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The determinants of anti-money laundering compliance among the Financial Action Task Force (FATF) member states

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Abstract

Purpose – This paper aims to compute a measure for anti-money laundering/counter-financing of terrorism (AML/CFT) compliance and investigate its determinants.

Design/methodology/approach – Using the Financial Action Task Force (FATF) recommendations and assigning weights to them, the study computes a measure for AML compliance. Further, the determinants of AML compliance were investigated using ordinary least squares (OLS) data of 155 countries between 2004 and 2016.

Findings – The findings suggest that AML compliance have slightly improved over the years. Further, the OLS regression results show that technology, regulatory quality, bank concentration, trade openness and financial intelligence center significantly determined and improved AML compliance.

Practical implications – From the findings, it is evident that countries that wish to improve the AML compliance should focus more on technology, regulatory quality, structure of the banking sector, size of the economy and institution of financial intelligence center so as to enhance AML compliance.

Originality/value – To the best of the author's knowledge, this paper reveals a first AML/CFT compliance index that measures the cross-country level of AML/CFT compliance from the year 2004 to 2016. Subsequently, this paper adopted an OLS econometric model to identify the key determinants of AML/CFT compliance among member states of FATF.

Keywords Anti-money laundering, Money laundering, Terrorist financing, Financial Action Task Force

Paper type Research paper

Introduction

A new era of globalization has emerged, and it is consolidating the continents and re-engineering local politics and international relationships. Globalization demands the international amalgamation of information, capital and technology, leading to a sole global market and, to a large extent, a global village (Schroeder, 2001). Although globalization has expanded opportunities leading to free market capitalism, these same opportunities have resulted in new risks across countries (Schroeder, 2001). Notable among these risks is the increase in the incidence of money laundering and terrorist financing. Money laundering is the process of disguising the origin of ill-gotten money to make it seem as though such funds were obtained from legitimate sources. Simply put, money laundering is the process of washing “dirty money” to make it look “clean”. Money laundering activities do not only



threaten the criminal justice systems, but they have the capacity to destabilize financial institutions and entire financial system.

In addition to the main threats mentioned above, money laundering also undermines the integrity of the private sector (Unger and Den Hertog, 2012), undermines democracy and the rule of law (Diamond, 2016) and leads to reputational damages (Unger, 2014). Anti-money laundering (AML) policy dates as far back as the 1980s when governments and private actors saw the need to combat the cancer of money laundering (Verhage, 2011). The Financial Action Task Force (FATF) is the main body tasked by the seven largest economies (G-7) with the mandate of fighting money laundering and terrorist financing across the globe. Terrorist financing therefore encapsulates any activity that provides financial support or funding either in part or whole to terrorists or terrorist organizations to perpetuate acts of terrorism (Zdanowicz, 2004). Other international bodies such as the International Monetary Fund (IMF), the World Bank and United Nations Office on Drugs and Crime (UNODC) and all the FATF-style regional bodies (FSRBs) are partners with the FATF in this global crusade. However, in recent times, the significant increase in the number of predicate crimes coupled with the discovery of new techniques and methods of money laundering has been a huge source of concern to stakeholders (FATF, 2013a, 2013b, 2013c- TF in WA).

It is worrying to know that given the persistent increase in the scale of money laundering, compliance cost increased by a rate of 53 per cent globally for just banking institutions and show no signs of slowing down (PricewaterhouseCoopers, 2012). Also, the biennium budgetary allocation by the UNODC alone for AML activities in 2014-2015 was \$760.1m; this includes about \$88.9m (11.7 per cent) from the UN's regular budget (UNODC, 2014).

It is very obvious that on September 11, 2001, the world changed, the horrifying events that plagued the USA completely altered the existing approaches to combatting money laundering/terrorist financing. Nearly every country introduced, revised or strengthened its AML regime, with reports being churned out by various countries annually to reveal the level of progress being made in the fight against the global menace.

