project before submission to the Parliament	Expected date of implementation	Expected date Directive becomes effective
AUSTRIA	1 July 2007 (forwarding of draft subject to official appraisal)	31 October 2007	20 November 2007	5 December 2007	15 December 2007
BELGIUM	The project is almost finalized (only a matter of some fine tuning)	On the 10th on June 2007 we had federal elections. However until today a new government has not been formed.			
BULGARIA	August 3, 2007	Draft Law on Amendments and Complements to the Bulgarian Law on Measures against Money Laundering adopted by Bulgarian Government on September 13, 2007.	September 2007	By the end of November 2007	3 days following the adoption
CYPRUS		Approved by the Council of Ministers on 21.9.2007	To be submitted on 2.10.2007	End of November 2007	One week after the adoption by the Parliament upon its publication in the Official Gazette
CZECH REP.	Internal Consultation Process started on 24 October 2006 External Consultation Process started on 24 January 2007	Tabled to the Government (incl. Legislative Council of the Government) on 24 April 2007	Approved by the Government on December 4, 2007 and tabled to the Parliament		Date of entry into force proposed in the draft: 15 December
DENMARK					Entered into force 1 March 2006 and 1 January 2007
ESTONIA	January 2007	October 2007	November 2007	19 December 2007	Beginning of January 2008
FINLAND				First quarter of the year 2008	First quarter of the year 2008
FRANCE	Ongoing		Beginning 2008		

GERMANY	September 2005	October 2007	November 2007	January 2008	February 2008
GREECE			End of October 2007	End of November 2007	15 December 2007
HUNGARY		October 2007	Second half of October 2007	28 November 2007	15 <sup>th</sup> December 2007
IRELAND		October 2007	End 2007		Mid - 2008
ITALY				End of November 2007	15 December 2007
LATVIA		Approved on 11 December 2007		January 2008	
LITHUANIA		Approved by the Government on 11.07.2007	Submitted on 19.07.2007	Early 2008	14.12.2007
LUXEMBOURG		16 November 2007	5 December 2007	As soon as possible	
MALTA		Mid – November 2007		Mid – December 2007	January 2008
NETHERLANDS			December 2007	Beginning 2008	
POLAND	July 2007	October 2007	November 2007	December 2007	15 <sup>th</sup> of December
PORTUGAL		After the public consultation process, the Working Group has already submitted the Project to the Portuguese Government.	The project of Law has been approved by the Council of Ministers in November 22 <sup>nd</sup> and sent to the Parliament for final approval (as Law)		
ROMANIA	yes	October 2007	November 2007	December 2007	December 2007
SLOVAKIA	November 2006	Passed through Legislative Council of the Government on 2007-08-14 Draft Law approved by the Government on 2007-08-22	Submitted to the Slovak National Council on 2007-08-26. Expected to be included on the agenda of its October session		Proposed to enter into force on 2007-12-15
SLOVENIA		Submitted on 27 March 2007	Submitted on 19 April 2007	Adopted on 22 June 2007	The new AML/CFT law entered into force on 21 July 2007.
SPAIN					
SWEDEN	On March 16, 2006 the government appointed a committee of inquiry.	On March 30, 2007 the conclusions of the committee was published.  On April 24, 2007 the consultation period began.	March 2008	May – June 2008	1 July 2008

		On 27 July, 2007 the consultation period ended.			
UK	December 2005	July 2006 First public consultation  January 2007 Second public consultation	Final legislation submitted to Parliament July 2007	25 <sup>th</sup> July 2007  Opportunity for debate of the regulations will expire at about the end of October 2007, subject to the UK Parliamentary timetable.	15 <sup>th</sup> December 2007

