Drivers of Suspicious Transaction Reporting Levels: Evidence from a Legal and Economic Perspective

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Abstract

Suspicious transaction reporting (STR) is a cornerstone of the international Anti-Money Laundering/Combatting the Financing of Terrorism (AML/CFT) framework. The evaluation of AML/CFT regimes is challenging, however, as the quality of STRs varies substantially between countries and little is known about the factors that drive STR. In combining legal and economic analyses, this article evaluates various factors that potentially explain STR levels. The analysis of the AML/CFT legislation in nine jurisdictions reveals that well-established legal and institutional structures promote the effectiveness of STR systems. In particular, the legal analysis shows that the scope of predicate offenses in national criminal law, as well as a penalty regime for non-compliance with the obligations under national AML/CFT legislation, seem to increase the quantity of STRs. Overly strict penalty regimes and insufficient training of entities with reporting obligations, on the other hand, likely stimulate over-reporting. Based on these findings, we econometrically investigate potential determinants of STR levels for 54 countries from 2006 to 2012. We find that high STR numbers indicate high levels of illegal activities such as terrorism and organized crime. Moreover, mutual evaluations of countries' AML/CFT frameworks entail a short-term increase in the number of STRs.

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INTRODUCTION

Combining legal and econometric methods, this paper analyses suspicious transaction reporting levels. While the number of these reports differs substantially between countries, little is known about the factors that explain a given level of reporting. In identifying and analysing a broad set of legal and economic factors that potentially contribute to countries' reporting levels, this article aims to facilitate the evaluation of suspicious transaction reporting schemes.

In response to the growing threat of global terrorism, the Financial Action Task Force (FATF)[6] initiated the development of a global standard of policy and legal measures to fight money laundering, terrorist financing and the proliferation of weapons (hereinafter the FATF Standard) (FATF, 2012). FATF Recommendation 20 proposes the introduction of a reporting standard that requires national financial intelligence units (FIUs) to report suspicious transactions related to criminal activity or terrorist financing. Depending on national legislation, these suspicions usually take the form of suspicious transaction reports (STRs) or suspicious activity reports (SARs).

The efficiency of STR systems depends on two factors: the quality of reports and the administrative capacity to detect and prosecute criminal activity. Both factors, however, rely on the implementation of several legislative and bureaucratic provisions (Roule & Kinsell, 2003). Therefore, periodic evaluations of the degree to which jurisdictions are compliant with the FATF Standard are an integral part of the global anti-money laundering/combating of the financing of terrorism (hereinafter AML/CFT) framework. Mutual evaluations are conducted by financial experts and found to be objective and consistent (Chaikin, 2009). Moreover, when conducting mutual evaluations of AML/CFT regimes, the question often arises as to what an adequate level of such reporting might be. As reporting entities are held liable for the consequences of money laundering, FIUs often receive a large number of unfounded STRs (e.g. Johnston & Carrington, 2006; KPMG, 2003), which makes the FIUs' evaluation particularly important.[7] Experience of the assessors has shown that the number of STRs could range from hundreds a year to thousands a day. Against this background, it is very difficult to make any meaningful and informed judgment about whether or not a given level of reporting is adequate in a country's particular context. However, in order to facilitate the evaluation of FIUs efforts in fighting money laundering and the financing of terrorism, a better understanding of the effectiveness of STR schemes and the factors that drive reporting levels is much needed.

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[6] The FATF is an inter-governmental body established in 1989 by the Ministers of its member jurisdictions. The objectives of the FATF are to set standards and promote effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system.

[7] FIUs often forward only a small fraction of STRs filed to law enforcement agencies and sometimes several thousand STRs refer to one money laundering case (e.g. see EUROSTAT, 2013).

While it should be acknowledged that direct comparisons between different countries are not feasible due to each country's unique circumstances (legal, financial, etc.), we assume that some factors may contribute to and explain a given level of reporting. In combining legal and economic analyses, this article aims to evaluate various factors that potentially explain STR levels. Improving the effectiveness of AML/CFT regimes is crucial as global terrorism and international money laundering remain significant threats to political stability and economic prosperity in many regions of the world.

Our main findings are threefold. First, the legal analysis reveals that the scope of predicate offenses in national legislation and a dissuasive penalty regime for non-compliance with national AML/CFT regimes seems to increase the number of STRs. On the other hand, insufficient training of reporting entities, as well as overly severe penalties for non-compliance with reporting standards are likely to promote over-reporting. Second, the econometric analysis shows that illegal activities, particularly terrorism and organized crime, trigger high levels of STRs. Third, both legal and economic analyses find evidence that mutual evaluations increase the number of STRs.

In line with earlier research on the effects of FATF membership on money laundering in the banking sector (Johnson & Lim, 2003)[8], these findings suggest that the FATF Recommendations facilitate the detection of criminal activity related to terrorist financing and money laundering when implemented appropriately. Moreover, we observe that STR is particularly effective when embedded in sound legal structures with a broad scope of predicate offenses. Despite the resources required to build and maintain capacity to detect suspicious activities, the FATF Recommendations appear to play a crucial role in fighting global terrorism. However, as we find the number of STRs to be closely linked to mutual evaluations, mutual evaluation schemes should incorporate risk considerations. This would help monitoring jurisdictions that are vulnerable to money laundering and terrorist financing more effectively.

The next section describes the STR requirements as set out in the FATF Recommendations. We subsequently investigate legal and institutional factors that affect STR levels and discuss the effectiveness of different reporting standards in Section 3. In Section 4, we assess the effects of various economic and institutional factors on STR levels. Section 5 summarises and concludes.

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[8] While Johnson & Lim (2003) find that countries exhibit less money laundering activity in the banking sector after joining the FATF relative to non-FATF members, they do not investigate whether the FATF aggravates the money laundering problem in non-member states when illicit activity is relocated to non-FATF countries. Also, their research design does not allow identifying the direct effects of FATF membership on money laundering activity.

International standards in suspicious transaction reporting

Suspicious transaction reporting is the backbone of preventive measures under the FATF Standard. Specifically, the FATF recommends legal provisions that require financial institutions (FIs)[9] and designated non-financial businesses and professions[10] to report certain transactions to their national financial intelligence units (FIUs). The most relevant recommendation in this respect is Recommendation 20, which reads as follows:

> *"If a financial institution suspects or has reasonable grounds to suspect that funds are the proceeds of a criminal activity, or are related to terrorist financing, it should be required, by law, to report promptly its suspicions to the financial intelligence unit (FIU)."* (FATF, 2012, p. 21)

The interpretative note to Recommendation 20 clarifies its scope (FATF, 2012, p. 80). Criminal activity under this recommendation should be understood as any

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[9] The term *"Financial institutions"* under the FATF Recommendations 2012 has a broad meaning and includes both natural and legal persons who are engaged in a business encompassing, or carry out on behalf of the customer, one or more of the following activities: (i) acceptance of deposits and other repayable funds from the public; (ii) lending, (iii) financial leasing, (iv) money or value transfer services, (v) issuing and managing means of payment (e.g. credit and debit cards, cheques, traveller's cheques, money orders and bankers' drafts, electronic money), (vi) financial guarantees and commitments, (vii) trading in money market instruments (cheques, bills, certificates of deposit, derivatives etc.), foreign exchange, exchange, interest rate and index instruments, transferable securities, commodity futures trading, (viii) participation in securities issues and the provision of financial services related to such issues, (ix) individual and collective portfolio management, (x) safekeeping and administration of cash or liquid securities on behalf of other persons, (xi) otherwise investing, administering or managing funds or money on behalf of other persons, (xii) underwriting and placement of life insurance and other investment related insurance, (xiii) money and currency changing. The FATF Recommendations 2012 are available online at:
http://www.fatf-gafi.org/media/fatf/documents/recommendations/pdfs/FATF_Recommendations.pdf.
[10] Under the FATF Recommendations the term *"Designated non-financial businesses and professions"* is defined with an exhaustive list of subject persons that are expected to have an increased probability to be exposed to the proceeds of crime in their regular professional activity or business: (i) casinos, (ii) real estate agents, (iii) dealers in precious metals, (iv) dealers in precious stones, (v) lawyers, notaries, other independent legal professionals and accountants – this refers to sole practitioners, partners or employed professionals within professional firms. It does not refer to 'internal' professionals that are employees of other types of businesses, nor to professionals working for government agencies, who may already be subject to AML/CFT measures, (vi) trust and company service providers refers to all persons or businesses that are not covered elsewhere under these Recommendations, and which as a business, provide any of the following services to third parties (a) acting as a formation agent of legal persons, (b) acting as (or arranging for another person to act as) a director or secretary of a company, a partner of a partnership, or a similar position in relation to other legal persons, (c) providing a registered office; business address or accommodation, correspondence or administrative address for a company, a partnership or any other legal person or arrangement, (d) acting as (or arranging for another person to act as) a trustee of an express trust or performing the equivalent function for another form of legal arrangement, (e) acting as (or arranging for another person to act as) a nominee shareholder for another person. Further, it should be noted that designated non-financial businesses and professions have been included in the FATF Recommendations in 2003. The FATF Recommendations 2003 are available online at: http://www.fatf-gafi.org/media/fatf/documents/recommendations/pdfs/FATF%20Recommendations%202003.pdf.

