DESIGNING THE ANTI-MONEY LAUNDERING SUPERVISOR: THEORY, INSTITUTIONS AND EMPIRICS

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Abstract

Using a unique data set, this paper studies the governance of anti-money laundering supervisors known as Financial Intelligence Units (FIUs). Starting from a theoretical framework that highlights four key properties of FIU governance – financial powers, law enforcement features, independence and accountability – we build the first quantitative index of FIU governance. The proposed metrics are then applied in an analysis of 71 countries that explores the drivers of FIU governance properties. Our results show that FIUs' financial powers tend to be weaker in bank-based economies and stronger in countries with more affiliations with international anti-money laundering organizations. FIU independence and FIU accountability are stronger in countries with higher-quality governments and less opacity in the fiscal and legal systems. With regards to the nexus between country fundamentals and our overall FIU Governance Index, the index generally appears stronger for richer and more transparent countries. It is also stronger for countries with civil (rather than common) law. Finally, given the distinction between administrative FIUs and law enforcement FIUs, we find that overall FIU governance as well as independence and accountability are all weaker in countries with law enforcement FIUs.

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1. Introduction

The aim of this paper is to analyse the governance of anti-money laundering (AML) supervisors known as Financial Intelligence Units (FIU).[1] In the past two decades, the fight against money laundering has persistently ranked high on policymakers' agendas worldwide. Accordingly, the design of supervision in this field has been subject to an increasing amount of attention. All countries have been required to establish specialized public agencies with clear responsibilities, the FIUs. According to the official definition provided by the Financial Action Task Force (FATF), the OECD-based international standard-setter, FIUs serve as national centres for the receipt and analysis of: (a) suspicious transaction reports and (b) other information relevant to money laundering, related offences and terrorist financing. They are also responsible for the dissemination of the results of those analyses. In line with these provisions, national anti-money laundering regulations should ensure that FIUs are able to obtain additional information from reporting entities and that they have timely access to a wide range of intelligence, including information on financial, administrative and law enforcement issues, in order to discharge their functions properly.

In terms of guidelines that must be followed when designing an FIU, no formal best practices have been internationally defined thus far. The international anti-money laundering standards, established in 1990 by the FATF, consist of 40 recommendations, including legal and regulatory recommendations. FIUs are addressed in Recommendation 29, which allows each country to determine its own model. It does not suggest or impose any particular institutional design. Likewise, EU money-laundering directives define the extent of the regulated sector and the money-laundering obligations of financial intermediaries, businesses and professionals, and require member states to establish FIUs. However, they fall short of suggesting a specific model.

Countries worldwide have typically embraced one of two main paradigms: the administrative FIU or the law enforcement FIU. In the latter model, the FIU's functions are entrusted to a special independent police unit established for this very purpose. That unit typically has strong investigative skills and executive powers, such as the power to seize assets. In the administrative model, the FIU is established within the realm of public administration, typically under the Ministry of Finance or, in a few cases, as part of the financial sector's supervisory authority. In this case, the FIU is an autonomous authority endowed with highly specialised financial skills. It sometimes also discharges oversight functions with regards to compliance with AML regulations. A few countries have established a third type of FIU – a judicial FIU – which is often set up as a special unit within the General Prosecutor's Office. In the remaining cases a hybrid institutional arrangement is introduced in which features of the police and the administrative model are combined.

The economic literature on anti-money laundering offers arguments in favour of several well-defined information and law enforcement features of the FIU. It also highlights the need for the independence of the FIU with respect of different kinds of capture risks.[2] As a development of the extant research, our paper aims to offer a systematic analysis of FIU governance. More specifically, our focus is on uncovering governance properties that are simultaneously theoretically robust and empirically testable.

The paper is organized as follows. After a review of the state of the art in Section 2, we present a simple theoretical model highlighting the four key properties of FIU governance in Section 3. The FIU must be characterized by high levels of financial powers and a strong attitude to trigger investigative or judiciary activities. It must also be independent. In other words, the authority must be able to implement the best AML policy without any interference from banks or politicians. FIU independence reduces the risk of capture. Moreover, the FIU has to be accountable for its actions

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[1] Throughout this paper, we use the terms "Financial Intelligence Unit", "AML supervisor" and "AML authority" interchangeably.
[2] Masciandaro (1999), Masciandaro et al. (2007), Costa (2008), Dalla Pellegrina and Masciandaro (2009), and Takáts (2011).

in order to avoid the creation of an excessively powerful bureaucracy. Section 4 provides a quantitative index of FIU governance, which hinges on the four pillars underlying the theory developed in Section 3. Section 5 applies the FIU governance metrics to an analysis of 71 institutional settings in a heterogeneous and representative sample of countries. Section 6 provides an econometric analysis, while the conclusions are found in Section 7.

2. Supervising anti-money laundering policies: The state of the art

AML regulation is the focus of a well-established strand of literature[3] that sets out the conditions for an effective AML regime: the rule of law, an effective regulatory framework and judicial system, structures to prevent corruption, government effectiveness, and a deep-rooted culture of compliance. While the extant research convincingly argues that any shortcomings in these aspects can undermine the creation of an effective AML framework, evidence on the impact of AML action on financial crimes remains weak.[4] Furthermore, no in-depth analyses of the most appropriate design for an AML institutional framework in general or for FIUs in particular are available.

These issues have only recently been tackled in contributions on the relationship between the international standards and national FIUs.[5] Regardless of the FIU model, the observance of AML standards largely depends on domestic factors. Therefore, international compliance is quite low and convergence across countries is slow. However, this strand of literature highlights two major shortcomings. First, money-laundering practices are argued to pose a formidable threat not only to the stability of the financial system but also to the democratic institutions themselves.[6] This highlights the importance of a well-grounded evaluation of FIUs' effectiveness, which should be based on a rigorous economic analysis. Regretfully, the production and collection of statistical data on this matter have not been priorities thus far.[7] FATF recently tried to cope with this vulnerability by stressing the importance of proper AML-related data collection and providing guidance on the matter. It also attempted to set uniform standards for such data collection across all jurisdictions.[8] Second, the extant literature suggests that country-specific aspects, such as local governments' attitudes towards money laundering, are essential in determining the country's FIU model. However, no explanation of the main determinants in the selection of a specific FIU model is provided.

We leave the measurement of the impact of FIUs' activities to other studies.[9] In this paper, we analyse the rationale underlying the establishment of an FIU's institutional framework and the definition of its governance.

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[3] Important contributions on AML activity can be found in van Duyne (1994), van Duyne and de Miranda (1999), van Duyne at al. (2001), van Duyne and de Miranda (2002), Levi and Gilmore (2002), Cuellar (2003), Reuter (2004), Reuter and Truman (2004), Unger et al. (2006), Unger (2007), Levi and Reuter (2006), and Halliday et al. (2014). Cuellar (2003) finds a weak cause-effect relationship between AML action and a decrease in financial crime. Reuter and Truman (2004) try to assess AML tools on the national and international levels, and discuss the role of AML activities in stopping corruption and terrorism. Consistent with Cuellar (2003) and Reuter and Truman (2004), Levi and Reuter (2006) find weak evidence of an AML impact on crime prevention, although they show that AML activities facilitate investigation. Unger et al. (2006) compute the extent of money laundering in the Netherlands and tries to address the challenge of obtaining reliable estimates. For an analysis of the link between AML activities and terrorism, see Levi and Gilmore (2002).

[4] Halliday et al. (2014) show that it is difficult to find any evidence indicating an impact of FIUs on criminal activity.

[5] See Howell (2007) and Yepes (2011).

[6] Lenschow et al. (2005) state that politicians give "legitimacy to some social interests more than others".

[7] See Reuter and Truman (2004). One pioneering contribution can be found in van Duyne (1994), who describes the various shortcomings in measuring money-laundering activities and calls for improvements in the collection of the related data. Van Duyne et al. (2001) provide a detailed description of the law enforcement FIU model.

[8] See FATF (2015).

[9] For instance, Gara et al. (2019) provide the first empirical investigation of the effect of anti-money laundering inspections on banks' reporting of suspicious transactions.