However, with the continuous and persistent increase in funds laundered across the globe, fueled by increase in technology, coupled with the increase in terrorist activities across the globe, there still exists a lot of pessimism as far as AML and counter-financing of terrorism is concerned (Demetis, 2010). The statistics provided above indicate that millions of dollars and a great deal of effort are committed to AML activities. However, amidst all the efforts and funds invested in AML/CFT activities, there still remains a lot of work to be done in the area, especially where compliance is concerned (Yepes, 2011). This study investigates whether there exist country-specific factors that enhance or inhibit compliance with the FATF Recommendations enacted to combat global money laundering and terrorist financing. The findings from this research pose significant policy implications at both national and global levels: at the national level, countries are well equipped to fight money laundering as this study makes knowledge available on the factors that drive and inhibit AML compliance; hence, they know where to direct their efforts. At the global level, international organizations and stakeholders are awakened to the efforts made by countries and the factors that affect country-level compliance, as well as alterations that should be made to the current AML/CFT framework, to ensure effectiveness of the global regulatory framework. This paper is organized into four sections; the next section outlines the theoretical and empirical framework on which this research is built. The section that follows discusses the methodology adopted in this research, followed by a next section that enumerates the conclusion and recommendations of the research.

Literature review

Anti-money laundering policy

The inception of AML policy can be traced to the 1980s, where the council of Europe strongly advocated that the governments of its member states ratify the measures set to combat money laundering, especially through banks (Gill and Taylor, 2004). In 1988, the UN and the Basel Committee also commissioned measures to combat money laundering, with the former doing so through a convention held in Vienna and the latter commissioning a Basel Committee on Banking Supervision with the purpose of protecting the banking system from being used as a conduit for money launderers (Viritha *et al.*, 2015).

Aside the 40 FATF Recommendations, most countries also have enacted stringent laws to combat money laundering; a notable example is the US Patriot Act (Abel, 2002; Costanzo, 2013), which gave a detailed account of a shift in money laundering policy from a rule-based approach to a risk-based approach. In the early days of AML policy, rule-based system was characterized by strict regulations under which responsible agencies are to report money laundering activities to the corresponding financial intelligence units. The major downside with the rule-based approach is the countless tons of transactions that financial institutions had to deal with. The rule-based approach was also circumvented by launderers through a process known as smurfing, where criminals send cash transactions just below the threshold, say \$990, to avoid such transactions being scrutinized (if the rule is to scrutinize \$1,000 and above). This necessitated a shift from the rule-based approach to another method of AML policy known as the risk-based approach, which puts an obligation on not only financial institutions but also on other agencies such as real estate agencies, law firms and notaries to document the transactions or activities they deem as high risk relating to their unique professions. According to Costanzo (2013), a major disadvantage with the risk-based method is the high cost associated with the transfiguration of AML policy from rule-based to risk-based method. However, Costanzo (2013) exhibited a high degree of optimism about the prospects of AML policy and indicated that the rewards from a more suitable identification of money laundering risks will recompense for these high costs associated with the risk-based method in the long term.

The Financial Action Task Force

FATF was inaugurated by the member states of the G-7 (USA, UK, France, Germany, Italy, Canada and Japan) at a summit held in the year 1989 in Paris. The FATF was established because of growing concerns over the risks faced by the global financial system, especially the banking system (FATF, 2007a, 2007b). After its inception, the FATF was tasked with analyzing money laundering trends and techniques, studying financial, legislative and law enforcement programs sanctioned at national and international levels, assessing and monitoring country-level compliance and giving technical assistance where necessary (FATF, 2010). As an inter-governmental decision-making body, FATF comprises of 35 member states, two regional organizations, nine associate members and several observer organizations (e.g. World Bank, IMF, INTERPOL and UN) affiliated to it, which are known as FSRBs (FATF, 2010). The members of FATF and the FSRBs all sum up to over 180 jurisdictions across the globe.