predicate offense for money laundering as defined by the national laws of the individual countries. The FATF provides for a minimum list of offenses which should be covered by national AML/CFT legislation and be included in the definition of the predicate crimes for money laundering or terrorist financing.[11]

However, not all offenses falling in one of the designated crime categories have to be covered by the reporting requirement. FATF Recommendations[12] defining the scope of predicate offences for money laundering and terrorist financing are closely related to the STR framework. *Recommendation 3 "Money Laundering Offence"*[13] and *Recommendation 5 "Terrorist Financing Offence"*[14] outline the minimum scope of crimes that countries should include in their national AML/CTF regimes. From the wording of Recommendation 3, it is possible to derive that national laws have to define a threshold for predicate offenses that constitute serious crimes. An exception is made for terrorist financing as the *"serious crime"* threshold is omitted. Furthermore, it is stressed that terrorist financing should be understood in a comprehensive manner. This means financing of terrorist acts does not need to be linked to a specific terrorist act or acts to be considered as such (FATF, 2012, p. 80). All suspicious transactions must be reported to the FIUs, whether they have been carried out or just attempted (FATF, 2012, p. 80).

Although the FATF Recommendations do not constitute a legally binding instrument under international law, they have been globally recognized and therefore can be considered to be soft international law (Terry, 2010). In order to comply with the FATF Standard countries are expected to implement the FATF Recommendations in their national legal systems in compliance with a regular procedure laid down in their constitutional laws. Avoiding prescriptive provisions in the FATF Recommendations helps to provide for a flexible base that can be adapted to the legislative and legal specifics of each country. Such flexibility allows for a broad spectrum of designs and interpretation of the FATF Standard in the national institutional and legal AML/CFT frameworks. The enforcement of the FATF Standard is ensured by on-site visits and off-site reviews of the documentation provided by reviewees. Mutual evaluations are conducted by

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[11] A list of designated offenses under the FATF Recommendations 2012 includes the following categories of offenses: participation in an organised criminal group and racketeering, terrorism, including terrorist financing, trafficking in human beings and migrant smuggling, sexual exploitation, including sexual exploitation of children, illicit trafficking in narcotic drugs and psychotropic substances, illicit arms trafficking, illicit trafficking in stolen and other goods, corruption and bribery, fraud, counterfeiting currency, counterfeiting and piracy of products, environmental crime, murder, grievous bodily injury, kidnapping, illegal restraint and hostage-taking, robbery or theft, smuggling (including in relation to customs and excise duties and taxes), tax crimes (related to direct taxes and indirect taxes), extortion, forgery, piracy, and insider trading and market manipulation.

[12] Other recommendations also may have influence on the STR reporting frameworks, but in the authors' opinion their impact is rather indirect. Therefore, the focus of the legal analysis will be on the above-mentioned three recommendations with some references to other potential influencing factors.

[13] Old numbering: Recommendation 1 and Recommendation 2.

[14] Old numbering: Special Recommendation II.

assessors who are appointed either directly by FATF, or by connected organizations, such as the Committee of Experts on the Evaluation of Anti-Money Laundering Measures and the Financing of Terrorism (Moneyval), the Asia/Pacific Group on Money Laundering (APG) and the other FATF-like regional bodies.

Legal analysis

Introduction

Since the FATF Recommendations do not constitute a legally binding instrument under international law, jurisdictions may choose their own legal and institutional models in order to implement the FATF Standard. Given a broad variety of possible legal and institutional frameworks which may be implemented by jurisdictions, nothing else may be expected but a slighter or major deviation from the international standard.

With the aim of identifying relevant features in legal and institutional frameworks that may have affected STR levels, we focus our analysis on two contrasting groups of countries from the sample surveyed in the economic analysis. STR to GDP ratios rather than absolute figures are referred to in order to distinguish high and low-reporting countries for the purpose of reviewing legal and institutional frameworks. Particularly, we focus on the three countries with very high (Thailand, Latvia, Georgia) and four countries with the very low (Qatar, Switzerland, Germany, and Austria) STR/GDP ratios, while also accounting for practices from other interesting jurisdictions such as Mexico (medium STR/GDP levels) and Liechtenstein.[15] By reviewing the mutual evaluation reports (MERs) which are publicly available on the FATF or FATF-like bodies' websites, an attempt is made to identify changes in legal systems or institutional measures which could have affected STR levels in the period from 2006 to 2012.

Scope of the predicate offenses under domestic laws

In accordance with Recommendation 20, when deciding whether to report a suspicious transaction or activity, first of all, the entity or person has to identify whether a transaction has any potential connection with proceeds derived from committing a predicate crime. Thus, the number of reported transactions clearly depends on the scope of the definitions of money laundering and terrorist financing in national laws. It is hence plausible to expect that countries that define money laundering in a broad sense by including in its definition the whole range of designated crimes can be expected to have high STR levels. This assumption seems to be confirmed when looking at the countries with low STR/GDP levels.

As depicted in Appendix A, Qatar was the country with the lowest STR/GDP ratio in the timespan analysed. Indeed, the scope of money laundering offences was very

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[15] Until 2009, the OECD considered Liechtenstein as an uncooperative tax haven. http://www.oecd.org/countries/liechtenstein/listofunco-operativetaxhavens.htm.

narrowly drafted and accordingly criticized by the assessors in the MER of 2008. At that time under Qatari AML law, money laundering offenses did not cover acts aimed at concealing or disguising the location, disposition, movement, or ownership of funds and the list was further narrowed by adopting a list of predicate crimes substantially shorter than that of FATF-designated offences. Pursuant to this list, only crimes involving drugs and dangerous psychotropic substances, forgery and counterfeiting, and imitations of notes and coins, illegal trafficking of weapons, ammunition and explosives, terrorist crimes, and extortion and looting were considered to constitute crimes predicated to money laundering (MENAFATF, 2008, p. 9). As a result of these and other deficiencies Qatar was placed in a regular follow-up process (MENAFATF, 2012, p. 1). The deficiencies related to the scope of money laundering offence were removed in 2010 (MENAFATF, 2012, p. 2). Accordingly, the number of STRs significantly increased in 2010.[16]

Switzerland, the country with the second lowest STR/GDP in our sample, in 2005 had a definition of predicate offenses with a limited scope, which did not include four categories of predicate offenses specified by the FATF (human trafficking, piracy and counterfeiting, smuggling, insider trading and market abuse) (FATF, 2005, p. 13). The first three categories were addressed at the time of the follow-up report and the last one was partly dealt with (FATF, 2009, p. 16). The analysis of Swiss laws revealed that there was no requirement to file an STR if no relationship with the customer had been established due to failed negotiations. Furthermore, Swiss law required that a person filing a STR had a well-founded suspicion – a threshold that demands more verification from the person reporting a transaction than prescribed by the FATF Recommendations.

In the case of Germany the assessors noted in the 2010 MER that the concept of *"suspicious transaction"* was defined in a very narrow way. Its scope related only to money laundering and not generally to the proceeds from criminal activity (FATF, 2010, p. 165). Moreover, this definition required a much higher certainty threshold than is intended by the wording *"suspects or has reasonable grounds to suspect"* provided in the FATF Recommendations. National law indicated that the requirement of near-certainty had to be met before filing the report. Additionally, given that the German FIU was organized in the form of a police unit and STRs were submitted to criminal investigation authorities, STRs represented criminal complaints instead of constituting a preventive measure (Cindori, 2013).