3. Designing FIU governance: theory

Few articles tackle the issue of FIU design. However, despite the novelty of the issue, the relevance of FIU governance has been highlighted in the law and economics literature devoted to FIU establishment. In particular, some research suggests that the optimal FIU design is the administrative (mainly financial) FIU. Its "insider view" has been highlighted as a crucial factor in enhancing FIU effectiveness. The relevance of the insider nature of an FIU is supported by arguments related to the informational advantages and economies of scale that can be derived from bringing the financial-intelligence function under the umbrella of the authority in charge of overall banking supervision (i.e., the central bank or the banking supervisory authority). The importance of the insider view supports the establishment of a financial FIU as a device that can help improve the quality of AML regulations.[10]

At the same time, the administrative FIU has several shortcomings. The involvement of banking supervisors in the development of AML regulations can be costly due to policy failures, which do not occur if the supervisor is an outsider (outsider view) and the FIU is not of a financial nature. Such policy failures can be triggered by two phenomena: the risk of law enforcement weakness and the risk of capture. On the one hand, law enforcement weakness risk is possible, as a financial agency is naturally less skilled in terms of policy and investigative powers, which is clearly a strong argument in favour of a law enforcement FIU. On the other hand, an administrative, mainly financial, FIU is prone to three main sources of capture. First, regulatory capture may arise. The more an FIU acts as a financial authority, the more likely are the risks of capture by the regulated firms, which can drastically reduce the quality of regulation. Second, political capture is possible. The more an AML authority is a political agency (i.e., under the control of the incumbent government), the greater the risk of a captured AML regulator. Finally, a bureaucratic capture risk may emerge. The more the AML authority is held accountable, the lower the risk of an over-powerful AML regulator. Notably, the risks of political capture and bureaucratic capture can occur with any public agency. They may also affect a law enforcement FIU.

Consequently, four properties are interesting in conjunction with evaluating FIU governance: financial or information skills; enforcement and investigative skills; independence from politicians (top-down) and from the regulated firms (bottom-up); and accountability. By examining these four properties, we can derive an overall evaluation of the degree of good governance in the FIU's institutional setting.

Given this perspective, we proceed by studying the design of FIUs using a delegation framework.[11] In so doing, we adopt a political economy approach[12] that argues that the policymaker's choices related to the FIU model are conditional on the economic and institutional environment, which in turn determines the political weights assigned to the pros and cons. Our framework is based on two hypotheses. First, the gains and losses associated with a given FIU setting are variables computed by the incumbent policymaker, who maintains or reforms the FIU regime based on his or her (hereafter "her") own preferences. Second, policymakers are politicians, and, as such, they are held accountable in elections. All politicians are career-oriented agents motivated by the goal of pleasing voters in order to win elections.[13] The main difference among various types of politicians concerns the kinds of voters they wish to please. In this regard, we start with the assumption that

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[10] This view has been adopted by Takáts (2011), Masciandaro et al. (2007), Costa (2008), and Dalla Pellegrina and Masciandaro (2009).

[11] The principal-agent pattern has been used to describe AML regulation. The agency problem between banks and policymakers (two players) has been studied by Takáts (2011), who focuses on the fact that excessive fines may generate a larger number of useless reports. See also Masciandaro et al. (2007) and Costa (2008). For a discussion of the failure of traditional sanction methods, see Bowles et al. (2005).

[12] Masciandaro (2006), Masciandaro (2007), Masciandaro and Quintyn (2008), Masciandaro (2009), and Masciandaro and Volpicella (2016).

[13] Alesina and Tabellini (2004).

the policymaker is benevolent. In other words, she tries to find the optimal setting to avoid being captured or corrupted by vested interests.

Consider an economy with rational expectations and uncertainty. We assume that citizens prefer an effective AML setting. Should the insider agency be in charge of introducing the AML regulations? We assume that the incumbent policymaker can influence the intensity y (where 0 < y <1) of the FIU's financial skills. However, the policymaker is not a dictator. In other words, we assume that the elected policymaker does not perfectly and completely control the overall democratic process. As such, other powers (legislative and judiciary) are not necessarily perfectly aligned with the executive power on every occasion. Moreover, the elected policymaker does not completely control all of the governance features (i.e., the institutional legacy). Consequently, given the four key properties of FIU governance, the policymaker influences one of them. Without a loss of generality, we assume that the policymaker influences the intensity of the FIU's financial skills, taking the other properties into account.[14]

Citizens acknowledge that, by definition, the optimal design of an FIU requires the appropriate exploitation of the trade-offs between the advantages of each model and the associated risks. Citizens care about the effectiveness of the AML regime according to a classic well-behaved concave function: u = U (y). Welfare increases with the optimal level of the FIU's financial skills. Linear preferences are used:

$$U(y) = y \tag{1}$$

In a democracy, citizens assign the elected policymaker the task of endowing the FIU with the appropriate level of financial skills (i.e., the level guaranting the AML regulations' effectiveness). In particular, the incumbent policymaker is delegated by society to handle the functions of defining and implementing the optimal level of the FIU's financial skills. The policymaker's reward is based on how she carries out her job.

As already stated, the policymaker is a politician who wishes to please citizens. One additional assumption could be that the policymaker's aim is to please specific constituencies (i.e., lobbies). However, we adopt the *helping-hand view* (HH) of the policymaker's type and assume that she wishes to please citizens rather than a particular constituency or lobby (the *grabbing-hand view*) (GH).

At this point, it is useful to show that the four properties of good FIU governance are consistently associated. That is, the optimal level of financial skills is directly associated with the level of law enforcement skills and with the levels of both independence and accountability. The level *y* of the FIU's financial skills is determined by the policymaker's ability, Ω, and effort, *a*.

$$y = a + \Omega \tag{2}$$

Let us describe the delegation framework. The sequence of events is the following. First, society delegates the task of determining the optimal level of the FIU's financial skills to the policymaker. Second, the policymaker decides on her effort, *a*, before she knows her ability, Ω, in implementing this particular task (building an AML regime is not a usual task). Third, the policymaker implements the FIU regime, thereby revealing her ability, Ω. Fourth, the citizens observe the level of the FIU's financial skills but not the relationship between effort and ability, as they cannot distinguish innate talent from contingent effort. They then reward the policymaker for this task.

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[14] This framework is equivalent to a situation in which the policymaker considers the existing public agencies that might be eligible to act as an FIU. Each of those agencies has its own combination of the four relevant properties (i.e., financial skills, investigative skills, independence and accountability). Each agency is evaluated in relation to the others. If, for the sake of simplicity, we assume that the policymaker focuses on an existing financial/banking agency (i.e., an insider) with institutional legacies in terms of (relative) skills and the institutional setting, with no loss of generality y can be considered as the probability that such agency is established as the FIU.

The policymaker's utility function Z_{HH} is defined as:

$$Z_{HH} = R(U) - C(a) \qquad (3)$$

where **R (U)** is the reward function and **C (a)** is the cost function. The political reward is a function of the social utility, while the political costs depend on the effort used for the task. The policymaker evaluates every task assignment while taking the political rewards and costs of doing so into account. Let us describe the three crucial features of the policymaker – ability, political reward and political costs – as follows.

A) Ability: The policymaker's ability is a random variable with a normal distribution (where Ω_{AV} is the mean).