**FIGURE 1 - SUSPICIOUS TRANSACTIONS (1997-2007)**

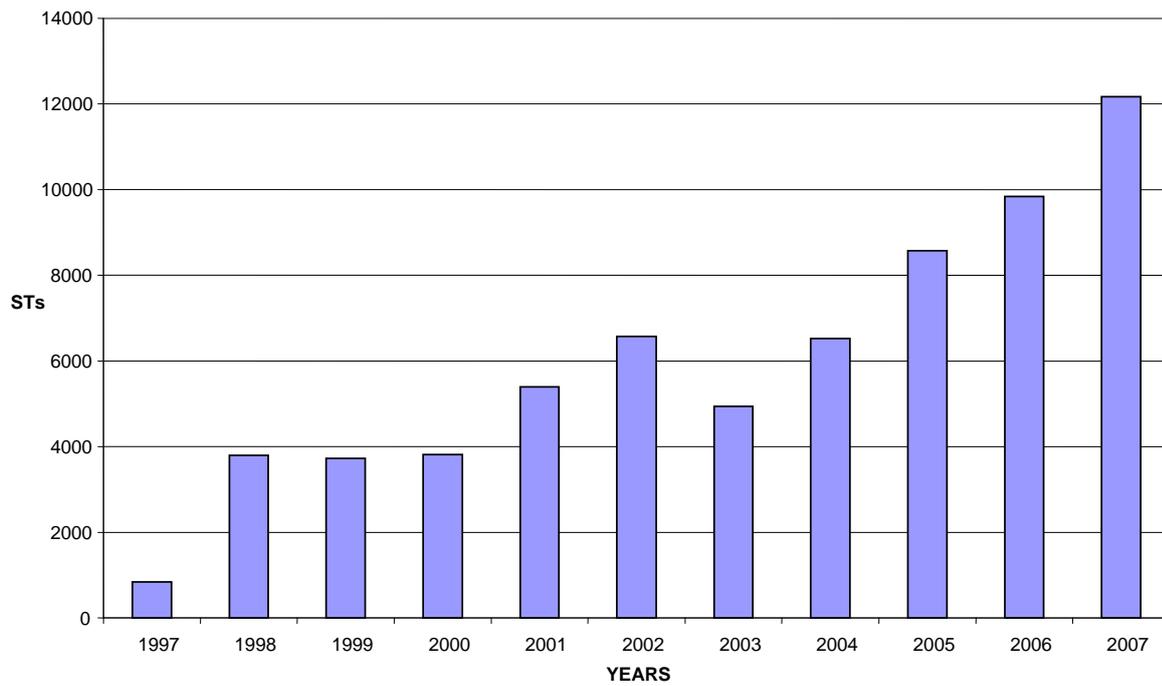