An interesting example is represented by Thailand - the country with the highest STR/GDP ratio in our sample. The high ratio of reports in Thailand is not a concomitant of the definition of money laundering, but is rather attributable to inefficiencies of its AML/CFT framework (International Monetary Fund, 2007, p. 168). In fact, Thailand was rated as being partly compliant with Recommendation

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[16] This effect cannot be entirely attributed to the extension of the scope of predicate crimes, but should rather be seen as the result of comprehensive AML/CFT framework reform requested by the MENAFATF.

1 and Recommendation 2 (now Recommendation 3) in the 2007 MER, where it was asked to extend the scope of predicate offences. Thailand is rather an exception, since its high reporting levels may be explained by deficiencies of its legal and institutional frameworks that are explained in more detail in Section 3.5.

On the other hand, a broad definition of money laundering crimes can lead to more adequate STR levels An example is Latvia,[17] where the level of STRs was low due to the fact that reporting entities deliberately complied with the AML/CFT framework in a very lax way (Moneyval, 2006, p. 7). Reporting levels improved, however, after regulatory reforms were undertaken in order to address international objections and to restore trust in the financial sector.

Penalties for non-compliance with reporting obligations

Sanction regimes for non-compliance with reporting obligations are central elements of AML/CTF regimes. In line with traditional economic theory, the cross-country analysis supports the assumption that high penalties imposed on non-compliant entities can work as a dissuasive factor and increase the level of STRs (Allingham & Sandmo, 1972).

Low sanctions or no fines effectively imposed seem to affect STR levels negatively. The problem of insufficiently dissuasive sanctions is common to many countries with low reporting levels. For example, in the 2008 MER of Qatar the assessors have highlighted that the Qatari AML law did not provide for sanctions for failure to report suspicious transactions (MENAFATF, 2008, p. 138). Furthermore, no institutions were sanctioned for non-compliance with AML law (MENAFATF, 2008, p. 140). Subsequent to this critique Qatari laws were amended and penalties were increased, and additional administrative sanctions were introduced (MENAFATF, 2012, p. 16). In fact, the number of STRs reported in 2010 compared to the 2009 figures increased more than two times.

Also in the case of Georgia, STR levels increased substantially due to the stricter regulatory pressure by the National Bank of Georgia on the financial sector. In fact, the number of STRs more than doubled in 2010 compared to 2009. However, at the same time financial institutions interviewed by the assessors have revealed that the substantial increase in STRs was a signal of defensive over-reporting following inspections carried out by the Georgian National Bank and penalties imposed as a result of those inspections rather than a sign of effective identification of suspicion (Moneyval, 2012, pp. 194-195).

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[17] The first MER completed in 2001 already stated that "Latvia has taken a number of significant steps to counter money laundering. They have put together a very comprehensive structure for the protection of the financial system in a regime based on suspicious and unusual transaction reporting, the latter with a range of different reporting thresholds for various institutions" (Moneyval, 2001, p. 2).

In Thailand, persons subject to reporting faced a lack of feedback or guidance on how to detect suspicious transactions or which circumstances might indicate the possibility that transactions have an underlying ML/FT purpose (International Monetary Fund, 2007, p. 168). On the other hand, high sanctions and penalties for non-compliance, which in the AML/CFT framework always means the failure to report a suspicious transaction, tended to fortify further the tendency to file STRs without a well-grounded suspicion. Given the high level of uncertainty with respect to their obligations, financial entities reported more suspicious transactions than necessary (International Monetary Fund, 2007, p. 168).

Visits of Evaluators and Regulatory Pressure

Generally, the analysis of the majority of MERs proves that on-site visits of the assessors play a significant role in triggering the reforms necessary to bring the legal system of a particular country in line with the FATF Standard and increase the number of meaningful STRs. One of the most salient examples is Latvia. Being caught in the midst of the scandals revolving around its financial sector in 2005 and subject to heightened international attention,[18] including that of AML/CFT framework assessors, Latvia had to introduce a range of legislative, institutional and administrative measures to rehabilitate the image of its financial sector. Furthermore, authorities have undertaken extensive inspections at the financial institution; as a result, at one point 13 of 23 Latvian financial institutions were under intensified supervision due to AML/CTF deficiencies. It was expected that deficiencies identified during this period were to be substantially addressed by the end of 2005. As a result of these reforms and intensified pressure on the financial sector by the national authorities, the numbers of suspicious and unusual transactions reports have increased in the period of the reforms and kept on growing several years thereafter. Figure 1 represents the dynamics of the reporting levels in Latvia between 2000 and 2010 (the data are taken from Moneyval, 2012, p. 77). The 2012 MER underlined Latvia's substantial progress in improving its AML/CFT system. However, it was still rated as *partially compliant* with a range of recommendations concerning the establishment of client risk profiles and STR (Moneyval, 2006, p. 245). Generally, in countries with low reporting levels visits of assessors led to an increase of STRs due to the reforms that had to be implemented in order to comply with the observations made in the MERs (also see Section 4).

Efficiency of AML/CFT Frameworks

High levels of STRs do not automatically indicate that the AML/CFT system is entirely compliant with the FATF Standard. In 2008, Mexico's MER detected a long list of deficiencies in its AML/CFT framework, among which an

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[18] The US Treasury made a proposal for classifying two Latvian banks as posing major concern for money laundering for the purposes of the US law (Moneyval, 2006, p. 7).

overwhelming quantity of low quality STRs (FATF, 2008, pp. 184-185). The latter deficiency was not only identified by the assessors, but also acknowledged by the Mexican authorities. STRs peaked in 2005, and then started to decrease due to efforts undertaken to increase the quality of the reports. It is interesting to note that although the quantity of STRs was high, Mexico did not make use of the STRs filed by some participants on the financial market, for example bonding companies, registered money transmitters and currency exchanges (FATF, 2014b, pp. 20-21).

Figure 1. Suspicious and unusual transactions reported in Latvia in 2000- 2010
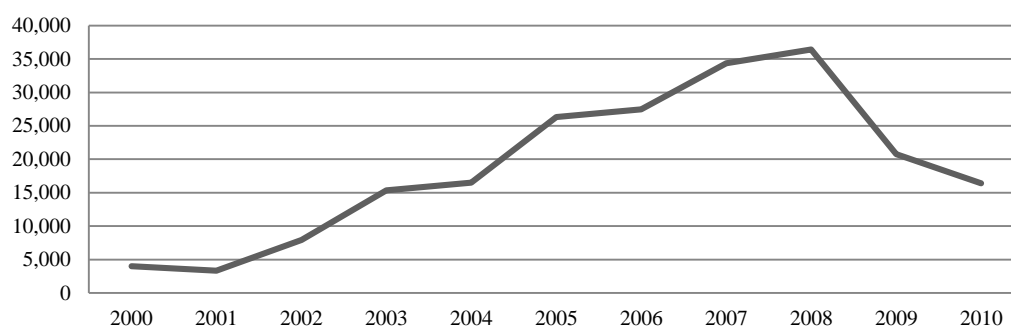
The high level of reporting in Thailand could also to some extent be attributed to an inefficient AML/CFT system. According to the 2007 IMF report, many of the reports filed were of poor quality (p. 168). In particular, the cash transaction reporting threshold triggering the identification obligation seemed problematic. An analysis of reporting patterns revealed that reporting entities tended to submit reports for transactions that exceeded this threshold without due diligence. On the other hand, transactions below the threshold were seemingly not properly scrutinised by financial institutions, as the low number of STRs referring to these transactions indicates (International Monetary Fund, 2007, p. 168). Therefore, in its 2007 review the IMF concluded that the over-reporting in Thailand could *inter alia* result from a misinterpretation of the reporting obligations (International Monetary Fund, 2007, p. 168).