B) Political reward: The incumbent policymaker wishes to be re-elected and the government needs to provide the majority of voters with enough utility. Thus, the policymaker's objective is to maximize the social welfare, *U*. In general, the policymaker wishes to please voters and her goal is the alignment of her interests with those of the citizens. However, each delegated task (i.e., each specific alignment) can be more or less convenient in terms of political gains from the policymaker's point of view. We denote the political value she assigns to fulfilling the specific task of designing the FIU with β with $0 \leq \beta \leq 1$. Therefore:

$$R(U) = \beta U .$$

The alignment of the policymaker's and citizens' incentives is a necessary and sufficient condition for finding the optimal behaviour of the policymaker. One more step is needed to find the effective political reward. The reward will be useful if the citizens' utility exceeds the minimum threshold of utility, *W*, that they expect from an incumbent government (the political competition condition). Citizens compare government performance with the expected performance of outside politicians. The political competition condition can be defined as follows:

$$R_{HH} = \beta \Pr(U \geq W) \qquad (4)$$

C) Political costs: The policymaker knows that the more the financial agency is involved in AML regulations, the greater the likelihood that two kinds of costs will arise. First, the efficiency costs of having an insider regulator acting in the AML field rather than an outsider agency should be considered (i.e., weakness in terms of law enforcement features). Second, the more the insider agency is dependent and the less it is held accountable, the more likely are capture risks. In other words, we assume that from the policymaker's point of view, the political costs of establishing an insider FIU depend on her expectations of facing at least one of two types of costs: capture costs, *CC*, and efficiency costs, E*C*.

Therefore, the policymaker's cost function can be represented by the following simple specification:

$$C(a) = ca^2 \qquad (5)$$

where $c = c_0 + c_1(prob\ CC + prob\ EC)$, and each probability is between 0 and 1.

The political costs of designing the FIU's skills depend on the extent to which the incumbent government is blamed if shocks occur. In other words, those costs depend on the size of reputation losses. When a failure occurs, citizens can be more or less sensitive. From the government's point of view, the failure likelihood per se is not relevant. The relevant factor is how failure affects the government's reputation. The reputation factor is represented by the parameter c_1. For the sake of simplicity, we assume: a) that the negative effect on the government's reputation is the same regardless of the type of failure and b) that events involving failure are independently distributed.

The determination of the optimal level of the FIU's financial skills requires a two-step process. The first step is to define the policymaker's effort. The second step is to evaluate the intensity of the skills. In defining her optimal effort a_{HH}, the policymaker maximises her objective function, which makes her ability Ω_{HH} evident. The optimal degree of FIU's financial characterisation can be evaluated using the equation for the FIU's financial skills and the policymaker's final political reward can be calculated using the political-competition equation. It follows that the policymaker maximises social welfare net of the costs of executing the task:

$$\max Z_{HH} = max[R(U) - c(a_{HH})]$$

$$R(U) - c(a_{HH}) = \beta(U) - c(a_{HH})$$

Given that the level of social utility is equal to the optimal level of the FIU's financial skills, which is a function of the policymaker's effort, both the rewards and the costs depend on the effort:

$$\beta(a_{HH} + \Omega_{HH}) - ca_{HH}$$

From the first-order condition, the optimal effort is:

$$\frac{\delta Z_{HH}}{\delta a_{HH}} = \beta - 2ca_{HH}$$

$$a_{HH}^* = \frac{\beta}{2c}$$

Given a_{HH}^*, the effective political reward for the policymaker depends on the condition of political competition:

$$R_{HH} = \beta \Pr(U \geq W)$$

Voters are rational. They realize that the alternative to re-electing the incumbent policymaker is another politician with average ability. Given their expectations a^e for effort, it follows that:

$$W = a_{HH}^e + \Omega_{AV}$$

Then:

$$R_{HH} = \beta Pr(\Omega + a_{HH} \geq \Omega_{AV} + a_{HH}^e)$$

$$R_{HH} = \beta Pr(\Omega - \Omega_{AV} \geq a_{HH}^e - a_{HH}) \tag{6}$$

The ability of the incumbent policymaker Ω_{HH} is determined by nature. It follows that:

$$R_{HH} = \beta Pr(\Omega - \Omega_{AV} > a_{HH}^e - a_{HH}) \tag{7}$$

When expectations are perfectly matched $(a_{HH}^e = a_{HH})$, the effective political reward will be positive if the ability of the incumbent policymaker is above average:

$$(\Omega_{HH} > \Omega_{AV}). \tag{8}$$

The equilibrium level y is determined by the policymaker's ability Ω_{HH} and by her effort a_{HH}^*:

$$y_{HH} = a_{HH}^* + \Omega_{HH} = \frac{\beta}{2c} + \Omega_{HH} \tag{9}$$

Given the exogenous policymaker's ability, the optimal level of FIU's financial skills depends on how politically relevant it is for the government to introduce effective AML regulations. In other words, the policymaker's perceptions of the social relevance of the FFIU setting matters. On the other hand, the government takes into account the expected costs of the failures that may arise when a financial supervisor is deeply involved in AML regulations.

Equation (9) shows that the four proprieties that can characterize FIU governance are consistently associated. The optimal delegation level serves as a proxy for the effectiveness of AML supervision. In fact, the social convenience of establishing an efficient FIU is positively associated with financial skills (i.e., the level of β) and with increasing enforcement skills, independence and accountability, all of which are inversely associated with c. Based on (5), the latter is positively correlated with the probability that capture or efficiency costs emerge. The tools the politician has in order to curb these costs is the FIU's independence, i.e. safeguarding against regulatory and political capture, and its accountability, i.e. a check on the risk of bureaucratic capture. In addition, given the equilibrium financial skills, the politician can boost the FIU's efficiency by endowing it with increasing investigative skills.
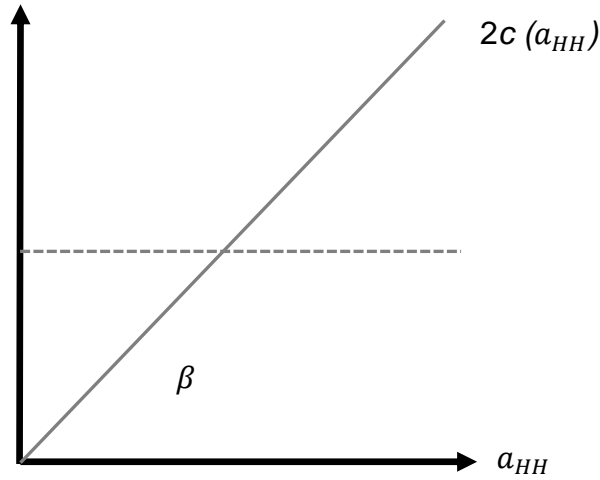

Figure 1

Figure 1 describes the policymaker's marginal reward and marginal cost functions of the policymaker (vertical axis), where the latter is associated with effort (horizontal axis). All else equal, an increase in financial powers increases the optimal level of FIU's skills (increases in β). The same is true if there is an increase in the law enforcement features, the degree of independence or the degree of accountability (decreases in c).

Alternatively, we can use the *grabbing hand* (GH) *view* of the political actor. According to the grabbing hand approach, policymakers are motivated by a desire to please specific, well-defined voters in order to win elections. In our case, the financial industry may be considered a highly organised, powerful interest group that can influence political competition.

The financial industry is likely to be a smaller and more coherent group than the consumers of their services and, therefore, better organised from a political perspective. When defining FIU governance, the GH policymaker depends on the financial industry's view if that view can strongly affect her chances of re-election. From the policymaker's point of view, any misalignment with public preferences caused by an alignment with lobby preferences can be considered only if a potential political reward emerges.

The preferences of the financial constituency can be written as:

$$V = (1 + \delta)y_2 - f \tag{10}$$

The parameter δ represents how the financial nature of the FIU differs for the financial constituency and other citizens. The more the financial industry is interested in establishing a more financial FIU (*capture's attitude*), the greater the parameter $\delta \geq 0$ will be.

The parameter *f >0 (lobbying commitment)* represents the capturing costs. The financial industry can invest resources in campaign contributions, which might affect the incumbent policymaker's chances of re-election. Campaign contributions can be contingent upon the policymaker's effort – for simplicity, $\boldsymbol{f = ka_{GH}}$. The parameter k represents the financial industry's *lobbying cost*: the greater the investment needed for campaign contributions, the higher the parameter's value. The alignment between the lobby's wishes and the politician's conduct is costly.