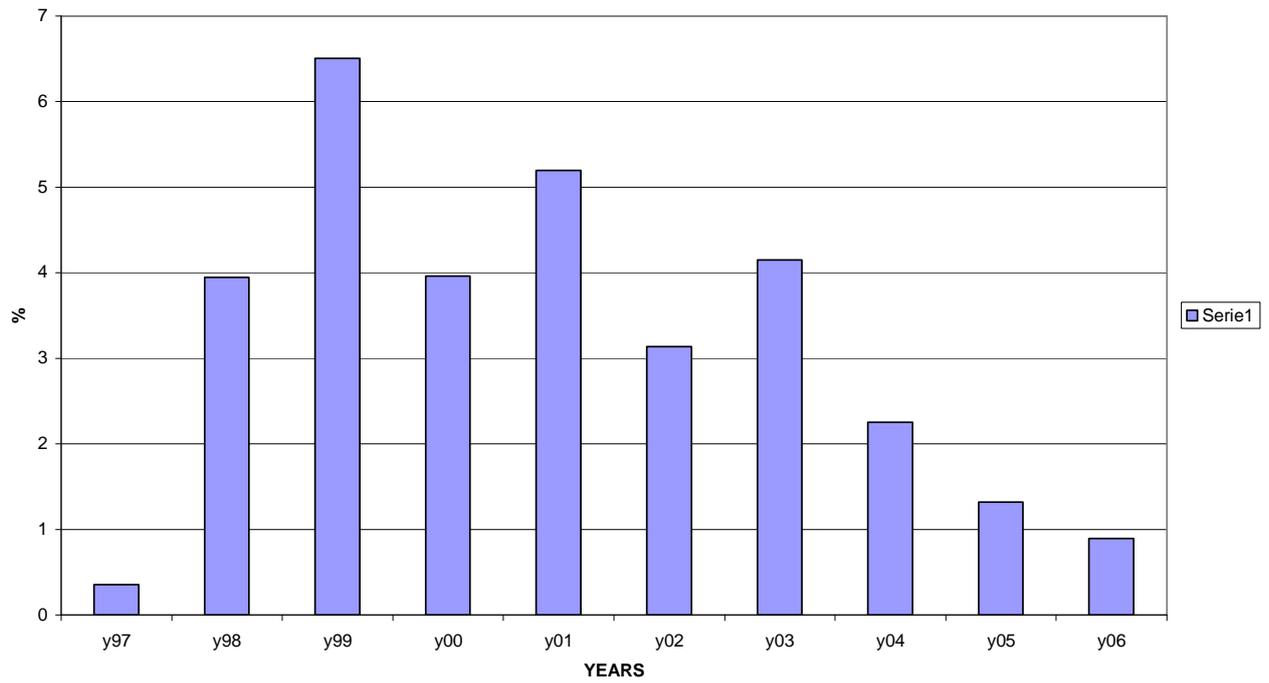
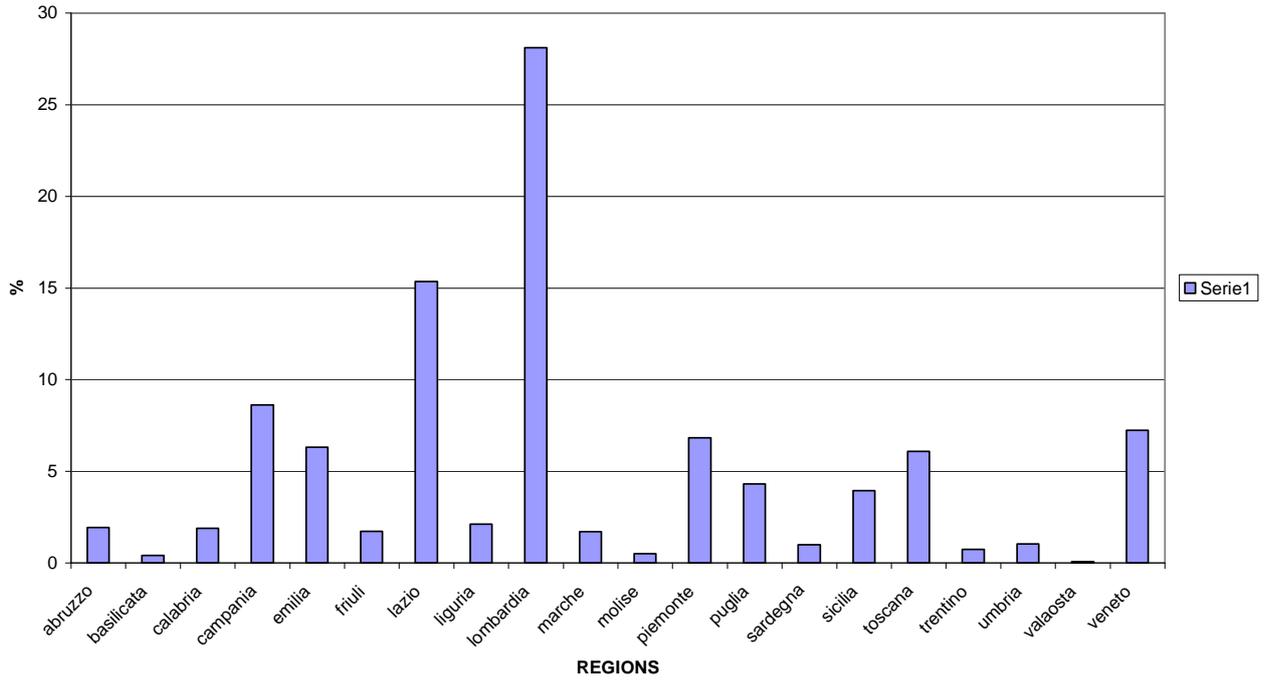


