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An Incentive Based Approach to Combat Money Laundering

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Abstract

In this paper both a Pigovian and an incentive based approach to combat money laundering are studied. The analysis departs from the consensus that financial institutions play a central role in the combat against money laundering since an efficient report system depends on the willingness of banks to cooperate with competent authorities. The paper shows that a Pigovian taxation on the profit of banks that are not committed to report suspicious activities may lead the bank to follow more closely the Basle Convention prescription 'know your customer' by reducing the number of banking accounts. The incentive based approach yields an efficient contract if the competent authorities know the type of the institution. The creation of a contract under imperfect information whose aim is to stimulate banks with particular willingness to cooperate faces the shortcoming of hidden information. This may damage the efficiency of the anti-money laundering regulation.

1. Introduction

There is a consensus in the literature that financial institutions play a central role in the war against money laundering. Recommendation 16 of FAFT states that '[i]f financial

institutions suspect that funds are connected to criminal activity, they should be permitted or required to report promptly their suspicious to the competent authorities.' A great deal of confiscation of proceeds from illegal activities departs from a report of suspicious activity made by the financial institution which is being used to launder the money. Further investigations carried on by competent authorities may lead to the prosecution of offenders and confiscation of the proceeds from crime.

Theoretically speaking the problem is easier than handled in practice. The main difficulty faced by competent authorities, is that they do not have full or adequate knowledge of the bank intrinsic willingness to cooperate by reporting suspicious activities. Masciandaro (1999, p. 237) by approaching the effectiveness of the Italian regulation has concluded that "the main reason for such a serious failure can be found in the missed chance to really involve banks in the fight against money laundering, that is to say in the impossibility of putting the concept of active cooperation into real practice." The point focused by this author is that the burden of an efficient report system cannot fall entirely on banks since they face legal schemes that create wrong incentives that stimulate the non-cooperation behavior.

This evidence is according to Ping's findings about financial institutions in the world. He states that "[a]lthough banks are the most vulnerable institutions to money laundering activities, according to the complex schemes of money laundering; it is not enough only to impose the obligation of reporting suspicious transactions on them." [Ping (2005, p. 253)]. It is also necessary to create an incentive based approach in which a financial institution discloses promptly information on any suspicious transactions. This view is according to Stessens (2000, p. 172) which states that "[i]n order to obtain co-operation from financial institutions that they will not be held responsible, either

civilly or criminally, if they inform the authorities responsible for combating money laundering of facts which are covered by banking secrecy."

One of the shortcuts that financial institutions face when decide to cooperate is the risk of facing criminal liability for reporting suspicious transactions. A rigid application of the bank secrecy principle may induce banks not to cooperate with competent authorities. In this vein the creation of a proper environment of cooperation between financial institutions and authorities depends on a satisfactory solution to the risk of criminal liability for financial institutions that carry out a suspicious transaction.

By studying the effectiveness of the anti-money laundering regulations and the characteristics of the compliance costs involved for banks Masciandaro and Filotto (2001) have concluded that the 'incentive approach' allows us to conclude that if the conduct of a certain economic actor is not as expected or hoped for, the reason must be sought by analyzing the game rules, formal and informal. In their analysis, the game rules are represented primarily by the anti-money laundering laws. This reasoning is also supported by Stessens (2000, p. 424) who states that "[t]he 'carrot and stick' approach which has been practiced towards banks, which consists of combining the threat of criminal sanctions with the capacity for banks to obtain exonerations by co-operating with the government, seems to work." In the framework of fighting money laundering the goal of the competent authorities − the principal − is to make financial institutions − agents − to report promptly their suspicious on financial transactions connected to criminal activity.

The use of the Economics of Contracts to approach law issues has been widespread in the literature and according to Parisi (2000, p. 400) "[t]he present generation of legal scholars has witnessed an irreversible process of transformation in contemporary legal science, and it is hard to imagine legal science growing apart of the

rigorous methodology of law and economics." In the field of Regulatory Economics for instance, the mechanism design approach assumes that a central agency – the regulator or the principal – is entrusted with the power of regulating the concessionaries of public services – agents – in order to make them to follow the contract established to provide the public good. The aim of these studies is to assess the efficiency of the legislation and to establish mechanisms that made the concessionaries of public services to follow the contracts. [See Crew and Kleindorfer (2002)]. By comparing this set up with the scheme of combating money laundering it is possible to make an analogy in which the authorities are the principal or the regulator and the financial institutions is the agent, that is, the concessionary of bank services.