The purpose of campaign contributions is to influence the incumbent's chances of winning elections. Let us assume that the policymaker's effort devoted to influencing FIU governance, a_{GH}, is observable by financial professionals, as they can be considered insider agents. The GH policymaker chooses her level of effort while taking the lobby goal function into account. The GH policymaker needs to provide the financial lobby with enough utility. She will align her function with the interests of the financial industry. The reason is simple: the GH policymaker knows that campaign contributions can reduce the political competition in her favour, although the effect on voters is stochastic. This assumption can be simply represented by suggesting that the lobby is able to influence voters' reservation utility using campaign contributions:

$$\boldsymbol{W' = a_{GH}^e + \Omega_{AV} - M}$$

The variable **M** represents the *voting effect* of campaign contributions on voters. We can assume that the voting effect is stochastically distributed:

$$\boldsymbol{M = mf}$$

where **m** is a random variable with standardized normal distribution (0;1). The campaign contributions may change the incumbent government's chances of remaining in charge, thereby modifying citizens' reservation utility. In general, the effect of campaign contributions on voter sentiment is uncertain. The GH policymaker knows in advance that if she pleases the financial industry, she gains its favour (i.e., contributions), while voter reactions are uncertain. The financial industry's direct or indirect support of the incumbent government can produce a mixed reaction in voter sentiment. The final effect is unknown in advance. Nature determines whether the political effect of the financial industry's campaign contributions is positive, neutral or negative, i.e., $0 \leq m_{GH} \leq 0$.

The policymaker's utility function $\boldsymbol{Z_{GH}}$ is defined as:

$$\boldsymbol{Z_{GH} = R(V) - C(a_{GH})} \tag{11}$$

The GH policymaker's reward function depends on the financial industry function V. As usual, we denote the political value she assigns to fulfilling the specific mandate on FIU governance with β. Therefore:

$$\boldsymbol{R(V) = \beta V}$$

We assume that from the GH policymaker's point of view, the political costs of increasing the FIUs' level of financial skills are the usual ones. In other words, the cost function assumes the same specification (5):

$$\boldsymbol{C(a) = ca^2} \tag{5}$$

Therefore, given the utility function, $\boldsymbol{Z_{GH}}$, of the GH government, the policymaker's optimal behaviour will be the result of the following maximization:

$$\max Z_{GH} = max[R(U) - c(a_2)]$$

where:

$$R(V) = \beta(V) = \beta[(1+\delta)y_{GH} - f] = \beta[(1+\delta)(a_{GH} + \Omega) - ka_{GH}] \tag{12}$$

Given the cost function (5), we have:

$$R(V) - C(a_{GH}) = \beta[(1+\delta)(a_{GH} + \Omega) - ka_{GH}] - c(a_{GH}^2)$$

It follows that the GH policymaker maximizes the financial industry's welfare net of the costs of executing the task. From the first-order condition:

$$\frac{\delta Z_{GH}}{\delta a_{GH}} = \beta[(1+\delta)] - 2ca_{GH} = 0$$

The optimal effort will be:

$$a_{GH}^* = \frac{\beta(1+\delta-k)}{2c} \tag{13}$$

The chart shows a vertical axis with a rising line labeled $2c\,(a_{GH})$, a horizontal dashed line at level $\beta(1+\delta+k)$, and a horizontal axis labeled a_{GH}.
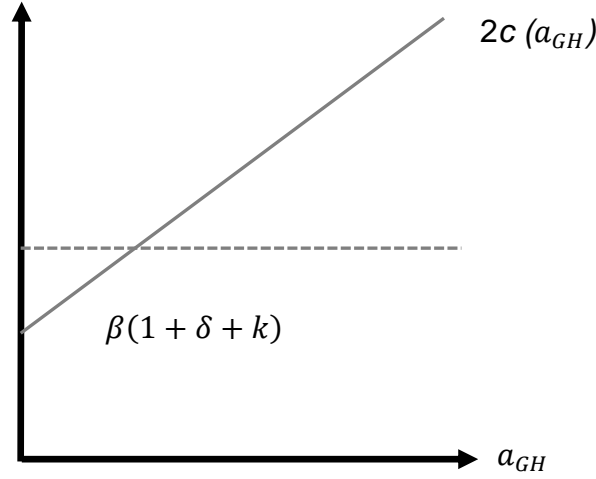
Figure 2

Figure 2 describes the marginal reward function and the marginal cost function of the policymaker (vertical axis). As in the previous case, only the latter depends on effort (horizontal axis). It is already evident that, given the lobbying costs, the higher the capture attitude of the lobby, the more intense the FIU's financial skills will be.

Given a_{GH}, the effective political reward of the GH policymaker will depend on the condition of political competition (4):

$$R_{GH} = \beta \Pr(U \geq W'),$$

where:

$$W' = a_{GH}^e + \Omega_{AV} - m_{AV}f \text{ and}$$

$$W' = a_{GH}^e + \Omega_{AV}$$

Then:

$$R_{GH} = \beta Pr(\Omega + a_{GH} \geq \Omega_{AV} + a_{GH}^e)$$

$$R_{GH} = \beta Pr(\Omega - \Omega_{AV} \geq a_{GH}^e - a_{GH}) \tag{4C}$$

If we compare conditions (7) and (4c), it is evident that the HH policymaker and the GH policymaker face the same condition *ex ante*. Both agents wish to pick their optimal effect given that neither of them know their ability and the GH policymaker does not know the final effect of lobbying activity on voters.

Nature chooses the ability of the incumbent policymaker Ω_{GH} . It follows that the effective reward will be:

$$R_{GH} = \beta Pr(\Omega_{GH} - \Omega_{AV} \geq a_{GH}^e - a_{GH} - m_{GH}ka_{GH})$$

When expectations are perfectly matched $(a_{GH}^e = a_{GH})$, the effective political reward will be positive if the incumbent policymaker's ability is above average, taking into account the *ex post* effect of campaign contributions:

$$\Omega_{GH} > \Omega_{AV} - m_{GH}ka_{GH} \tag{4d}$$

The equilibrium level, *y*, of FFIU will be determined by the GH policymaker's ability Ω_{GH} and effort a_{GH}^* :

$$y_{GH} = a_{GH}^* + \Omega_{GH} = \frac{\beta(1+\delta-K)}{2c} + \Omega_{GH} \tag{14}$$

Finally, we can compare the two policymakers. Given the ability of the government and comparing (9) and (14), we have the effect of different types of policymaker on the intensity of the FIU's financial skills. From

$$y_{HH} = a_{HH}^* + \Omega_{HH} = \frac{\beta}{2c} + \Omega_{HH} \tag{9}$$

$$y_{GH} = a_{GH}^* + \Omega_{GH} = \frac{\beta(1+\delta-K)}{2c} + \Omega_{GH} \tag{14}$$

If $\Omega_{HH} = \Omega_{GH}$,

we have that:

$$y_{HH} > y_{GH} \text{ if } k - \delta > 0 .$$

The optimal level of FIU's skills is greater in the presence of an HH government than a GH government if the lobbying costs are higher than the capture propensity of the financial industry. All other relationships between the four properties of FIU governance are confirmed.

In summary, irrespective of the nature of the policymaker, the optimal governance of a FIU has four key properties. The FIU must be characterized by high levels of financial powers and law enforcement features. Moreover, it must be independent. In other words, it must be able to implement the best AML policy without any interference from banks or politicians in order to reduce the risk of capture. At the same time, the FIU must be held accountable for its actions in order to avoid the creation of an excessively powerful bureaucracy. All of these properties are desirable, in general, for any type of FIU: the relationship among powers, independence and accountability represents the core of FIU governance.

4. Evaluating FIU governance: institutions

In the previous section, we proposed an FIU governance benchmark. How can the benchmark be compared with concrete FIU governance settings? The FIU Index that we propose takes the four

key dimensions into account: financial powers, law enforcement features, independence and accountability. Different indicators are considered for each dimension. Overall, we have 26 elementary indicators: 3 that measure financial powers, 3 that measure law enforcement features, 17 that measure independence and 3 that measure accountability (see Table 1).

The indicators are inspired by the strand of economic literature that focuses on measuring the independence of central banks and banking supervisors. Indicators range from very simple to more complex. They are briefly described in the following (the full list and the content of each indicator can be found in Table A1 in the Appendix).