Exposure of Reporting Entities

Another important element that could be noted in the countries with low reporting levels is the exposure of reporting entities filing the STR and the status of STR itself. Countries where reporting entities were excessively exposed to the attention of criminal authorities exhibited the tendency to have low reporting levels. In Liechtenstein the FIU was obliged to submit all suspicious activity reports to the prosecutor's office. This could negatively affect the willingness of financial institutions to file such reports (Moneyval, 2014, p. 12). Similar issues with the exposure of institutions obliged to reporting were also found in Austria. Under national law, the STRs constituted an instrument similar to a criminal complaint, meaning that the suspect or defendant had a right to access all the files including the relevant STRs after the end of proceedings. That made them a self-limiting

factor for reporting entities (FATF, 2014a, p. 12). A similar weakness was revealed in the German regime, where the reporting entity had to have a relatively high degree of certainty regarding the money laundering offense before filing a STR. Moreover, the reports had to be filed with the state criminal investigation authorities. As a result, the reports were perceived as criminal complaints rather than indicators of suspicious transactions (FATF, 2010, p. 12).

Secrecy provisions

Although bank and professional secrecy provisions in many jurisdictions have been removed or relaxed due to international pressure from the G20, the FATF and the OECD, they still seem to negatively impact the STR levels in several countries.

In 2014, it was underlined that Liechtenstein was still constrained by its national secrecy regulations. Austria also applied strict bank secrecy rules to information retained by banks. Moreover, there were restrictions on the FIU's access to information. However, following the legislative changes undertaken in 2010 and 2012, the follow-up report of 2014 up-graded Austria's legislation and considered it to be largely compliant with Recommendation 9 *"Financial Institution Secrecy Laws"* (FATF, 2014a, p. 5).

The 2010 MER criticized the German framework for having a carve-out provision for legal privilege and professional secrecy. Lawyers were exempted from their reporting obligations in instances where information on suspicious transactions was obtained while providing legal advice or while defending clients at court.[19] The negative implications of this exemption on reporting levels were enhanced by a broad interpretation of the legal advice definition. For instance, notaries claimed that almost all of their activities were considered to involve an element of legal advice, since attesting to the correctness of documents includes determining whether the terms of contracts and other documents are legally correct. The secrecy policy in Germany was further strengthened by the possibility to transmit STRs to competent federal chambers. Nevertheless, according to German chambers' representatives, this latter aspect did not play a significant role as STRs were forwarded promptly to the relevant authorities (FATF, 2010, p. 225).

This section has shown that differences in legal AML/CFT frameworks and the role of FIUs strongly affect STR levels. More specifically, the country studies have illustrated that (i) the scope of predicate offense under domestic laws, (ii) non-compliance with reporting obligations, (iii) the visits of evaluators and regulatory pressure, (iv) the efficiency of AML/CFT frameworks, (v) the exposure of reporting entities, and (vi) secrecy provisions in domestic law have an impact on STR levels. Acknowledging these very different legal frameworks, the next section broadens

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[19] There was an exception to this regulation. The carve–out was not effective if it was certain that a client deliberately used legal advice for the purpose of ML or TF.

the perspective and analyses the effects of various economic and political factors that potentially drive STR levels.

Economic analysis of the drivers of STR levels

Introduction

This section aims at identifying factors that affect countries' STR in order to facilitate the determination of adequate reporting levels. Little is known about the determinants of reporting levels and empirical evidence on the effectiveness of STR schemes is rare. However, as there is broad consensus that money laundering and terrorist financing pose pressing political challenges, it is essential to establish reporting systems that facilitate effective prosecution. As the number of transactions reported varies significantly between countries and reporting obligations pose a substantial burden for financial and political institutions, a better understanding of the factors that drive reporting levels is much needed.

This section, therefore, provides an exploratory analysis of the effects of a broad range of political and economic factors on countries' reporting levels. Generally, a theoretical framework that allows evaluating the adequateness of reporting standards is missing and it seems questionable whether an effective reporting system is characterized by a high number of STRs. In a first step we thus develop a set of hypotheses and describe the data (Section 4.2). Subsequently, we regress national reporting levels on selected key factors in order to identify their respective effects on STR levels (Section 4.3). The findings are then discussed and summarized in Section 4.4.

Descriptive Data Analysis and Hypotheses Development

Since its founding in 1989, the FATF expanded to its current 36 members. It moreover cooperates closely with several associate members and observer organizations.[20] However, despite the FATF's general recommendation to publish suspicious activity reports annually, most financial intelligence units of associated member states do not provide comprehensive access to information on STRs. Our sample is thus restricted to countries that publish annual reports or grant access to data on reporting levels.[21]

In total, we consider 54 countries[22] during the period from 2006 to 2012. Generally, countries' reporting levels vary dramatically. They range from 63 STRs in Malta (2009) to over 1.5 million SARs in the United States (2012).[23]

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[20] http://www.fatf-gafi.org/about/membersandobservers/.
[21] These figures can for instance be retrieved from
http://www.fiba.net/pages/FinancialIntelligenceUnits/.
[22] Countries that provided information on STRs are listed in Appendix A.
[23] Suspicious Activity Reports (SARs) are generally defined more broadly than STRs, as they include various activities that violate criminal law.

Figure 2 shows the total number of STRs (in thousands) over the period analysed. The number increased steadily from 1.38 million in 2006 to above 3.4 million in 2010. After this spike in 2010, we observe a small decrease in the following two years, with the total number of STRs remaining above three million. For 2012, our data comprises a total of 3.06 million reported STRs (SARs). With 1.58 million STRs, the lion's share of these STRs/SARs was reported by the United States (51.9% of total reports). Other important reporting countries were Japan, South Korea, and the United Kingdom, each with more than 250,000 STRs in 2012.

Clearly, the high overall number of STRs/SARs is driven by a small number of countries. In 2012, the first eight countries together reported more than 90% of all STRs. Therefore, it is imperative to investigate country-specific characteristics of the enforcement regime (see Section 3). In order to facilitate the comparison between different countries that adopted AML/CTF schemes, we additionally evaluate the effect of several macro-economic factors on reporting levels. Appendix B provides an overview of the variables considered in our analysis.

Figure 2: Total number of STRs (in thousands) from 2006 to 2012 in the sample of 54 countries
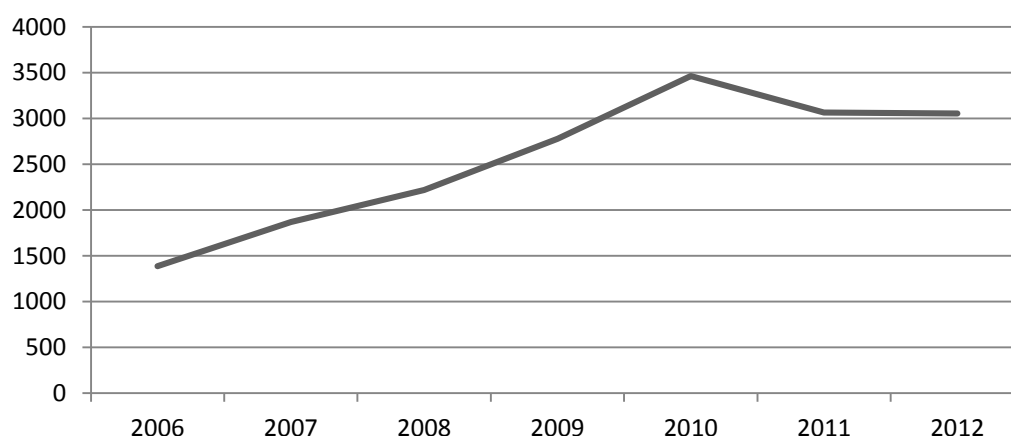
To start with, the economic size of a country seems an obvious determinant of varying STR levels among countries. Particularly the larger size of the financial sector may trigger more STRs. Indeed, a simple scatterplot illustrates that the number of STRs is positively correlated with the economic size of a country (measured in GDP) (Figure 3). Given this positive correlation, we "normalize" the number of STRs by the GDP of the respective country. We can thus analyse how specific factors affect the ratio of reports to GDP.

Figure 4 depicts the (natural logarithm of the) average ratio of STR/GDP between 2006 and 2012. Apart from a small decline in 2007, the average ratio of STR to GDP has increased steadily since 2006, exhibiting a relatively steep rise between 2007 and 2010 and a slower increase in the years after.