The Financial Action Task Force Recommendations

The FATF combats global money laundering through recommendations or standards it enacts (Terry, 2010). In its maiden year, FATF presented a report bearing 40 recommendations to facilitate the fight against money laundering. In the year 2003, the 40 recommendations were reviewed to cater for the changing trends and methods adopted by

launderers mainly due to globalization (FATF, 2003). The revision was also necessitated by the petrifying events of 9/11 in 2001, which caused the expansion of the recommendations to include 9 extra recommendations to address terrorist financing activities, making it the 40 + 9 FATF Recommendations. The most recent review of the recommendations took place in 2012; this time, the recommendations were consolidated instead of expanded, where the 40 recommendations absorbed the extra 9 recommendations, bringing it back to 40 FATF Recommendations to date (FATF, 2012). These recommendations are well drawn as FATF has a responsibility to protect civil liberties, respect individual state sovereignty and adhere to the norm of deliberative equality in its quest to fight money laundering and terrorist financing (Wessel, 2006).

Anti-money laundering/counter-financing of terrorism compliance index

Yepes (2011) proposed an index that was used in a country-level analysis of AML compliance. The index covered the seven components of the FATF Recommendations. This index was based on AML data from 2004 to 2011. The AML data available during the period that Yepes (2011) conducted the study were also based on the old set of AML Recommendations by FATF in 2004. The currently available revised version of the FATF Recommendations renders Yepes' (2011) AML compliance index impractical in measuring compliance levels of countries from the year 2004 to 2012. This necessitated the construction of the new AML/CFT compliance index proposed by this study that measured country-level compliance from 2004 to 2016 based on the 2004 FATF Recommendations and the revised Recommendations in 2012.

Anti-money laundering compliance

Many individuals and corporations assert that AML and combating the financing of terrorism are overrated topics, with Savona and ISPAC (1997) positing that “the economic cost of controls based on obligations and prohibitions is often underestimated, while the benefits they produce tend to be overrated”. Geiger and Wuensch (2007) also argued that AML regulation could lead to distortion of competition among firms, which poses danger to firms worldwide as it could retard the progress of society toward wealth creation and also diminish the annual productivity of firms. They added that AML costs are unnecessary transaction costs that burden most banks, with smaller banks suffering the most as they feel the burden twice as much as bigger banks feel it. To some others, it is not AML in its generic sense that is unnecessary, but the current strategies adopted in AML programs that bear the problems (Turner, 2004; Beekarry, 2011). If these arguments against the importance of AML/CFT policies hold, why all the fuss about AML/CFT?

Among many other advantages of AML compliance, the most important of all is that AML compliance safeguards integrity of the global financial system. Young (1979) defined compliance as “the actual behavior of a given subject conforming to prescribed behavior”. Young (1979) also argued that non-compliance occurs when actual behavior departs significantly from prescribed behavior. Therefore AML compliance can be defined as all actions by reporting institutions that conform to standards, rules, objectives, laws and regulations set by authorities put in place to check against money laundering (Choo *et al.*, 2014). As the techniques deployed by money launderers evolve, so do the FATF Recommendations evolve to be able to address modern trends and vice versa. According to Putman (1988), the efficacy of a global AML/CFT framework mainly hinges on the efficacy of its components and vice versa. Putman (1988) argues further that global collaboration should be seen as a “two-level game”, where compliance of local governments to AML policy is considered the first step to a successful global AML policy.

[Yepes \(2011\)](#) asserts that although there has been progress across the various categories of the 40 + 9 FATF Recommendations, compliance with the AML/CFT standards is generally low among countries. This conclusion was reached in a study that conducted a cross-country analysis of countries' compliance with the FATF recommendations. The 87-country study conducted by [Yepes \(2011\)](#) found that institutional factors are very influential in AML compliance. [Yepes \(2011\)](#) further explained that institutional factors play a key role in AML compliance because they provide conditions under which policy reforms or amendments are defined and therefore, accommodate, restrain or digress their implementation. Extant literature provides some key factors that either enhance or impede AML compliance. Some of these factors are discussed in the subsequent paragraphs.

Determinants of anti-money laundering/counter-financing of terrorism compliance

One of the determinants of AML/CFT compliance discussed in literature is regulatory quality, which measures how well the leadership of a country is able to develop laws and execute sound policies that create an enabling environment for the private sector to thrive. [Sharman \(2008\)](#) posits that the quality of International AML Policy is to a large extent dependent on the quality of domestic regulatory frameworks. Thus, no matter how good the FATF Recommendations are, they tend to be ineffective when applied to a local jurisdiction with a weak regulatory framework.