4.1 Financial powers – By financial powers, we mean the ability to have and acquire information on the functioning of financial intermediaries. Such information skills are typically enhanced by status as an insider in the financial system (e.g., being part of a financial administration) and they may involve scale economies (i.e., the bigger the FIU and its financial powers, the easier it is to acquire new information).

There are three indicators of financial powers. They refer to: 1) the power to collect additional information from banks and other obliged entities in the course of the AML analysis, 2) the breadth and strength of supervisory and oversight powers, if any, with regard to the range of obliged entities and AML obligations, and 3) the breadth and strength of regulatory powers, if any, with regard to the range of obliged entities and AML obligations.

Table 1
A Composite Quantitative Indicator of FIU Governance

Components	Number of indicators
Financial powers	3
Law enforcement features	3
Independence	17
Structural independence	*4*
Operational independence	*5*
Appointment of top positions	*2*
Financial independence	*4*
Staffing and organization	*2*
Accountability	3
Total	**26**

4.2 Law enforcement features – By law enforcement features we mean the institutional features which are related to (increase) the ability to trigger investigative or judiciary action. These may enhance the effectiveness of the FIU's action to a great extent. In this realm, we use three indicators measuring whether the FIU has, respectively, 1) law enforcement information and skills, 2) dissemination powers and 3) freezing powers. Whilst the third is self-explaining, the first reflects the extent of the access to investigative data and, more in general, the proximity that the FIU has with a law enforcement activity (i.e. if the FIU is established within a Police Corp or its personnel has mainly a law enforcement experience or capabilities). The second provides an indication of the stage the FIU is placed in the AML system pipeline: if it disseminates the results of its analysis directly to the judiciary, this is a signal that it is endowed with enough investigative powers to start a fully-fledged judicial proceeding; vice versa, if the FIU's reports are transmitted to a law enforcement body, then it is very likely that the latter carries out the investigative activity.

4.3 Independence – We aim to measure independence from the government and other authorities, as well as independence from regulated intermediaries. We identify five dimensions of independence: i) structural independence, ii) operational independence, iii) appointment of top positions, iv) financial independence, and v) staffing and organization. *Structural independence* is measured using four indicators: 1) the number of years since the FIU was established, 2) the number of employees normalized to GDP, 3) the number of divisions and offices that comprise the FIU

and 4) the area of the public administration to which the FIU belongs (e.g., police, public prosecutor, Ministry of the Treasury). *Operational independence* is measured using five indicators: 1) whether the FIU is the only authority receiving STRs, 2) the degree of discretion in STR dissemination, 3) the extent of feedback on the investigative or judicial outcome of STRs, 4) the extent to which access to STR information is monopolized, and 5) whether the FIU is in charge of coordinating national representation at international forums (e.g., FATF, FSRBs). The *appointment of top positions* includes two indicators: 1) the authority that has the power to appoint the director (e.g., head of state, ministry head), and 2) the existence and composition of other executive positions or bodies in the FIU. *Financial independence* is measured using four indicators: 1) whether the FIU has its own budget, 2) whether the FIU has the right to approve its budget, 3) whether the FIU's resources are its own or provided by other authorities, and 4) the size of the budget normalized to GDP. Finally, with regard to *staffing and organization*, we use two indicators: 1) the power to hire new personnel and 2) the power to deliberate over the FIU's internal organization and structure.[15]

4.4 Accountability – The concept of accountability encompasses two aspects: accountability towards institutions and public opinion. It is measured using three indicators: 1) the existence and type of statutory reporting obligations, 2) the FIU's power to set and declare its own policy objectives and priorities, and 3) the FIU's involvement in AML policy design and priority setting.

5. Measuring FIU governance: metrics and results

5.1 Governance indicator and descriptive statistics

Each of the 26 individual indicators described above are normalized from 0 to 1. For each of the four dimensions, we take the average of the corresponding indicators to obtain four indicators for each country/FIU in our sample. The indicators measure the intensity and strength of financial powers, law enforcement features, independence and accountability. Finally, for each country/FIU, we take the average of the four indicators (i.e., the average of the averages) and compute the overall FIU Governance Index. In so doing, we obtain an overall indicator that gives equal weight to each of the main four components regardless of the number of individual indicators that comprise each component.

Our sample includes the 34 FATF countries plus the 6 largest countries (by GDP) for each of the 8 economic regions envisaged by the International Monetary Fund (i.e., Emerging and Developing Asia, Emerging and Developing Europe, Latin America and the Caribbean, Middle East, North Africa, Sub-Saharan Africa, Commonwealth of Independent States, Advanced Economies). Overall, we obtain a sample of 71 countries.[16] The list of countries is available in Table A2 in the Appendix. With reference to geographical distribution, 33 of the countries are in Europe and North America, 8 are in Central and South America, 21 are in Asia, 7 are in Africa and 2 are in Oceania. With regard to the level of economic development, half of the countries belong to the OECD and the remaining half are emerging (i.e., non-OECD) economies.

Data sources – The information used to compute the individual indicators for the FIU Governance Index is taken mainly from (public) reports from the third round of the FATF's Mutual Evaluations (2005-2011) and the analogous reports published by the FATF-Style Regional Bodies (FSRBs). When additional information was needed, we consulted the websites of the individual FIUs.

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[15] The indicators that we use to measure FIU independence are consistent with the "characteristics of an operationally independent and autonomous FIU" proposed by the Egmont Group (2018).

[16] The overall sample sum is 71. This is because 3 of the 42 largest countries identified based on the geographical criterion were already included in the 34 FATF sub-sample, while no adequate information on the AML system was available for two others.

We also collected information on some key country features. Data on GDP, population, unemployment rates and country governance indicators were taken from the World Bank's website.[17] The Basel index of money-laundering risk is computed by the Basel Institute on Governance and updates are periodically provided on the Institute's website. Finally, the corruption index is available on Transparency International's website.

5.2 Basic statistics and main correlations

With regard to FIU type, two thirds of the FIUs in our sample (48) are administrative FIUs, while roughly one fourth (17) are law enforcement FIUs. The few remaining FIUs are hybrid (5) or judicial FIUs (1; see Table 2). In terms of geographical distribution, all FIUs in Americas and Africa are administrative FIUs, while law enforcement FIUs are more common, although still a minority, in Europe and Asia.

Table 2
Sample Distribution by FIU Type and Continent

FIU type	World	Europe	Asia	Americas	Africa	Oceania
Administrative	48	16	14	10	7	1
Hybrid	5	3	2	0	0	0
Judicial	1	1	0	0	0	0
Law enforcement	17	11	5	0	0	1
Total	**71**	**31**	**21**	**10**	**7**	**2**

The strengths of the four components of our indicator – financial power, law enforcement power, independence and accountability – for the different types of FIU are shown in Table 3. The results of tests comparing the respective average values for administrative and investigative FIUs are also reported.

Table 3
Average Component Indicators and Overall Index by FIU type

FIU type	Financial powers	Law enforcement features	Independence	Accountability	FIU Governance Index
Administrative	0.41	0.33	0.50	0.68	0.48
Hybrid	0.28	0.33	0.41	0.70	0.43
Law enforcement	0.31	0.43	0.36	0.52	0.41
H_0: admin. FIU = law enforcement FIU[1]	*	*	***	*	*

[1] The asterisks report the significance level of rejection of the null hypothesis (one-tail T and bootstrap test). The statistics concerning the judicial FIU type are omitted from the table since there is only one FIU within this category.

There is some evidence (at a 10% confidence level) that financial powers are stronger for administrative FIUs than for law enforcement FIUs (the significance level of the corresponding test is reported in the last row of Table 3), but no statistical evidence indicates that the opposite is true for law enforcement features. This is interesting, as it signals that the FIU's endowment of financial powers and law enforcement features is constrained only to some extent by the nature of the FIU itself (at least according to our metrics and given the focal period). Investigative FIUs are endowed with more law enforcement features, on average, than administrative FIUs, but the difference is not statistically significant. On the other hand, a statistically strong difference between the two types of FIU emerges with regard to independence. In fact, the evidence indicates that administrative FIUs

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[17] http://info.worldbank.org/governance/wgi/index.aspx#home.

are, on average, more independent than law enforcement FIUs. The former also seem to be more accountable (at a 10% confidence level). Not surprisingly, hybrid FIUs tend to show intermediate values for all components. There is some evidence (at a 10% confidence level) that the overall FIU Governance Index is stronger for administrative FIUs than for law enforcement FIUs. As we discuss in the next section, the differences between administrative and law enforcement FIUs become much sharper for all of the indicators being considered when a more comprehensive multivariate analysis is introduced.