Figure 3: The number of STRs(ln) plotted against the GDP(ln) in the 54 sample countries between 2006 and 2012
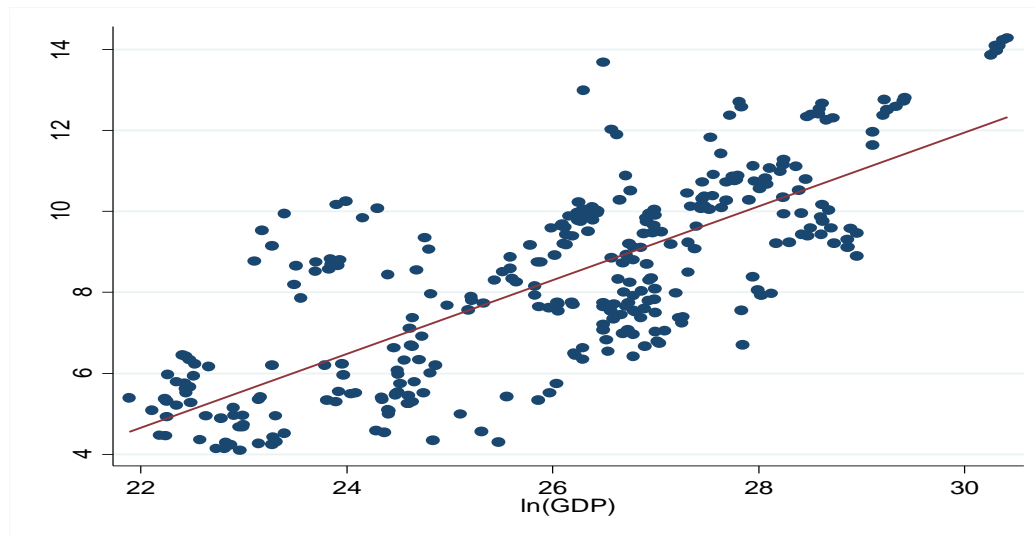
Figure 4: The average ratio of STR to GDP (ln) of the 54 sample countries between 2006 and 201
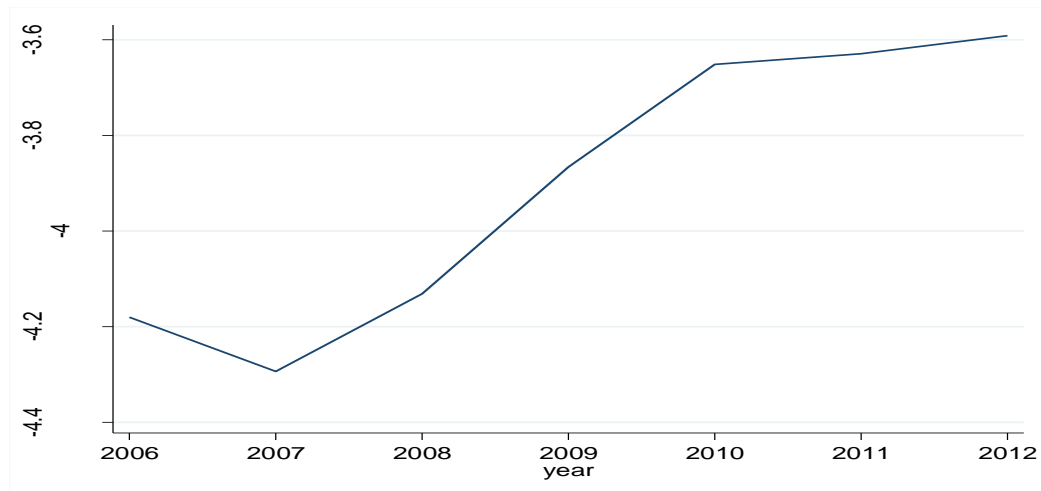
As little is known about the effects of those factors on countries reporting levels and it is often not clear how they affect STR, we develop a broad set of hypotheses that cover various economic and institutional factors.

First, we expect the level of economic development and general institutional factors to influence reporting levels. A state's stability, its capacity to fight corruption, and the size of the shadow economy likely determine suspicious activity. For instance, Puffer, McCarthy & Jaeger (2016) argue that institution building in emerging economies is key in fighting corruption, and Vaithilingam & Nair (2007) find less money laundering activity in countries with strong institutional capacity, effective legal and regulatory frameworks, and efficient governance structures. On the other hand, while a large degree of corruption, for instance, potentially triggers a lot of suspicious activity that translates into a high number of STRs, a corrupt system

might also undermine reporting standards and thus reduce the number of reports filed. Thus, we hypothesize that:

> H1: General institutional factors affect STR levels (direction unclear).

Second, we assume that the depth and internationality of a country's financial sector impacts STR levels. We would expect that the larger this share of international activity in total banking activity is, the higher the risk for suspicious transactions taking place and being reported. The financial sector variables also capture that the place of financing of the criminal activity may differ from the place where the underlying criminal activity actually takes place.

> H2: Depth and internationality of the financial sector increase the number of STRs.

Third, we conjecture that financial sector regulation influences STR levels. Restrictions on bank activity and the strength of official supervisory power, for instance, could have positive or negative effects on reporting levels. Therefore, we assume that

> H3: Financial sector regulation affects STR levels (direction unclear).

Fourth, we expect that FATF membership increases STR levels. While little is known about the costs and benefits of AML/CFT regimes (Halliday, Levi & Reuter, 2014), FATF membership indicates a political commitment that might ultimately result in high numbers of STRs. In line with our findings from Section 3.4., we moreover expect on-site visits and MERs to increase STR levels, as they facilitate and supervise the implementation of FATF standards. It follows that

> H4: FATF membership and mutual evaluations increase STR levels.

Fifth, we hypothesize that criminal activities drive reporting levels. Given that well-targeted reporting systems successfully identify criminal activities, countries with high crime-rates should file more STRs. Thus, particularly high costs for businesses that are caused by terrorism or organized crime are likely to increase the number of STRs. We therefore assume that

> H5: Criminal activities increase the amount of STRs.

We finally conjecture, that tax havens oppose disclosure of financial information and thus report relatively few suspicious transactions. This is in line with the notion that tax havens protect investor privacy (Schjelderup, 2016). Thus, we hypothesize that

> H6: Tax havens exhibit low STR levels.

Regression analysis

Data and methodology

We set up a panel data set comprising 54 countries and perform regression analysis to investigate the hypotheses above. The choice of countries depends mainly on whether or not the countries publish their STR numbers. The sample thus contains very different economies from all continents, including 28 OECD countries, a number of middle-income countries such as India, the Philippines or the Senegal, large countries such as the United States and very small countries such as Malta, and also nine jurisdictions which are classified as tax havens.[24] The full list of countries is included in Appendix A.

The sample period spans the years 2006 to 2012. The average number of reports per country over the sample period 2006-2012 amounts to 55,568 STRs per year. The average number of STRs per country exhibits a large variance ranging from a maximum of over 1.3 million in the United States and a minimum of 76 in Senegal. On average, there are 94 STRs per USD one billion GDP over all countries and all years in our sample. The highest ratios are to be found in Thailand (1,623.3), Latvia (864.1) and Georgia (759.3), while Qatar has the lowest ratio with 1.3, followed by Switzerland (1.9) (see Table A). Due to the limited availability of STR data we do not have observations for all countries for all years of the sample period. The panel is thus unbalanced.

To control for time-invariant country-specific factors (such as institutional and legal frameworks), fixed-effects estimations are used. These estimates, however, only give a picture on within-country variation over time. Hence, we additionally show random-effects estimates capturing some cross-country variation as well.

As clearly visible in Figure 1, the number of STRs shows a steady upward trend over most of the sample period. Also, our sample period includes the years of the financial and economic crisis starting in 2008 which might affect STR levels. All regression models thus include year-fixed effects to control for a common time-trend. Standard errors are clustered at the country level. The dependent variable is the (natural logarithm of the) ratio of the number of STRs over GDP by a given country in a given year. The choice of explanatory variables is based on the hypotheses above. Summary statistics and correlation tables are presented in Tables C and D in the Appendix.

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[24] Cyprus, Hong Kong, Ireland, Lebanon, Luxembourg, Malta, Mauritius, Singapore, and Switzerland (Gravelle, 2015).