The first aim of this paper is to show that the use of financial institutions to launder money may arise as the consequence of a large production that makes the banks not to follow the Basle convention principle 'know your customer'. It is widely accepted that the operation of a bank without the necessary care to prevent money laundering produces a negative externality for the society, that is, money may be laundered by using the regular services of banking account.

By using a welfare analysis it is shown is the next section that the production, that is the number of bank accounts, offered by the financial institution is in general higher than the production that maximizes the social benefit. In this vein the bank maximizes its private benefit, that is, its profit, not taking into consideration the harmful externality of its action, that is, the use of its accounts to launder dirty money. The paper shows that a possible solution to make the bank to choose the optimal solution from a social perspective is the introduction of a Pigovian taxation on the price of the bank services. Although this solution is shown to be effective from a theoretical point of view it is hard to be implemented in practice.

In this vein the second aim of this paper is to show that an incentive based approach may lead the bank to choose the same production that maximizes the social benefit without the shortcomings of a Pigovian taxation. Hence a formal contract is designed in which the regulator establishes rewards and penalties in order to make the agent, that is, the financial institution, to operate legally by choosing a smaller production which raises the chance of identification of suspicious activity.

However, it is widely known that the creation of a regulation or mechanism such as the one may give rise to distortions and inefficiencies due to problems that became known in the literature as hidden information and moral hazard [See Salanié (1999)]. In the present treatment we highlight these issues by considering the existence of financial institutions with different productivities and willingness to cooperate with competent authorities.

The hidden information refers to a situation where the bank has private information about its inability or unwillingness to report suspicious activity of money laundering to competent authorities. Public regulators are often at an informational disadvantage with respect to the regulated entity. The information about the willingness of cooperating with competent authorities is hidden from them. Hence the approach adopted here considers that the party proposing the contract, that is, the competent authority is the uniformed one and this situation may lead to a problem of moral hazard since a bank may try to hide its type in order to receive a better contract.

By following this approach its is possible to show that the loss due to inefficiency is minimized and the production that the bank chooses is the one that maximizes the social benefit and not its private benefit. This view is stressed by Masciandaro (1999, p.238) who states that "we wish to highlight how anti-money laundering regulation, due to a well designed system of incentives and costs for

financial intermediaries, may evolve towards the achievement of higher effectiveness goals while improving its efficiency standards as well. The optimal solution is therefore to orient policy efforts in the direction of an effective-efficient regulation."

This paper is structured as follows. In the next section a Pigovian analysis of the anti-money laundering regulation is performed and in section 3 an incentive based approach is formalized. Section 4 concludes.

2. A Pigovian Analysis of the Anti-Money Laundering Regulation

The central problem of anti-money laundering regulation, as Masciandaro (1995) pointed out, is to design a system of procedures and incentives that induces the agents, that is financial institutions, to act effectively with regard to the production of the necessary information towards suspicious activities. Due to intensive use of Information and Communication Technologies (ICT) by financial institutions they may have a large production that maximizes their profits but makes them unable to perform a proper screening against money laundering.

In this section we show that a Pigovian taxation on the price of bank services reduces the number of banking accounts and makes the bank to follow more closely the Basle convention principle 'know your customer'. The aim of this taxation is to make the bank to choose the amount of production that maximizes the social benefit of its production by taking into consideration that its production may produce a harmful externality for the society, that is, money laundering.