Secondly, technology is used as a determinant of AML/CFT compliance because with an increase in regulatory initiatives, many more institutions have joined in the fight against money laundering, creating new challenges for regulators and other AML agencies tasked with ensuring compliance with AML regulations. It is interesting to know that although launderers have taken advantage of the internet to enhance their activities, in most cases at both national and regional levels, online investigation of money launderers' activities is not common among many regulatory agencies tasked with fighting money laundering ([Wall and Williams, 2013](#)). Building the online or internet capacity of reporting agencies, regulatory agencies and law enforcement agencies could give a major boost to country compliance with AML laws.

Foreign direct investment (FDI) has also been linked to AML/CFT compliance in extant literature. [Naheem \(2015\)](#) likened investment laundering to the layering and integration stages of money laundering. [Yepes \(2011\)](#) had a contrasting view on the effect of FDI on AML compliance. He found that FDI net inflows have a positive impact on compliance, particularly compliance with designated non-financial businesses and persons (DNFBPs) prevention and entity transparency components of the FATF Recommendations. More so, the level of trade openness of countries is also considered a key determinant of compliance with AML policy, with [Ferwerda et al. \(2013\)](#) confirming that trade-based money laundering (TBML) is very prominent between the USA and countries that have low levels of compliance with AML regulations. Literature also establishes a nexus between bank concentration and AML/CFT compliance. [Rawlings and Unger \(2005\)](#) postulated that a high level of bank competition exists for laundered funds. They added that banks compete for laundered funds through the implementation of high-grade bank secrecy policies in a bid to attract illicit funds. [Rawlings and Unger \(2005\)](#) pointed out the threats that bank concentration presents to the global AML framework and called for the intervention of the FATF.

Given all the diverse and contrasting views on the determinants of AML/CFT compliance, it will be interesting to uncover if there is a nexus between other socio-economic factors such as technology, criminalization of money laundering and education on AML/CFT compliance and the extent to which these factors affect the compliance levels of countries.

Methodology

This paper uses an AML/CFT compliance index to measure the compliance levels of the member states of FATF. Borrowing from a similar AML/CFT compliance index composed by Yepes (2011), which measures country compliance from 2004 to 2008, this paper reveals a newly composed AML/CFT compliance index that measures the cross-country level of AML/CFT compliance from the year 2004 to 2016. Subsequently, this paper adopted an ordinary least squares (OLS) econometric model to identify the key determinants of AML/CFT compliance among member states of FATF. The OLS approach was adopted due to the lack of high-frequency AML/CFT data of the countries under study. For most of the countries included in the study, mutual evaluations had been conducted just once, which made the OLS approach a more appropriate choice for this study. More so, no sampling technique was needed, as all the countries used in this research are those that have successfully participated in at least one round of mutual evaluation and have submitted a mutual evaluation report (MER) to FATF. Consequently, the countries not represented are those who have no record of MER with the FATF. A total number of 155 countries provided 207 MERs between the period of 2004 and 2016 for our analysis.

Construction of anti-money laundering/counter-financing of terrorism index

To measure the level of compliance of individual countries to AML/CFT Recommendations set by FATF, there was the need for an index to be constructed to measure the compliance level of countries from the year 2004 to 2016. The AML/CFT compliance index covers the seven components of the 2004 FATF Recommendations (legal factors, institutional measures, financial institution prevention measures, DNFBPs prevention, informal sector prevention, entity transparency and international cooperation) and seven components of the 2012 FATF Recommendations (AML/CFT policies and coordination, money laundering and confiscation, terrorist financing and financing of proliferation, preventive measures, transparency and beneficial ownership of legal persons, powers and responsibilities of competent authorities and international cooperation). To provide a quantitative basis for the ratings for calculation purposes, numerical values were assigned to each rating. A value of 1 was assigned to recommendations where countries were compliant, 0.66 to largely compliant, 0.33 to partially compliant and 0.00 to non-compliant.