RESULTS

The baseline regression results with fixed effects are depicted in Table 1 below. Following hypothesis 1, we include a country's GDP per capita (gdppc) in order to measure its level of economic development. This variable is highly correlated with a number of institutional variables such as corruption levels, the strength of the rule of law, the size of the shadow economy and state stability (hypothesis 1).[25] We thus expect this variable to capture such institutional factors as well. However, against our expectations it is statistically not significant. This may be due to the ambiguous impact of institutional factors (captured by the gdppc variable) on reporting levels.

We further account for the development of the financial sector, which we assume to have a positive impact on STR levels (hypothesis 2). We use a proxy to measure the size and depth of the financial sector: domestic credit as a percentage of GDP (credit). This variable has the expected positive sign, but proves, however, not to be statistically significant. Potential variables to measure the internationality of the financial sector would be the in- and outflows of foreign portfolio investments. These variables are, however, highly correlated with the GDP per capita and are thus not included in the regression.[26] In line with hypothesis 3, we also include a proxy that captures the stringency of rules for the financial sector: an index measuring overall restrictions on banking activities (restrictiveness, columns (3) and (4)) and, alternatively, an index measuring the power of the supervisory authorities (supervision, columns (5) and (6)). Both are positive, but not statistically significant in our regressions.

Based on hypothesis 4, we wish to capture the effects of the institutional framework of the FATF. FATF membership and in particular on-site visits of a FATF committee and the subsequent publication of a MER may increase STR levels. The regressions thus also include dummy variables that take the value of one in the year an MER is published (mer) or in the following respective years (mer(t+1), mer(t+2), mer(t+3)). The dummies are individually and also jointly statistically significant and positive. It thus seems that an on-site visit and the publication of the MER do indeed increase the numbers of STRs significantly. The effect seems quite sizeable.

In the year following the publication of the report, the model predicts around a quarter more STRs, in the subsequent year a third more STRs than the country would have without an on-site visit and publication of a MER. In the third year the effect shrinks, but still amounts to 20%. Countries hence seem to react strongly to the MERs and increase their efforts to report more suspicious transactions (also see 3.4). However, the increase seems not to be persistent, but rather to decrease after the second year.

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[25] Correlations are depicted in Appendix E.
[26] Correlations are depicted in Appendix E.

Table 1: Baseline Regressions: Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)
gdppc (ln)	-0.776	-0.393	-0.465	-0.002	-0.083	0.550
	(0.200)	(0.549)	(0.419)	(0.998)	(0.883)	(0.381)
credit	0.002	0.002	0.001	0.0001	0.0003	-0.0004
	(0.448)	(0.509)	(0.829)	(0.964)	(0.924)	(0.872)
terrorism	-0.468**		-0.588***		-0.515**	
	(0.020)		(0.003)		(0.013)	
organized crime		-0.319*		-0.341**		-0.352**
		(0.051)		(0.036)		(0.039)
restrictiveness			-0.005	0.006		
			(0.917)	(0.918)		
supervision					0.029	0.048
					(0.487)	(0.282)
mer			0.143**	0.128*	0.121*	0.093
			(0.040)	(0.085)	(0.058)	(0.140)
mer (t+1)			0.270***	0.256**	0.247**	0.227**
			(0.009)	(0.011)	(0.013)	(0.010)
mer (t+2)			0.343***	0.355***	0.325***	0.346***
			(0.002)	(0.001)	(0.005)	(0.002)
mer (t+3)			0.187*	0.211**	0.189**	0.223**
			(0.056)	(0.047)	(0.047)	(0.037)
observations	270	269	260	259	242	241
countries	54	54	51	51	47	47
R^2	0.28	0.27	0.37	0.34	0.34	0.34
F-test	3.02	3.70	4.20	4.77	4.79	6.27
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Joint significance mer (t+1) mer (t+2) mer (t+3)			3.91 (0.01)	4.33 (0.01)	3.33 (0.03)	3.80 (0.02)

Notes: The dependent variable in all regressions is the natural logarithm of the ratio of STRs to GDP. All regressions include time FE and country FE, and a constant. Standard errors are clustered at the country level; p-values in parentheses; sample period: 2006-2012; *, **, and *** indicate significance at the 10%, 5%, and 1% level; the number of years and observations varies due to limited data availability.

Moreover, we also try to account for the criminal activity taking place in a country, in particular terrorism (columns (1), (3) and (5)) and organized crime (columns (2), (4) and (6)), as we would expect that the numbers of STR vary with the extent of these activities in a country (hypothesis 5). We proxy these two variables using a yearly survey carried out by the World Economic Forum, which is available since 2006.[27] The questions asked in the survey are "In your country, to what extent does the threat of terrorism [organized crime (mafia-oriented racketeering, extortion)] impose costs on businesses? The answer categories vary from "to a great extent [1] to "not at all" [7]. Higher numbers hence reflect a lower perceived threat of terrorism and organized crime respectively.Table 2 gives an overview on the top seven countries in our sample for which the survey indicates the highest/lowest costs for business due to terrorism and organized crime on average over time.

Table 2: Top seven countries with highest/lowest costs reported due to terrorism and organized crime

Indicator	Countries
highest costs due to terrorism	Lebanon, United States, Nigeria, the Philippines, Turkey, India, Mexico
lowest costs due to terrorism	Finland, Slovakia, Iceland, Austria, Hungary, Lithuania, Czech Republic
highest costs due to organized crime	South Africa, Argentina, the Philippines, Turkey, Poland, United States, Croatia
lowest costs due to organized crime	Iceland, Denmark, Finland, Singapore, Luxembourg, Norway, Austria

In the regressions, both variables show the expected sign and are statistically significant, indicating that in fact STR levels are associated with the extent of criminal activity taking place in a country. Even if the magnitude of the effects themselves are difficult to interpret, as terrorism and organized crime are measured as indices, and as it is not entirely clear what an increase in the index by one percentage point means in real terms, one can say that terrorism seems to be reflected in STR levels more strongly than organized crime. [28]

In addition to the fixed-effects estimations presented above, we also performed some random effects estimations (Table 3). Dismissing country-fixed effects allows capturing some cross-country variation and estimating the impact of factors that do not vary over time. Moreover, these regressions serve as robustness checks. The regressions in columns (1) to (4) predict similar outcomes when compared to the fixed-effects estimations above. Columns (5) and (6) show regression results including a tax haven dummy for the nine tax haven countries in our sample. In line

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[27] http://www.weforum.org/reports?filter[type]=Competitiveness.
[28] For illustrative purposes, a decrease by one percentage point in terrorism levels (as depicted by the data) would for instance be equivalent to a decrease from the level in Nigeria (index=3.7) to the Indian level (index=4.7).

with hypothesis 6, the results do indicate lower STR levels in these jurisdictions. The effect is however not statistically significant.

In order to further assess the robustness of our results we re-run all regressions without the US, which is by far the country with the most STRs/SARs reported. As the results remain largely unchanged, we are confident that the identified variables actually affect STR levels (see Tables F and G in the appendix).

Discussion of the econometric results

Despite the fact that some authors question the reasonableness of AML/CFT regimes (e.g. Takats, 2011), our analysis suggests that they are effective in identifying terrorism and organized crime, as countries with higher crime rates file more STRs. Moreover, we find that FATF membership and mutual evaluations drive reporting levels. Assuming that peer pressure likely promotes compliance with FATF standards, this finding seems plausible: Countries that are labelled as non-compliant face reputational risk that might, for instance, discourage foreign investors. Somewhat surprisingly however, we do not observe significantly deviating reporting patterns for tax havens. While strict non-disclosure regulations and limited exchange of information seem to be reflected in low STR levels, this effect is not statistically significant.

The regression results indicate conditional correlations, meaning they capture the effect of a specific variable while controlling for the effects of the other covariates in the regression. However, interpreting the outcomes in a causal way seems problematic, as it is conceivable that for some variables the causality runs in the opposite direction or in both directions. For instance, a country that already records a high level of terrorism might attract additional illicit money flows, which finance more terrorist activity (which are reflected in additional STRs).

Also, measurement errors may lead to endogeneity concerns. In particular, the measurement of STRs seems problematic and the question arises as to whether STRs are actually comparable across countries. In other words, does an STR in the USA mean the same as an STR in Qatar? The legal analysis shows that due to the soft law nature of the FATF recommendations and their rather flexible implementation in the different countries the qualitative identity of STRs across countries is not given (see Sections 2 and 3).