FIGURE 2 : TSTs on STs (1997-2006)



**FIGURE 3 SUSPICIUOS TRANSACTIONS (2007, 2nd semester)**



**FIGURE 4 TRUE SUSPICIOUS TRANSACTIONS (2007, 2nd semester)**

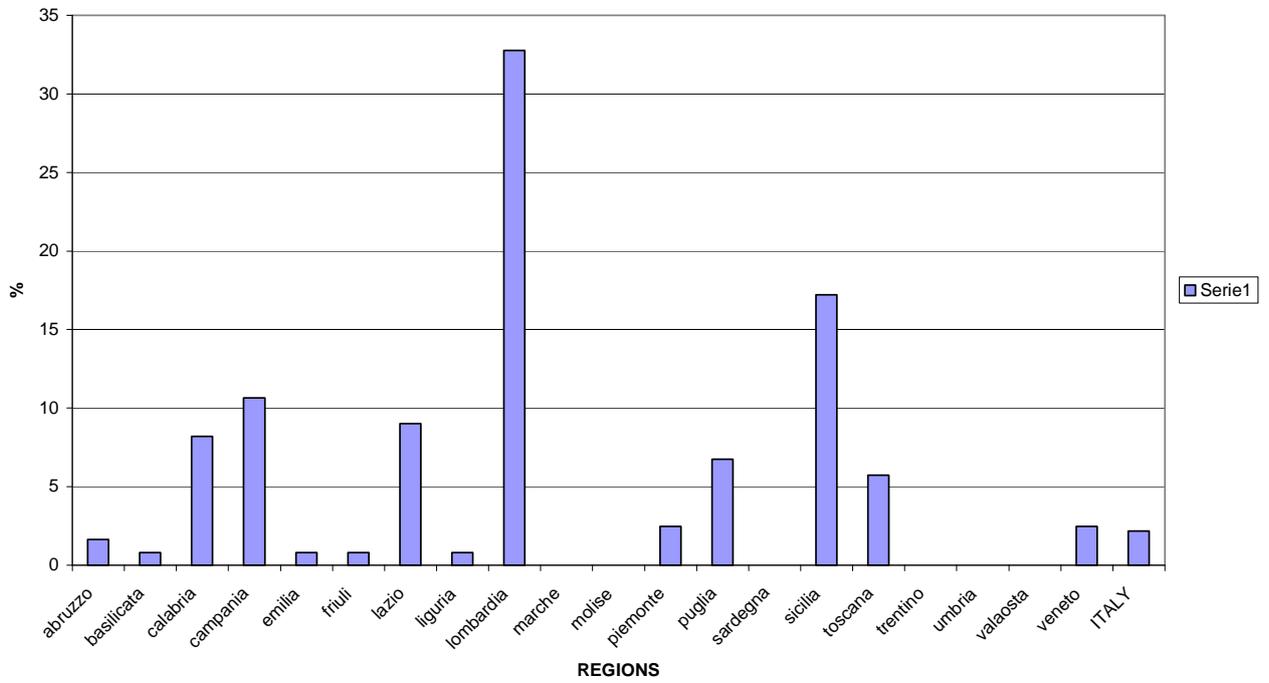