The numeric values for the individual recommendation under a component are summed up to determine the total score for that particular component. The aggregate of the seven components constituted the AML/CFT compliance index or score for a particular country, for a particular year.

The model

The econometric model used in this study is quite similar to the model was used by Yepes (2011) in a similar investigation. The model is as follows:

$$\begin{aligned} \text{AML/CFT Compliance Index}_i = & \beta_0 + \beta_1 \text{CrimML/FT}_i + \beta_2 \text{RQ}_i + \beta_3 \text{CO}_i \\ & + \beta_4 \text{BFATF Member}_i + \beta_5 \text{IDI}_i \\ & + \beta_6 \text{M2/GDP}_i + \beta_7 \text{TradeOp}_i + \beta_8 \text{Nim}_i \\ & + \beta_9 \text{FDI/GDP}_i + \text{DUMMY YEAR2007} + \varepsilon_i \end{aligned}$$

A cross-sectional model is ideal in this case due to lack of consistent AML compliance data from 2004 to 2016. The AML/CFT compliance index composed represented the dependent

variable in the regression, while the country-specific determinants identified earlier in Literature review constituted the explanatory variables. The model is as follows:

$$AML.CFTCI_i = \beta_1 FDI_i + \beta_2 TradeOp_i + \beta_3 CO_i + \beta_4 RQ_i + \beta_5 BC_i + \beta_6 gdp\text{percap}_i \\ + \beta_7 Tech_i + \beta_8 CrimDrugML_i + \beta_9 FIC_i + \varepsilon_i$$

where:

AML/CFTCI represents the Anti-money laundering (AML) and counter-financing of terrorism (CFT) deduced from the compliance index composed to measure the various levels of country compliance with the FATF Recommendations between 2004 and 2016. Compliance scores range from 0 to 49; the interpretation here is that the higher the AML. CFTCI, the higher the degree of country compliance to the FATF Recommendations. However, because of lack of data in recent years, the regression considered index scores between 2004 and 2012.

FDI is proxied by FDI Net inflows as a percentage of gross domestic product (GDP). The determinant of FDI Net inflows is the aggregate of equity capital, reinvestment of returns on investment and other short and long-term capital investments. FDI Net inflows is used because of the keen interest in researching the existence and degree of relationship between the entry of foreign capital and AML compliance. The relationship between FDI and compliance is inconclusive in extant literature; hence, the expected symbol for the FDI coefficient for this study is positive or negative.

TradeOp is used to represent trade openness and measures the importance of foreign markets, particularly in relation to imports and exports on AML compliance. This study used trade of good and services as a percentage of GDP to proxy trade openness. The assumption here is that the more a country is open to other foreign economies, the more susceptible it is to TBML and the more difficult it is for such a country to effectively comply with AML/CFT standards (Unger *et al.*, 2014). Therefore, the expected sign for trade openness is negative.

Co represents corruption, which is named among the money laundering typologies, and could also be considered a predicate offence of money laundering. Corruption could be defined as the abuse of public position for individual or private gain (Tupman, 2005). Tupman (2005) further asserts that corruption is mainly perpetuated by multinational companies and politicians, the two players who are major influencers of public policy. Hence, there exists a relationship between corruption and AML compliance, which is confirmed in literature (Yepes, 2011). Control of corruption (estimate) is the indicator used to proxy corruption. Control of corruption indicates the degree to which people perceive that public power is exercised for individual gains in a particular country. The control of corruption indicator captures both small and major forms of corruption. The estimate shows a country's aggregate score in units of a standard normal distribution ranging from approximately -2.5 to 2.5. Therefore, a positive figure suggests a high corruption perception, hence a negative relationship with AML compliance. The expected sign of the CO coefficient is negative.

RQ is used in the model to represent *quality of domestic regulation*. This variable is proxied by regulatory quality (estimate). Regulatory quality captures perception of the capacity of the lawmakers of countries to enact sound policies, laws and regulations that create a favorable and conducive environment that enhance private sector development. RQ Estimate shows the country's score on the aggregate indicator in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. The expected sign for regulatory quality is positive.