These endogeneity concerns may potentially lead to biased estimators, meaning that our results should be interpreted with some caution. It is not clear which factors are indicators and which factors are drivers of STRs. This problem is common in the literature on money laundering and the shadow economy, because - as in our case - measurement is difficult and there is no theory that guides the interpretation (Schneider, Buehn & Montenegro, 2010). Nevertheless, we hope that the links we find between the different factors contribute to the literature and may serve as a primer on which further research can build.

Table 3: Baseline Regressions: Random Effects

	(1)	(2)	(3)	(4)	(5)	(6)
gdppc (ln)	-0.257	-0.145	-0.087	0.057	-0.086	0.057
	(0.396)	(0.653)	(0.764)	(0.856)	(0.768)	(0.854)
credit	0.003	0.002	0.001	0.001	0.001	0.001
	(0.229)	(0.233)	(0.573)	(0.552)	(0.583)	(0.569)
terrorism	-0.339*		-0.481***		-0.482***	
	(0.066)		(0.006)		(0.006)	
organized crime		-0.244*		-0.293**		-0.294**
		(0.099)		(0.048)		(0.047)
restrictiveness			-0.011	-0.004	-0.011	-0.004
			(0.805)	(0.936)	(0.804)	(0.939)
haven					-0.095	-0.018
					(0.867)	(0.971)
mer			0.130**	0.119*	0.130**	0.119*
			(0.045)	(0.097)	(0.046)	(0.098)
mer (t+1)			0.247**	0.237**	0.247**	0.238**
			(0.012)	(0.013)	(0.012)	(0.013)
mer (t+2)			0.334***	0.338***	0.334***	0.338***
			(0.001)	(0.000)	(0.001)	(0.000)
mer (t+3)			0.183**	0.194**	0.182**	0.194**
			(0.038)	(0.043)	(0.037)	(0.042)
observations	270	269	260	259	260	259
countries	54	54	51	51	51	51
R^2	0.27	0.27	0.36	0.34	0.36	0.34
Wald test	37.65	29.68	60.79	77.80	61.27	77.38
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Joint significance mer (t+1) mer (t+2) mer (t+3)			12.74 (0.01)	13.87 (0.00)	12.66 (0.01)	13.85 (0.00)

Notes: The dependent variable in all regressions is the natural logarithm of the ratio of STRs to GDP. Random effects estimations, all regressions include time FE, and a constant. Standard errors are clustered at the country level. P-values in parentheses. Sample period 2006-2012. *, **, and *** indicate significance at the 10%, 5%, and 1% level. The number of years and observations varies due to the limited availability of some data.

CONCLUSIONS

In combining legal and economic methods this paper investigates the effects of various policies, institutional and legal factors on STR levels. As earlier research questions the effectiveness of AML/CFT frameworks in general (e.g. Takats, 2011), recently a lot of attention has been drawn to the discussion regarding which information high STR numbers actually conveys. And indeed, this question is difficult to answer. While high numbers of STRs ideally indicate high levels of suspicious activity or efficient monitoring systems, they might also reveal poorly-targeted evaluation systems that provide incentives for over-reporting.

Among the most important features of legal systems that drive numbers of STRs is the scope of predicate offenses in national criminal law. Moreover, sanctions for non-compliance with national AML/CFT legislation affect reporting levels. Depending on their design, sanctions may deter or encourage the filing of STRs. At worst, strict sanctions may lead to the phenomenon of *"defensive reporting"* or, on the contrary, cause a lack of reporting due to disproportionately high penalties. Therefore, adequate penalties for non-compliance with AML/CFT standards seem to be essential in the establishment of efficient reporting structures (Takats, 2011).

At the same time it has to be noted that high levels of STRs are not necessarily proof of an effective AML/CFT regime. Over-reporting may frequently be a consequence of inefficient legal systems, overly broad definitions of predicate offenses, or poorly calibrated automated suspicious transaction identification systems. Additionally, overly severe penalties for non-compliance with reporting standards potentially trigger over-reporting. Thus, as demonstrated in the foregoing analysis, apparent over-reporting should be examined in detail in order to draw conclusions on the effectiveness of AML/CFT frameworks.

The economic analysis partly confirms our hypotheses. In particular, we find that countries in which businesses face high costs due to terrorism or organized crime file more STRs. The supervision and reporting system therefore appears to be successful in detecting suspicious financial transactions related to money laundering and terrorism. Moreover, we find that the mutual evaluation framework increases reporting levels sustainably: countries report significantly more suspicious activity in the years following an evaluation. This indicates that the on-going review process is crucial for the improvement of international compliance with the FATF Standard. In identifying deficiencies in countries' STR regimes, the assessors apparently initiate reforms that increase compliance with the FATF recommendations and drive reporting levels. Consequently, mutual evaluation schemes should incorporate risk considerations and target those countries that are particularly vulnerable to criminal activities related to money laundering and terrorist financing.

Regarding countries' economic and financial sector development, we do not observe any significant effects on STR levels. Also, we do not find any effects of financial sector regulation and, likewise, tax havens exhibit no divergent reporting patterns. However, as the results suggest that the global AML/CFT system successfully identifies activity linked to terrorism and organized crime, the capacity of regulatory and supervision regimes needs to be further strengthened in order to effectively and sustainably implement the FATF Recommendations (OECD, 2014).

The review of the AML/CFT frameworks in the selected countries is useful in providing evidence on a possible correlation between STR levels and certain characteristics of national legal and institutional frameworks. This analysis is not sufficient to provide conclusive evidence on the extent of particular legal and institutional factors' impact on reporting levels. Moreover, it does not evaluate the effectiveness of different STR regimes. However, it clearly demonstrates that certain characteristics of legal and institutional frameworks strongly affect the quantity of STRs.

Our analyses do not cover some factors that are clearly relevant in the field of terrorism financing and money laundering. These include, for instance, cyber-money such as bitcoins. As today only few AML/CFT regimes contain provisions on virtual currencies, FIUs should in the future be provided with efficient means to respond to the digitalization of economies.

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APPENDIX

A.   List of Countries

Country	STR	STR/GDP	Country	STR	STR/GDP
Argentina	3,507	7.3	Luxembourg	4,205	76.3
Australia	36,590	32.0	Malta	92	11.0
Austria	1,859	4.6	Mauritius	158	17.0
Barbados	104	23.1	Mexico	49,085	43.2
Belgium	17,267	34.9	Netherlands	33,704	40.0
Bulgaria	746	15.2	New Zealand	4,249	34.2
Canada	57,393	35.7	Nigeria	3,188	8.0
Croatia	1,478	23.2	Norway	6,389	15.2
Cyprus	336	13.2	Philippines	9,506	45.1
Czech Republic	2,120	10.2	Poland	2,214	4.7
Denmark	1,828	5.6	Portugal	1,017	4.2
Estonia	5,552	254.7	Qatar	174	1.3
Finland	19,879	78.3	Republic of Korea	165,824	148.7
France	17,781	6.6	Romania	2,671	15.4
Georgia	9,995	759.3	Senegal	76	6.1
Germany	10,542	3.0	Serbia	2,449	61.8
Greece	1,702	5.0	Singapore	16,471	59.0
Hong Kong	17,739	78.2	Slovakia	2,344	25.9
Hungary	7,421	53.0	Slovenia	275	5.7
Iceland	377	24.1	South Africa	44,532	126.6
India	11,537	6.6	Spain	2,906	1.9
Ireland	12,488	56.3	Sweden	9,408	19.7
Italy	30,282	14.0	Switzerland	1,118	1.9
Japan	265,607	51.0	Thailand	495,018	1635.3
Latvia	24,304	864.1	Turkey	9,834	13.1
Lebanon	227	6.9	United Kingdom	249,031	95.6
Lithuania	213	5.2	United States	1,325,874	88.8

Note: STR and STR/GDP denote the average per country between 2006 and 2012 including all years where data are available. GDP is measured in billions USD.