Let us assume that financial institutions are eligible for being involved in legal and illegal activities concomitantly. If it decides not to cooperate then the financial

institution operates illegally and in fact some financial institutions may decide to act accordingly. This view is based on an adapted concept of 'legal-criminal economy' developed by Masciandaro (1999) and used by Araujo and Moreira (2005)[1]. Let us consider that the profit of the bank under legal operation, Π_l, is given by the following expression:

$$\Pi_l = py(k_l) - (r+c)k_l \tag{1}$$

Where p is the price of bank service, y is the amount of service provided by the bank, which may be considered as the number of banking accounts and c stands for compliance costs that express the commitment of the financial institution with the combat of money laundering; k_l stands for the stock of capital goods. This specification assumes that banks are intensive in Information and Communication Technology (ICT) and a number of authors adopt the hypothesis that a production function intensive in capital goods conveys properly the functioning of this kind of technology. [See Boucekkine et al. (2004)]. In order to obtain closed formed solutions let us assume that $y(k) = Ak^\alpha$. The term A captures the productivity of the capital goods and this is a characteristic particular to each financial institution. The optimal amount of capital goods is given by the maximization of the profit function that yields:

$$k_l* = \left(\frac{A\alpha p}{r+c}\right)^{\frac{1}{1-\alpha}} \tag{2}$$

By substituting this result into the production function yields the following production under legal operation:

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[1] In the 'legal-criminal economy' an agent of the legal sector may choose for being occasionally involved in an illegal activity.

$$y_l^* = A\left(\frac{A\alpha p}{r+c}\right)^{\frac{\alpha}{1-\alpha}} \tag{3}$$

This result shows that the higher the compliance cost, that is, c, the smaller the production of the bank, that is, the number of banking accounts: the commitment of the bank to report suspicious activity may lead to a smaller production than in the case of an illegal operation. If the bank chooses the illegal operation it does not face the compliance costs and it is able to obtain a higher production that is given by:

$$y_i^* = A\left(\frac{A\alpha p}{r}\right)^{\frac{\alpha}{1-\alpha}} \tag{4}$$

The fraction of production that is left behind due to the legal operation of the financial institution may be viewed as a measure of its commitment with the 'Know your customer' recommendation of the Basle Convention. In this vein the aim of the competent authority is to create incentives that may induce the bank to choose the smaller production of the legal operation. One possible way of reaching this aim is to introduce a Pigovian Taxation on the price of bank services. By adopting this approach the profit function for the financial institution that decides not to cooperate to combat money laundering is given by the following expression:

$$\Pi_P = (p-t)y(k_P) - rk_P \tag{5}$$

The term Π_P stands for the profit of the financial institution by facing the Pigovian taxation. From the profit maximization behaviour it yields the following stock of capital goods:

$$k_P^* = \left[\frac{A\alpha(p-t)}{r}\right]^{\frac{1}{1-\alpha}} \tag{6}$$

By substituting this stock of capital into the production function yields:

$$y_P* = A\left[\frac{A\alpha(p-t)}{r}\right]^{\frac{\alpha}{1-\alpha}} \tag{7}$$

By comparing this expression with expression (4) we conclude that the production in face of a Pigovian Taxation is smaller than the production without the taxation. After some algebraic manipulation it is possible to show that the Pigovian taxation that makes the production in the illegal operation be equal to the legal operation is given by:

$$t* = \frac{cp}{c+r} \tag{8}$$

By applying this taxation on the price of financial institutions that do not cooperate with the competent authorities to combat money laundering make their production to be same of the production of a bank that intends to cooperate with competent authorities. In order to measure the difference between the two productions, that is, under illegal and 'Pigovian' operations consider that the profit rate under the late operation is rewritten as[2]:

$$\Pi_\gamma = (1-\gamma)py(k_\gamma) - rk_\gamma \tag{9}$$

Expression (9) focuses in the diminution of production rather than in the increase in the price due to the taxation. It shows that a fraction $0 < \gamma < 1$ of output is being left aside. By equalizing expression (5) to (9) it is possible to conclude that they yield the same profit for the bank if $t = \gamma p$. The solution for the stock of capital and for the production is given by:

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[2] This approach is useful for two reasons: first it allows to turn the focus to the amount of production and second it allows a connection between the Pigovian approach and the incentive based approach that is carried out in the next section.