FIGURE 5 - SUSPICIOUS TRANSACTIONS AND TSTs

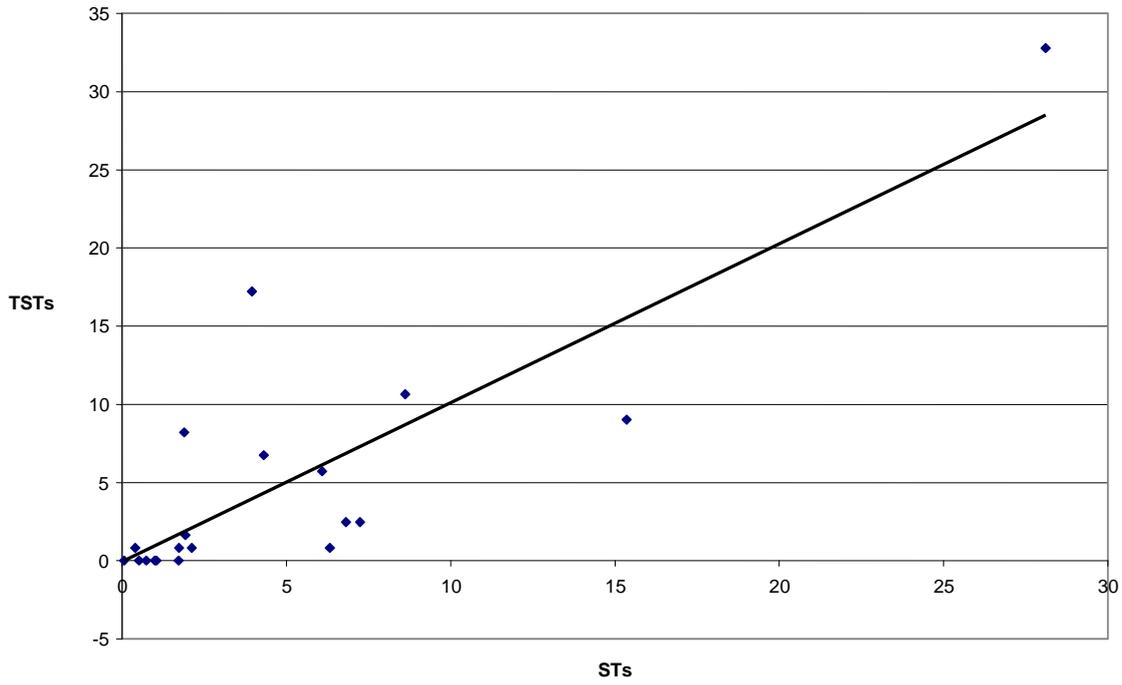


FIGURE 6 - TSTs AND RISK OF ORGANIZED CRIMES

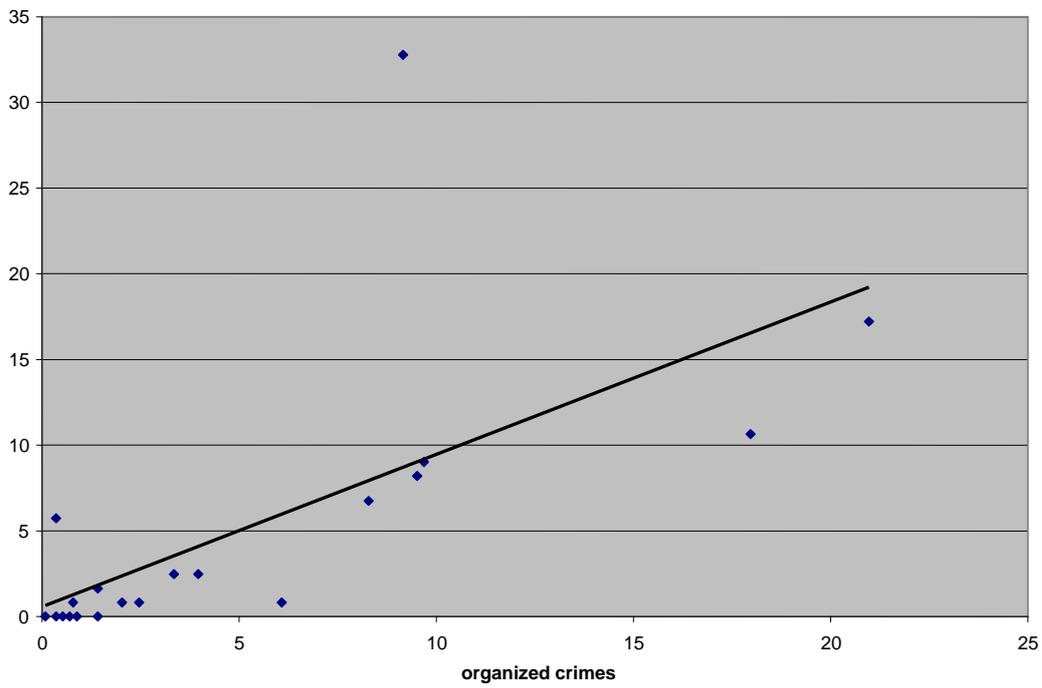


FIGURE 7 – SUPERVISORY SETTING