B. *Variables and Data Sources*

Variable	Description and Source
gdp (ln)	Gross domestic product (GDP) measured in US dollars at current prices and current exchange rates. Source: World Bank Development Indicators
gdppc (ln)	GDP per capita measured in US dollars at current prices and current exchange rates. Source: World Bank Development Indicators
ofpi (ln) and ifpi (ln)	Outward and inward total portfolio investments, in US dollars at current prices and current exchange rates in millions. Source: FPI UNCTAD, UNCTADstat
state fragility index	Index combining scores on eight indicators measuring political and economic effectiveness and legitimacy. Index ranges from 0 "no fragility" to 25 "extreme fragility." Source: Systemic Peace Institute
claims(ln) and liabilities(ln)	Total Claims and Liabilities reported by banking offices located in the specified country regardless of the nationality of the controlling parent, in millions of US dollars; Source: Bank for International Settlements
credit	Domestic credit provided by financial sector (% of GDP). Source: World Bank: World Development Indicators
corruption	Freedom from Corruption Index; The index ranges from 0 to 100, with higher values indicating lower levels of corruption. Source: Heritage Foundation
shadow economy	Size of the shadow economy (in % of GDP) available for 1999-2007. Source: Schneider, Buehn & Montenegro (2010).
rule of law	Percentile rank terms from 0 to 100, with higher values corresponding to better outcomes.[29] Source: World Bank: Worldwide Governance Indicators
restrictiveness	Index ranging from 3 to 12, where higher values indicate more restrictive bank regulation.[30] Source: World Bank Survey (Barth, Caprio & Levine, 2013)
supervision	Index ranging from 0 to 14, where higher values indicate greater supervisory power.[31] Source: World Bank Survey (Barth, Caprio & Levine, 2013)
terrorism	Cost for Businesses caused by terrorism Survey question: In your country, to what extent does the threat of terrorism impose costs on businesses? [1 = to a great extent; 7 = not at all] Source: World Economic Forum: Global competitiveness index
organized crime	Cost for Businesses caused by organized crime Survey question: In your country, to what extent does organized crime (mafia-oriented racketeering, extortion) impose costs on businesses? [1 = to a great extent; 7 = not at all] Source: World Economic Forum
haven	Binary variable taking the value 1 if a country is classified as a tax haven and 0 otherwise. Source: Gravelle (2015).
mer	Binary variable taking the value 1 if an MER is published on a country in a specific year (0 otherwise); Source: http://www.fatf-gafi.org/

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[29] Index captures perceptions of the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

[30] Sum of three indices: The extent to which banks may engage in underwriting, brokering and dealing in securities, and all aspects of the mutual fund industry. + The extent to which banks may engage in insurance underwriting and selling. + The extent to which banks may engage in real estate investment, development and management.

[31] Whether the supervisory authorities have the authority to take specific actions to prevent and correct problems.

C. Summary statistics

	N	Mean	Std. Dev.	Min	Max
str/gdp (ln)	270	-3.97	1.59	-7.35	1.01
gdppc (ln)	270	9.91	1.08	6.85	11.64
credit	270	127.48	69.81	18.80	349.03
supervision	242	10.79	2.48	3.00	14.69
restrictiveness	260	6.73	1.70	2.25	12.00
terrorism	270	5.67	0.77	2.60	6.80
organized crime	269	5.61	0.91	2.69	6.85
mer	260	0.18	0.39	0.00	1.00
mer (t+1)	260	0.19	0.39	0.00	1.00
mer (t+2)	260	0.17	0.38	0.00	1.00
mer (t+3)	260	0.27	0.44	0.00	1.00
haven	260	0.18	0.39	0.00	1.00

D. Pairwise correlations

	str/gdp (ln)	gdppc (ln)	credit	super-vision	restric-tiveness	terrorism	organized crime	mer	mer (t+1)	mer (t+2)	mer (t+3)	haven
str/gdp (ln)	1.00											
gdppc (ln)	0.06	1.00										
credit	0.15	0.50	1.00									
super-vision	-0.02	-0.02	-0.08	1.00								
restric-tiveness	-0.08	-0.29	-0.07	0.38	1.00							
terrorism	-0.05	0.24	-0.11	-0.03	-0.13	1.00						
organized crime	-0.07	0.52	0.24	-0.06	-0.26	0.52	1.00					
mer	-0.02	0.05	0.02	-0.01	-0.10	0.02	-0.04	1.00				
mer (t+1)	0.02	0.07	0.04	0.02	-0.07	0.03	0.02	-0.17	1.00			
mer (t+2)	0.08	0.01	0.02	0.06	-0.05	0.01	0.02	0.01	-0.16	1.00		
mer (t+3)	0.12	0.08	0.09	0.11	-0.01	-0.01	0.04	0.01	-0.01	-0.11	1.00	
haven	0.04	0.24	0.22	0.03	-0.06	0.08	0.32	-0.01	-0.03	-0.03	-0.04	1.00

E. Correlations with GDP per capita

	gdppc (ln)	corruption	rule of law	state fragility index	shadow economy	foreign portfolio investment flows (ln)
gdppc (ln)	1.00					
corruption	0.86	1.00				
rule of law	0.81	0.96	1.00			
state fragility index	-0.75	-0.72	-0.72	1.00		
shadow economy	-0.77	-0.76	-0.72	0.34	1.00	
foreign portfolio investment flows (ln)	0.61	0.55	0.49	-0.28	-0.64	1.00

F. Regression Results without the United States (Fixed Effects)

	(1)	(2)	(3)	(4)
gdppc (ln)	-0.812	-0.446	-0.487	-0.047
	(0.188)	(0.500)	(0.408)	(0.942)
credit	0.002	0.002	0.001	0.0001
	(0.478)	(0.554)	(0.836)	(0.976)
terrorism	-0.464**		-0.595***	
	(0.023)		(0.003)	
organized crime		-0.347**		-0.363**
		(0.034)		(0.030)
restrictiveness			-0.005	0.010
			(0.914)	(0.854)
mer			0.139**	0.111
			(0.043)	(0.117)
mer (t+1)			0.271***	0.239**
			(0.010)	(0.014)
mer (t+2)			0.346***	0.334***
			(0.003)	(0.002)
mer (t+3)			0.185	0.192
			(0.105)	(0.118)
R^2	0.28	0.28	0.37	0.35
observations	263	262	253	252
countries	53	53	50	50
F-test	3.01	3.95	3.99	4.81
	(0.01)	(0.00)	(0.00)	(0.00)
Joint significance mer (t+1) mer (t+2) mer (t+3)			3.46 (0.02)	3.58 (0.02)

Notes: The dependent variable in all regressions is the natural logarithm of the ratio of STRs to GDP. All regressions include time FE and country FE, and a constant. Standard errors are clustered at the country level; p-values in parentheses; sample period: 2006-2012; *, **, and *** indicate significance at the 10%, 5%, and 1% level; the number of years and observations varies due to limited data availability.

G. *Regression Results without the United States (Random Effects)*

	(1)	(2)	(3)	(4)
gdppc (ln)	-0.268	-0.155	-0.095	0.043
	(0.380)	(0.632)	(0.746)	(0.892)
credit	0.002	0.002	0.001	0.001
	(0.258)	(0.290)	(0.589)	(0.601)
terrorism	-0.321*		-0.477***	
	(0.089)		(0.008)	
organized crime		-0.254*		-0.300**
		(0.091)		(0.049)
restrictiveness			-0.012	-0.002
			(0.792)	(0.964)
mer			0.128**	0.105
			(0.046)	(0.130)
mer (t+1)			0.248**	0.224**
			(0.011)	(0.017)
mer (t+2)			0.336***	0.321***
			(0.001)	(0.001)
mer (t+3)			0.181*	0.178
			(0.072)	(0.106)
R^2	0.27	0.27	0.36	0.34
observations	263	262	253	252
countries	53	53	50	50
Wald-test	29.55	39.23	58.55	77.22
	(0.00)	(0.00)	(0.00)	(0.00)
Joint significance mer (t+1) mer (t+2) mer (t+3)			11.55 (0.01)	11.73 (0.01)

Notes: The dependent variable in all regressions is the natural logarithm of the ratio of STRs to GDP. Random effects estimations, all regressions include time FE, and a constant. Standard errors are clustered at the country level.

P-values in parentheses. Sample period 2006-2012. *, **, and *** indicate significance at the 10%, 5%, and 1% level. The number of years and observations varies due to the limited availability of some data.