We also explored cross-correlations among the FIU governance components, which are reported in Table 4. Perhaps not surprisingly given the evidence in Table 3, there is no negative correlation between financial powers and law enforcement features . In fact, they are uncorrelated; however, the findings from a more comprehensive multivariate analysis are somewhat different – see the next section. Similarly, there is no systematic nexus between financial powers and law enforcement features on the one hand and independence and accountability on the other. Interestingly, independence and accountability are strongly positively correlated with each other. This seems to suggest that a higher degree of independence is counterbalanced by a comparatively higher degree of accountability (i.e., by stricter obligations to provide stakeholders with a full account of the FIU's activities, priorities and results). In other words, FIUs with more independence are required to give a full account of how they use that independence.

Table 4
FIU Governance Components, Cross-correlations

	Financial powers	Law enforcement features	Independence	Accountability
Financial powers	1	0.13	0.14	0.10
Law enforcement features	0.13	1	-0.05	0.17
Independence	0.14	-0.05	1	0.50***
Accountability	0.10	0.17	0.50***	1

6. Econometric analysis

We performed an econometric analysis to shed additional light on the possible drivers of FIU governance. The main statistics for all of the variables for the whole sample and for countries with administrative FIUs and law enforcement FIUs are reported in Table 5. Countries with law enforcement FIUs tend, on average, to be richer and smaller in terms of population size, and the generally have less perceived corruption and better quality of government. For the FIU components measured in this study, the statistics reported in Table 5 correspond to those reported in Table 3. In other words, when compared to administrative FIUs, law enforcement FIUs have weaker financial powers, stronger investigative powers, less independence, less accountability and, accordingly, a lower value for the overall FIU Governance Index.

However, these are just univariate, descriptive statistics. For a more robust and comprehensive picture, we need an econometric analysis. To carry out this analysis, we first analysed the countries' choice of FIU type, focusing on the two types for which we have enough data – the administrative FIU (48 countries) and the law enforcement FIU (17 countries). We have a cross-section of 67 countries (four countries were dropped because of a lack of data for some variables).[18] Our dependent variable is a dummy equal to 1 for countries with, respectively, administrative FIUs or law enforcement FIUs, and 0 otherwise. We used a standard Logit estimator and tested the significance of variables with heteroscedasticity-robust standard errors.

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[18] The countries dropped are China, Taiwan, Turkmenistan and Uzbekistan.

Table 5
Main Statistics

All countries (71)					
Variable	mean	std dev	min	med	max
Log of per capita GDP	9.341	1.328	6.425	9.378	11.529
Log of population	3.151	1.523	-1.170	3.251	7.191
Domestic credit by banks (as % of GDP)	0.722	0.491	0.034	0.619	2.118
Log of number of bank branches (per 100,000 adults)	2.806	0.902	0.481	2.817	4.594
Number of memberships in AML organizations	2.437	0.823	0.000	3.000	4.000
Basel indicator of money-laundering risk (log)	1.661	0.201	1.129	1.674	2.105
Perceived corruption index	0.371	0.293	0.007	0.309	0.964
World Bank Index of Country Governance (log)	3.958	0.738	1.205	4.246	4.597
Common law	0.268	0.446	0.000	0.000	1.000
Islamic law	0.070	0.258	0.000	0.000	1.000
Financial powers	0.374	0.215	0.000	0.333	0.867
Law enforcement features	0.357	0.254	0.000	0.333	1.000
Independent	0.460	0.149	0.128	0.451	0.752
Accountability	0.646	0.355	0.000	0.667	1.000
Overall FIU Governance Index	0.459	0.153	0.070	0.476	0.787

Countries with Financial FIUs (48)					
Variable	mean	std dev	min	med	max
Log of per capita GDP	8.965	1.244	6.425	9.009	11.140
Log of population	3.562	1.355	0.704	3.525	7.191
Domestic credit by banks (as % of GDP)	0.557	0.402	0.034	0.430	1.627
Log of number of bank branches (per 100,000 adults)	2.626	0.952	0.481	2.564	4.594
Number of memberships in AML organizations	2.271	0.893	0.000	2.000	4.000
Basel indicator of money-laundering risk (log)	1.710	0.184	1.214	1.719	2.105
Perceived corruption index	0.457	0.279	0.043	0.401	0.964
World Bank Index of Country Governance (log)	3.772	0.771	1.205	3.944	4.565
Common law	0.271	0.449	0.000	0.000	1.000
Islamic law	0.083	0.279	0.000	0.000	1.000
Financial powers	0.406	0.208	0.000	0.333	0.867
Law enforcement features	0.326	0.243	0.000	0.333	1.000
Independent	0.501	0.138	0.256	0.502	0.752
Accountability	0.677	0.351	0.000	0.667	1.000
Overall FIU Governance Index	0.478	0.155	0.070	0.487	0.787

Countries with Law enforcement FIUs (17)					
Variable	mean	std dev	min	med	max
Log of per capita GDP	10.141	0.969	6.932	10.563	10.907
Log of population	2.278	1.423	-1.170	2.116	4.850
Domestic credit by banks (as % of GDP)	1.085	0.501	0.375	0.966	2.118
Log of number of bank branches (per 100,000 adults)	3.186	0.583	2.093	3.255	4.222
Number of memberships in AML organizations	2.882	0.485	2.000	3.000	4.000
Basel indicator of money-laundering risk (log)	1.525	0.179	1.129	1.552	1.776
Perceived corruption index	0.179	0.227	0.007	0.096	0.944
World Bank Index of Country Governance (log)	4.341	0.531	2.366	4.530	4.590
Common law	0.353	0.493	0.000	0.000	1.000
Islamic law	0.059	0.243	0.000	0.000	1.000
Financial powers	0.314	0.204	0.000	0.333	0.600
Law enforcement features	0.431	0.283	0.000	0.333	1.000
Independent	0.363	0.138	0.128	0.360	0.713
Accountability	0.520	0.372	0.000	0.333	1.000
Overall FIU Governance Index	0.407	0.147	0.154	0.423	0.601

As is often the case in country regressions, there may be causality between the dependent variables and the regressors. In practice, most, if not all, explicative variables are structural variables, which are unlikely to be affected by the nature of the FIU (e.g., income level and population, features of the financial and legal systems), and controls are country features that can be safely viewed as

exogenous in our context (religion). Therefore, the number of variables that, in principle, might be affected by FIU type is low. They include the indicators of money-laundering risk, perceived corruption, quality of government and the number of memberships in AML organizations. Such variables are typically structural and heavily path-dependent, making them unlikely to be affected by the FIU type adopted during the period under analysis. However, their coefficients have to be interpreted with caution. In such cases, our analysis is more descriptive than focused on uncovering a causality nexus. In any case, as a robustness check, we analysed whether removing them affected the main coefficients of interest – the results were unchanged.

The results are reported in Table 6. Notably, the model's ability to capture the within-sample variability of the dependent variables is quite high for country regressions (within the 0.41-0.49 range).[19]

With regard to the roles of the different regressors, the impact of economic fundamentals and other country features on the adoption of certain types of FIUs seems limited, with some exceptions. In the regressions including religion controls (columns 3 and 4), an administrative FIU tends to be chosen, *ceteris paribus*, by countries with higher populations, as already noted by Masciandaro and Quintyn (2016). This points to a possible country-size effect, which is quite common in supervision.[20] An administrative FIU also tends to be chosen, *ceteris paribus*, by countries with larger banking sectors (as proxied by the per capita number of bank branches), while a negative coefficient is estimated for credit as a percentage of GDP. Moreover, an administrative FIU is more likely for countries that have, in general, less perceived corruption but poorer quality of country governance. With regard to the latter result, as the financial FIU is generally expected to be the most effective scheme (e.g., Masciandaro and Volpicella, 2016), the decision to adopt it might reflect a desire to address institutional failures and related financial crime.