$$k_\gamma^* = \left[\frac{A\alpha(1-\gamma)p}{r} \right]^{\frac{1}{1-\alpha}} \tag{10}$$

$$y_\gamma^* = A\left[\frac{A\alpha(1-\gamma)p}{r} \right]^{\frac{\alpha}{1-\alpha}} \tag{11}$$

By making $t = \gamma p$ these solutions are the same obtained for the value of k_P and y_P, that is, the production in the presence of the Pigovian taxation. In other to fully explore this approach let us consider that the social and private benefits of an action may be evaluated according to the following expression:

$$SB(k) = PB(k) + Ext(k) \tag{12}$$

Where *SB* stands for the social benefit of producing y by using the amount of capital goods k, *PB* refers to the private benefit of producing by using k units and *Ext* means the externality related to the production of k. The private benefit of production y is nothing but the profit of the bank not considering the compliance costs which is given by:

$$PB(k) = py(k) - rk \tag{13}$$

The bank does not take into account the harmful externality of its operation that is the production the money laundering. This externality, related to the production of y units of production, is given by:

$$Ext(k) = -\gamma py(k) \tag{14}$$

This harmful externality may be viewed as a proxy to the amount of money laundered. Hence the social benefit of producing y units is given by the sum of private benefit and externality:

$$SB(k) = (1-\gamma)py(k) - rk \tag{15}$$

The objective of the competent authority is to maximize the social benefit, the sum of private benefit and externality. The stock of capital that maximizes the social benefit is given by:

$$k_{SB}* = \left[\frac{A\alpha(1-\gamma)}{r} \right]^{\frac{1}{1-\alpha}} \qquad (16)$$

While the stock of capital that maximizes the private benefit is given by:

$$k_{PB}* = \left(\frac{A\alpha p}{r} \right)^{\frac{1}{1-\alpha}} \qquad (17)$$

Note that $k_{SB}* < k_{PB}*$. This fact shows that the operation of banks may produce a harmful externality that is the money laundering. In order to avoid this externality a Pigovian taxation or other mechanism that implies in a reduction of the number of the banking accounts may be introduced in order to make the bank to choose the stock of capital that maximizes the social benefit and not its private benefit.

In this vein the Pigovian taxation makes the bank to take into account the harmful externality that would result from its increased production. Without the Pigovian taxation the bank only cares about his private benefit from his action, not about any negative spillover effects that spring from his action. This fact is depicted in the following graph:
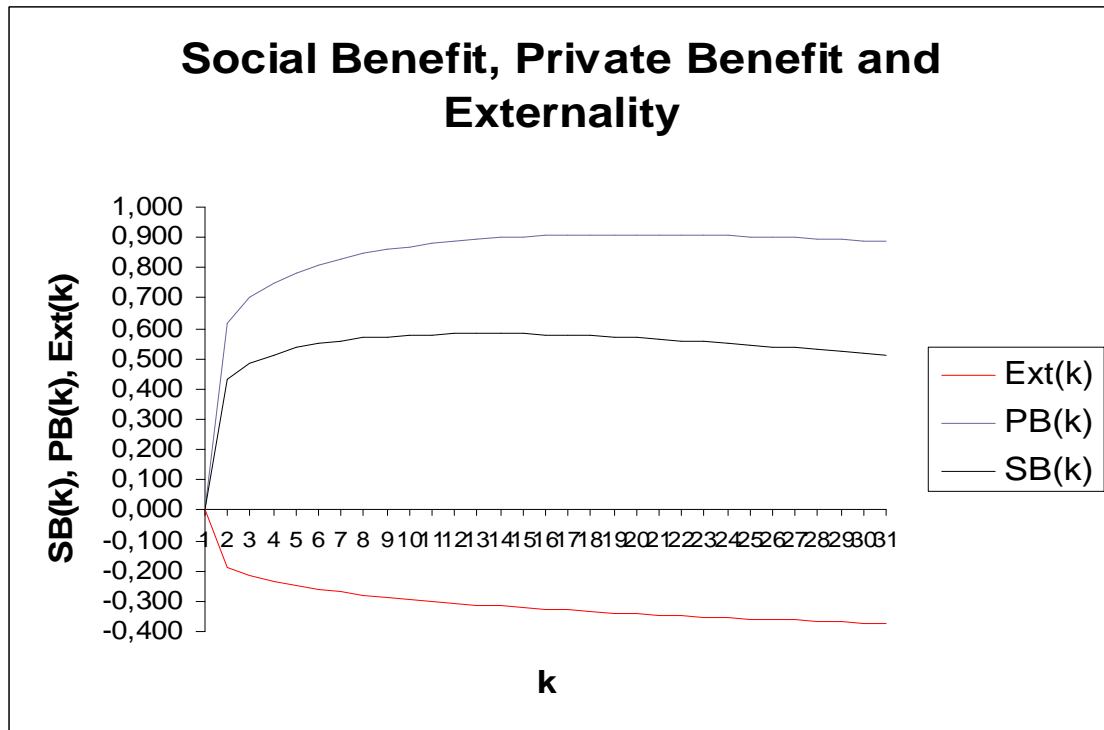
The graph shows that the production of the financial institution produces a negative externality, that is, money laundering which negatively affects the social benefit of bank operation. The amount of capital goods that maximizes the private benefit and social benefit shows that $k_{PB}* > k_{SB}*$ [See the Appendix for the numerical simulation]. If the bank does not take this fact in consideration it produces an amount of services that maximizes its private benefit that is higher than the amount of services that maximizes the social benefit of its operation. As pointed out this smaller production related to the maximization of the social benefit may be obtained through the application of a Pigovian taxation on the price of the bank service or an incentive based approach that will be presented in the next section.

The Pigovian approach is helpful to highlight the differences between the social and private benefits of bank operations but this cannot be used as a policy against money laundering due to a number of reasons. The first and most evident one is that the taxation would need to discriminate between banks that cooperate and not cooperate with competent authorities and this kind of taxation is forbidden by law. Besides, the

introduction of taxation may be viewed as a barrier against the regular activity of the banks. In countries that faced credit rationing as pointed out by Stiglitz and Weiss (1981) any additional barrier to the regular working of banks may be viewed as an additional barrier against economic growth.

Another shortcoming is that it requires the knowledge of the optimal taxation, which is given by expression (8) as a function of the compliance costs. The main difficulty in this case is that the firm is better informed of its costs than the regulator. In the next section by following the 'carrot-and-stick' approach to combat money laundering it is possible to mitigate the first limitation of the previous approach but the competent authorities still face the hidden information problem.

3. An Incentive Based Approach

As in the previous section let us assume that it has two possible actions towards the combat against money laundering: it may report or not the suspicious activity to the competent authorities. Accordingly let us assume that if the bank operates illegally, that is without cooperating with the combat to money laundering, it obtains the following expected profit:

$$\prod_i = \pi\big[py(k) - rk\big] + (1 - \pi)\big[py(k) - rk - M\big] \qquad (18)$$

Where π denotes the probability of not being punished and M is the monetary amount of punishment. Expression (18) shows that if the bank decides to operate illegally it does not face the cost associated to the compliance but it faces the risk of being punished by the competent authorities by paying a pecuniary penalty M. After some algebraic manipulation expression (18) may be rewritten as:

$$\prod_i = py(k_i) - rk_i - (1 - \pi)M \qquad (19)$$

By considering the profit maximizing behavior of the financial institution under illegal operation it chooses the stock of capital in other to maximize the expected profit:

$$k_i^* = \left(\frac{A\alpha p}{r}\right)^{\frac{1}{1-\alpha}} \tag{20}$$

And its production is given by:

$$y_i^* = A\left(\frac{A\alpha p}{r}\right)^{\frac{\alpha}{1-\alpha}} \tag{21}$$

By comparing this expression with expression (3) it easy to see that the production of the bank in the illegal operation is higher than in the legal one even in the case of an eventual a pecuniary penalty. But now since the competent authorities may choose the value of M they choose this value in order to make: $\prod_l \geq \prod_i$, that is the expect profit in the legal operation has to be higher than the expected profit in the illegal operation. After some algebraic manipulation the value of M that makes this choice happens is given by:

$$M \geq \frac{p(y_i - y_l) + r(k_l - k_i) - ck_l}{(1-\pi)} \tag{22}$$

By substituting (2), (3), (6) and (7) into expression (22) and considering that the regulator intends not to create extra regulation, the penalty chosen by the government authority that induces the bank not to operate illegally is given by:

$$M^* = \frac{(A\alpha)^{\frac{1}{1-\alpha}}\left\{p^{\frac{1}{1-\alpha}}\alpha^\alpha\left[\left(\frac{1}{r}\right)^{\frac{\alpha}{1-\alpha}} - \left(\frac{1}{r+c}\right)^{\frac{\alpha}{1-\alpha}}\right] + r\left[\left(\frac{1}{r+c}\right)^{\frac{1}{1-\alpha}} - \left(\frac{1}{r}\right)^{\frac{1}{1-\alpha}}\right] - \left(\frac{c}{r+c}\right)^{\frac{1}{1-\alpha}}\right\}}{(1-\pi)}$$

(23)

The expression of M^* that makes the bank to choose the legal operation shows that it depends on the productivity parameters of the bank, that is A, α and c and on the

probability of the illegal operation being detected, given by $1 - \pi$. The higher this probability the smaller the penalty since the financial institution is aware that there is a higher probability of illegal operation being detected and punished. By taking the derivative of M with respect to A it yields:

$$\frac{\partial M *}{\partial A} = \frac{\alpha^{\frac{1}{1-\alpha}}\left\{ p^{\frac{1}{1-\alpha}}\alpha^{\alpha}\left[\left(\frac{1}{r}\right)^{\frac{\alpha}{1-\alpha}} - \left(\frac{1}{r+c}\right)^{\frac{\alpha}{1-\alpha}}\right] + r\left[\left(\frac{1}{r+c}\right)^{\frac{1}{1-\alpha}} - \left(\frac{1}{r}\right)^{\frac{1}{1-\alpha}}\right] - \left(\frac{c}{r+c}\right)^{\frac{1}{1-\alpha}}\right\}}{(1-\pi)} \quad (24)$$

From expression (24) it is possible to conclude that $\dfrac{\partial M *}{\partial A} > 0$, that is the higher the productivity parameter the higher the penalty. From expressions (3) and (7) it is possible to conclude that a higher productivity parameter implies a higher production. In this vein the government proposes the following contract for the banks: $\underset{M, y_l}{Max} R = \pi M$

s.t. $\prod_l \geq \prod_i$. The next proposition shows that under perfect information this may be an efficient contract.

Proposition 1: The contract under perfect information is efficient.

Proof. The government chooses M and k_l. From the constraint the value of M is given by: $M \geq \dfrac{p(y_i - y_l) + r(k_l - k_i) + ck_l}{(1-\pi)}$. In order to avoid extra regulation the government

chooses $M = \dfrac{p(y_i - y_l) + r(k_l - k_i) + ck_l}{(1-\pi)}$. By substituting this value in to the objective

function and deriving in relation to k_l yields the first order condition:

$\dfrac{-pA\alpha k_l^{1-\alpha} + r + c}{(1-\pi)} = 0$. After some algebraic manipulation this yields the stock of

capital: $k_l* = \left(\dfrac{A\alpha p}{r+c}\right)^{\frac{1}{1-\alpha}}$ which is the same stock of capital that the firm chooses in the

legal operation. By substituting the values of y_l, y_i, k_l and k_i into the expression for M we obtain expression (9). $\square$

At a first glance this kind of contract seems to be efficient once it makes the financial institution to adhere to the legal sector by choosing the smaller production that maximizes its profits in the legal operation. This fact shows that this approach is effective when the competent authority knows the type of the institution.

However the contract is efficient only under perfect information [See Salanié (1999)]. The heuristic demonstration of this fact may be shown by considering the existence of two types of banks that are identified by A_1 and A_2, which are the productivity parameters associated to banks 1 and 2. By assuming that $A_1 > A_2$ and that all other parameters are the same for both banks then from expression (23) $M_1^* > M_2^*$. This result shows that if the competent authorities know the type of the banks they choose a higher penalty to the financial institution that has the higher productivity and the higher production.