A somewhat different picture emerges with regard to the adoption of law enforcement FIUs. First, countries that are more involved in international AML organizations are more likely to adopt an investigative FIU (this confirms the findings of Masciandaro, 2016). While the underlying reason is not clear – international organizations do not impose or suggest specific models – the pattern has sometimes been explained on the basis of a "band-wagon effect": an institutional setting is more likely to be adopted if it has already been chosen by some peers. A law enforcement FIU is also more likely, on average, among countries with more perceived corruption, which might suggest that an FIU with strong investigative powers is expected to be more effective in fighting corruption, and in countries with better quality of government.

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[19] In general, the signs of the coefficients tend to be the opposite across the two regressions. This is not surprising, as the administrative and law enforcement FIU types are by far the most common institutional choice worldwide and represent most of our sample. Thus, the results of the respective cases are somewhat mirroring.

[20] See Masciandaro (2007).

Table 6
FIU Types

Variable	(1) Administrative FIU	(2) Law enforcement FIU	(3) Administrative FIU with controls	(4) Law enforcement FIU with controls
Economic and demographic variables				
Log of per capita GDP	0.536	-0.872	0.579	-1.104
	(0.907)	(1.106)	(1.113)	(1.341)
Log of population	0.835*	-0.484	0.938**	-0.506
	(0.429)	(0.416)	(0.425)	(0.417)
Financial sector				
Domestic credit by banks (as % of GDP)	-2.659*	1.293	-2.922*	1.804
	(1483)	(1.156)	(1.514)	(1.656)
Log of number of bank branches (per 100,000 adults)	1.721**	-0.724	1.889**	-0.718
	(0.756)	(0.690)	(0.951)	(0.793)
Memberships in AML organizations	-1.252*	1.593*	-1.371*	2.018**
	(0.728)	(0.831)	(0.750)	(0.951)
Institutional variables				
Basel indicator of money-laundering risk	-0.621	-2.179	0.071	-4.336
	(2.535)	(2.447)	(2.531)	(3.333)
Perceived corruption index	-16.69*	14.80	-18.86*	25.13**
	(9.736)	(11.54)	(10.42)	(12.56)
World Bank Index of Country Governance	-15.83***	18.07*	-17.33**	28.70**
	(5.967)	(9.701)	(8.500)	(13.78)
Common law	1.090	0.242	1.226	-0.351
	(0.937)	(0.861)	(0.938)	(1.060)
Islamic law	-2202	5.439**	-17.55***	21.44***
	(1.971)	(2.532)	(2.110)	(2.920)
Religion controls	no	no	yes	yes
Constant	66.44**	-73.22*	70.42*	-115.7**
	(27.64)	(39.38)	(36.54)	(54.44)
Observations	67	67	67	67
Pseudo R²	.46	.41	.49	.45

Logit estimator. Robust standard errors in parentheses: *** p < 0.01, ** p < 0.05, * p < 0.1.

We now turn to what is probably the most interesting part of this econometric section – the statistical analysis of the drivers of the index of FIU governance that we propose in this paper. As our dependent variables now have values ranging from 0 to 1, we utilize a GLM binomial estimator (Papke and Wooldridge, 1996). The results are reported in Table 7. In terms of the roles of country features and fundamentals, financial powers are, on average, stronger in smaller countries and weaker in bank-based economies (measured in terms of credit as a percentage of GDP). This may reflect the "bargaining power" of the banking sector in these countries.

At the same time, financial powers are stronger in countries with more affiliations with international AML organizations. As most countries have administrative FIUs that, in turn, typically have stronger financial powers, this might reflect some kind of peer effect. Law enforcement features in FIUs are associated with countries with a lower risk of money laundering, as measured by the Basel indicator. Moreover, they tend to be stronger in countries with civil law rather than common law.

Table 7
The FIU Governance Index and Its Components

Variable	(1) Financial powers	(2) Law enforcement features	(3) Independence	(4) Accountability	(5) FIU Governance Index
Economic and demographic variables					
Log of per capita GDP	-0.056	0.293	0.201	0.382	0.178*
	(0.174)	(0.229)	(0.138)	(0.407)	(0.107)
Log of population	-0.241**	0.053	0.144**	0.559***	0.110**
	(0.106)	(0.132)	(0.072)	(0.176)	(0.055)
Financial sector					
Domestic credit by banks	-0.823**	-0.260	-0.075	0.475	-0.162
	(0.402)	(0.511)	(0.211)	(0.682)	(0.229)
Log of number of bank branches (per 100,000 adults)	0.324	-0.341	-0.194	-0.005	-0.069
	(0.211)	(0.254)	(0.150)	(0.432)	(0.131)
Members of AML organizations	0.483***	-0.214	-0.190	0.039	0.007
	(0.186)	(0.259)	(0.149)	(0.375)	(0.119)
Institutional variables					
Basel indicator of ML risk	0.224	-2.468**	-1.329**	-4.562***	-1.758***
	(0.759)	(1.027)	(0.568)	(1.358)	(0.467)
Perceived corruption index	-1.006	0.866	1.479	2.228	0.720
	(1.441)	(1.980)	(0.993)	(3.337)	(0.888)
WB Index of Country Governance	0.107	0.153	0.606$_{**}$	0.535	0.318
	(0.417)	(0.552)	(0.267)	(1.008)	(0.259)
Common law	0.03	-1.240***	0.112	-0.526	-0.328**
	(0.263)	(0.314)	(0.143)	(0.446)	(0.137)
Islamic law	-0.065	0.121	0.055	-0.109	-0.010
	(0.434)	(0.628)	(0.377)	(0.759)	(0.359)
FIU type					
Law enforcement FIU	-0.891***	0.490*	-0.615***	-1.526***	-0.572***
	(0.279)	(0.288)	(0.205)	(0.525)	(0.151)
Hybrid FIU	-0.302	-0.269	-0.494*	-0.824	-0.417
	(0.621)	(0.588)	(0.290)	(0.919)	(0.301)
Judicial FIU	-1.942***	1.941***	0.547	15.98***	0.883***
	(0.541)	(0.741)	(0.409)	(1.447)	(0.355)
Religion controls	Yes	Yes	Yes	Yes	Yes
Constant	-0.803	2.101	-1.904	0.975	0.107
	(3.116)	(3.946)	(2.019)	(7.654)	(1.778)
Observations	67	67	67	67	67
AIC	90.916	89.258	93.006	91.961	92.213
BIC	126.192	124.533	128.281	129.441	127.488

GLM binomial estimator. Robust standard errors in parentheses: *** p < 0.01, ** p < 0.05, * p < 0.1.
Note: For the regressions reported in this table, the indices utilized for "financial powers" and "law enforcement features" do not include items 1.1 and 2.1, respectively (see Table A1). The FIU Governance Index has been recalculated accordingly.

FIU independence is stronger in larger countries and in countries with better quality of government and less opacity in the fiscal and legal systems (as measured by the Basel index of money-laundering risk). FIU accountability is also stronger in larger countries and, not surprisingly, in countries with more fiscal, financial and corporate transparency (as measured by the Basel index). With respect to the intersection of country fundamentals and the overall FIU Governance Index, the latter appears to be stronger in richer, larger and more (fiscally and financially) transparent countries. It is also stronger, *ceteris paribus*, in countries with civil law.

Some of the most insightful results concern the relationship between our indicators and the nature of the FIU adopted at the national level. When interpreting these results, we must keep in

mind that the dummy for the FIU type that is omitted in the regressions reported in Table 7 is the dummy for the most common type (i.e., the administrative FIU).