But if the constant A is private information of the bank, bank 1 may try to act as bank 2 whose type is given by A_2 in order to receive a better contract than what is designed for itself. This fact shows that this mechanism is not efficient under imperfect information and this may be an explanation why the incentive based approach that has been proposed against money laundering has been at doubt. If the competent authorities choose the higher value of M then they may be creating excessive regulation in relation to the financial institution that intends to cooperate facing a smaller penalty.

This is the usual approach that has been adopted towards financial institutions to stimulate them to cooperate with competent authorities to fight money laundering. At a first glance this kind of contract seems to be efficient once it makes the financial institution to adhere to the legal sector by choosing the production that maximizes its profits in the legal operation. However the contract is efficient only under perfect information.

Such a result is a similar to the one found by Masciandaro (1999, p.237) approaching the efficiency of the Italian regulation. He points out that "we can conclude that law 197 turned out to be a relatively ineffective-inefficient form of regulation. Ever since the failure of law 197, Banca d'Italia has regarded the need of a more balanced regulation in terms of effectiveness of regulation while minimizing its costs, as well as to avoid that banks might behave as free riders concerning the real application of anti-money laundering rules."

4. Concluding Remarks

In this paper we have approached the anti-money laundering regulation by using two different tools. The first is the Pigovian analysis of diverges between social and private benefits. This analysis has shown that the regular activity of banks may produce a harmful externality, that is, money laundering and a Pigovian taxation on the profit of banks makes them to maximize the social benefit of their production. A possible interpretation for this outcome is that in this case the bank is committed by the force of a taxation with the Basle convention principle 'know your customer' and it chooses a smaller production than avoids money laundering. The shortcoming of this approach is that discretionary taxation is forbidden by law and it may affect the regular activity of banks by creating extra costs.

The incentive based approach is shown to be an alternative to the Pigovian taxation since it punishes only those financial institution that operate illegally. However the issue of hidden information that arise from the private information owned by the banks on the productivity parameters may damage the efficiency of the anti money laundering regulation based on this approach. This efficiency is increased in face of a

more precise screening on the bank willingness to cooperate performed by competent authorities.

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Appendix

Alpha	0,200
gamma (equação 18)	0,100
R	0,120
A	1,000
k(*)	1,383
y(*)	1,107
	0
C	
Price (p)	1,000

k	y(k) = Ak^alpha	Ext(k)	PB(k)	SB(k)
0	0,000	0,000	0,000	0,000
0,1	0,631	-0,189	0,619	0,430
0,2	0,725	-0,217	0,701	0,483
0,3	0,786	-0,236	0,750	0,514
0,4	0,833	-0,250	0,785	0,535
0,5	0,871	-0,261	0,811	0,549
0,6	0,903	-0,271	0,831	0,560
0,7	0,931	-0,279	0,847	0,568
0,8	0,956	-0,287	0,860	0,573
0,9	0,979	-0,294	0,871	0,577
1	1,000	-0,300	0,880	0,580
1,1	1,019	-0,306	0,887	0,581
1,2	1,037	-0,311	0,893	0,582
1,3	1,054	-0,316	0,898	0,582
1,4	1,070	-0,321	0,902	0,581
1,500	1,084	-0,325	0,904	0,579
1,600	1,099	-0,330	0,907	0,577
1,700	1,112	-0,334	0,908	0,574
1,800	1,125	-0,337	0,909	0,571
1,900	1,137	-0,341	0,909	0,568
2,000	1,149	-0,345	0,909	0,564
2,100	1,160	-0,348	0,908	0,560
2,200	1,171	-0,351	0,907	0,556
2,300	1,181	-0,354	0,905	0,551
2,400	1,191	-0,357	0,903	0,546
2,500	1,201	-0,360	0,901	0,541
2,600	1,211	-0,363	0,899	0,535
2,700	1,220	-0,366	0,896	0,530
2,800	1,229	-0,369	0,893	0,524
2,900	1,237	-0,371	0,889	0,518
3,000	1,246	-0,374	0,886	0,512