The most relevant estimates for our purposes are those concerning the coefficients of the dummy for law enforcement FIUs. As there are only five countries with a hybrid FIU and one with a judiciary FIU, the corresponding dummies are included for the sake of controls but their estimated coefficients do not allow us to draw broad-based conclusions. Financial powers are significantly weaker in countries with investigative FIUs than in those with administrative FIUs. This is not surprising per se, but the evidence provided by this analysis is much stronger than the evidence that emerged from the simple bivariate test reported in Table 3. The opposite holds true for FIU investigative powers, which are stronger for countries with law enforcement FIUs. This finding, which did not emerge in the bivariate test, is the outcome of a multivariate, *ceteris paribus* framework (at the 10% confidence level). Interestingly, the evidence clearly indicates that FIU independence is weaker in countries with investigative FIUs than in countries with administrative FIUs. The same holds true for also FIU accountability and, not surprisingly, for our overall index of FIU Governance – both are significantly weaker, *ceteris paribus*, for countries with investigative FIUs.

7. Conclusions

Money laundering and financial crime in general are devastating but increasingly common plagues of modern economies. One of the main components of the anti-money laundering system established by individual countries together with the international financial community is the national Financial Intelligence Units (FIU), which all countries are expected to have in accordance with the international FATF standards. While the extant literature covers the theoretical basis for and effectiveness of the establishment of an FIU as well as its type, no study had thus far attempted to empirically measure indicators of the powers and features of an FIU.

In this paper, we used a unique data set to study the governance of the anti-money laundering supervisor – the FIU. Starting from a theoretical framework that highlights four key properties of FIU governance – financial powers, law enforcement features, independence and accountability – we built a novel index of FIU governance. We then applied the index to an investigation of 71 countries (67 in the full econometric analysis) and explored the drivers of the FIU's governance properties. Our results show that FIU financial powers tend to be weaker in bank-based economies, while they are stronger in countries with more affiliations with international AML organizations. FIU independence and FIU accountability are stronger in countries with better quality of government and less opacity in the fiscal and legal systems. With regard to the intersection between country fundamentals and the overall FIU Governance Index, the index is stronger for richer and more transparent countries. It is also stronger for countries with civil (rather than common) law. Finally, given the distinction between administrative FIUs and law enforcement FIUs, we find that overall FIU governance as well as independence and accountability are weaker in countries with law enforcement FIUs.

Future lines of research may include the application of our metrics to data emerging from the ongoing FATF Mutual Evaluation round (fourth round, started in 2014), which is not yet completed. The updated data might also allow for further refinement of our indicators, which are a novelty in this field.

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Appendix

Table A1

List of Indicators – Components of the FIU Governance Index

1. **FINANCIAL POWERS (financial-sector insider effect, information skills and scale economies)**
   1.1   Does the FIU have autonomous powers to collect additional information in the course of STR analysis or does it have to rely on other authorities? *1= yes; 0 = no*

   1.2   Supervision and oversight powers
      - *0=FIU with no supervision and oversight powers*
      - *0.20=FIU with powers shared with other authorities for some obliged entities and AML obligations*
      - *0.40=FIU with powers shared with other authorities for some obliged entities and AML obligations, but not all of both*
      - *0.60=FIU with autonomous powers for some or all obliged entities and AML obligations but not all of both*
      - *0.80=FIU with powers shared with other authorities for all obliged entities and AML obligations*
      - *1= FIU with autonomous powers for all obliged entities and AML obligations*

   1.3   Regulatory powers
      - *0= FIU with no regulatory powers*
      - *0.20=FIU with powers shared with other authorities for some obliged entities and AML obligations*
      - *0.40= FIU with powers shared with other authorities for some or all obliged entities and AML obligations but not all of both*
      - *0.60=FIU with autonomous powers for some or all obliged entities and AML obligations but not all of both*
      - *0.80=FIU with powers shared with other authorities for all obliged entities and AML obligations*
      - *1=FIU with autonomous powers for all obliged entities and AML obligations*

2. **LAW ENFORCEMENT FEATURES (ability to trigger investigative or judiciary action)**
   2.1   Does the FIU have comprehensive and direct access to law enforcement information and personnel with investigative experience? 1= yes; 0= no

   2.2   Are STRs disseminated by the FIU to judicial authorities directly or through other authorities (e.g., LEAs)? *1= directly; 0=through other authorities*

   2.3   Does the FIU have asset-freezing powers? *1= yes; 0=no*

3. **INDEPENDENCE (from government *and* regulated intermediaries)**
   Structural independence
   3.1   Number of years since the FIU was established
   3.2   Number of employees/GDP in EUR billion
   3.3   Number of departments/divisions/offices
   3.4   Area of the public administration to which the FIU belongs: *3= Public Prosecutor/Attorney General; 2=Central Bank/Supervisor; 1=Police; 0=Ministry*

   Operational independence
   3.5   Is the FIU the only authority in charge of receiving STRs? *1= yes; 0=no*
   3.6   Does the FIU have discretion over which authority receives STRs, or is that determined by law or regulation?
         1= yes; 0=no
   3.7   Is feedback on the outcome of STRs provided by LEAs/judicial authorities to the FIU?
         1= yes; 0=no
   3.8   Is the FIU the only authority that can access STR information, directly or otherwise?
         1= yes; 0=no
   3.9   Is the FIU in charge of coordinating national representation at international forums (e.g., FATF, FSRBs)?
         1= yes; 0=no

   Director and other executive positions
   3.10 Who appoints the director? *3=head of state; 2=attorney general/head of independent administration; 1=head of ministry; 0= head of LEA*
   3.11 Are other FIU executive positions or bodies required by national legislation? *3=no; 2= Deputy Director with no Governing Board; 1= Governing Board with only FIU executives as Board members ; 0= Governing Board*

   Financial independence
   3.12 Does the FIU have its own budget or is it part of the budget of another institution?
         1= yes; 0=no

3.13 Does the FIU have the exclusive right to determine and approve its annual budget?
1= yes; 0=no

3.14 Are the FIU's resources (financial, logistic and human) its own or are they provided by other authorities?
1= own; 0=other authorities

3.15 Size of budget/GDP in EUR billion

Staffing and organisation

3.16 Who decides on the hiring of new personnel? *1= FIU; 0=other authorities*

3.17 Who deliberates on the FIU's internal organisation and structure?
1= FIU; 0=other authorities

4. ACCOUNTABILITY (to institutions and the public)

4.1 What statutory reporting obligations does the FIU have with reference to its activities?
1= public report (typically to high-level authority); 0= none or internal (not public) report

4.2 Is the FIU responsible for setting and declaring its own policy objectives and priorities, or are these fixed by other authorities/regulation/pre-defined processes (e.g., NRA)? *1= yes; 0=no*

4.3 Is the FIU involved in AML policy design and priority-setting, e.g., through NRA coordination and implementation?
1= yes; 0=no

Table A2
Sample Countries

1.	Algeria	36.	Kenya
2.	Angola	37.	Korea
3.	Argentina	38.	Lithuania
4.	Australia	39.	Luxembourg
5.	Austria	40.	Malaysia
6.	Azerbaijan	41.	Mexico
7.	Bangladesh	42.	Netherlands
8.	Belarus	43.	New Zealand
9.	Belgium	44.	Nigeria
10.	Brazil	45.	Norway
11.	Bulgaria	46.	Pakistan
12.	Canada	47.	Peru
13.	Chile	48.	Philippines
14.	China	49.	Poland
15.	Colombia	50.	Portugal
16.	Croatia	51.	Romania
17.	Czech Republic	52.	Russian Federation
18.	Denmark	53.	Saudi Arabia
19.	Ecuador	54.	Singapore
20.	Egypt	55.	Slovakia
21.	Finland	56.	Slovenia
22.	France	57.	South Africa
23.	Germany	58.	Spain
24.	Greece	59.	Sweden
25.	Hong Kong	60.	Switzerland
26.	Hungary	61.	Taiwan
27.	Iceland	62.	Tanzania
28.	India	63.	Thailand
29.	Indonesia	64.	Turkey
30.	Iraq	65.	Turkmenistan
31.	Ireland	66.	United Arab Emirates
32.	Israel	67.	United Kingdom
33.	Italy	68.	United States
34.	Japan	69.	Uzbekistan
35.	Kazakhstan	70.	Venezuela
		71.	Vietnam