National income GDP per capita was used as a proxy for national income. GDP per capita is the total GDP of a country divided by the population of that country. GDP per capita is included in the model to test whether the income of a country determines the level of AML/CFT compliance in that country. GDP per capita was included as one of the explanatory variables due to the fact that AML policy requires some capital outlay. Anti-money laundering expenses incurred by countries include costs incurred in setting up a financial intelligence unit to hiring of staff and purchasing tools and equipment to ensure the effective operation of financial intelligence centers (FICs) and other agencies tasked with ensuring compliance. The assumption is that wealthier countries have the capacity to provide all the resources needed to enhance compliance. Therefore, the expected sign is positive in this case.

Technology

Technology is a very important determinant of AML compliance, as pointed out earlier in the paper authored by Lavorgna (2015). From the detection stage to the reporting stage, the investigation stage through to the prosecution, technology is a necessary resource to have. Fixed broadband subscription is used as a proxy for technology. The expectation here is that the higher the level of technology, the better that country is equipped to comply with AML Recommendations.

Criminalization of money laundering

Criminalization of money laundering is one of the variables used in the model. This variable is a dummy variable indicating whether a jurisdiction has enacted laws criminalizing all offences of money laundering or otherwise.

FIC is used in the model to represent *financial intelligence unit/center*; another dummy variable indicating whether a country has established an operative central, national agency responsible for receiving (and, as permitted, requesting), analyzing and disseminating to the competent authorities disclosures of financial information concerning suspected proceeds of crime, or required by national legislation or regulation, to counter money laundering. These reflect those jurisdictions that are members of the Egmont Group.

Bank concentration

Number of commercial bank branches per every 100,000 adults is used as a proxy for bank concentration. This proxy is chosen because it indicates the level of concentration in the financial sector of countries in terms of the number of customers served by commercial banks. The variable is also an indicator of the level of competition in the financial sector. The idea is that if the level of bank concentration is high, then it indicates the likelihood of banks being overburdened with Know Your Customer and customer due diligence requirements and vice versa. On the other hand, one could argue that the higher the bank concentration, the easier it is for AML agencies to monitor their activities. Therefore, either a negative or positive sign was expected for this variable.

Government expenditure on education

This variable is used to measure a countries' level of education. Government expenditure on education as a percentage of GDP is used to represent this variable. This variable is an indicator for the educational level of countries. The variable is included in the model to determine whether the compliance level of a country can be influenced by that country's budgetary allocation to education.

Results and discussions

Four different model specifications were reported, including a principal component analysis (PCA) model, where the author used PCA to compose the AML/CFT index. The author’s model of interest is the first model as Models 2 and 3 are only different in the sense that they contain the two other variables (GDP per capita and corruption), which the author found to be highly correlated with the regulatory quality variable in the main model. In Model 1, control of corruption and GDP per capita were dropped, regulatory quality and GDP per capita were dropped for Model 2 and regulatory quality and control of corruption were dropped in Model 3. The OLS technique was used to estimate the variables. The OLS technique was adopted due to the lack of high frequency AML data. However, the study based its analysis on results from Model 1, because Model 1 featured the regulatory quality variable, which is sometimes used in extant literature to explain control of corruption (see: [Thomas, 2010](#) and [Berg et al., 2012](#)).

Descriptive statistics WERE used to summarize the data and to also give a better understanding of the entire data set. The descriptive statistics presented in [Table I](#) above confirm the absence of outliers in the data set that have the propensity to influence the consistency, efficiency and biasedness of the results. Specifically, the descriptive statistics featured the standard deviations, maximum and minimum values for the determinants of AML Compliance.

The AML/CFTCI that represents the dependent variables recorded a mean of 40.24 per cent. This means that the average percentage level of compliance among all the countries included in the study is 40.24 per cent. Trade openness recorded a mean value of 92.18 per cent, a minimum value of 0.18 per cent and a maximum of 439.66 per cent, signifying that on average, the total amount of international trade (sum of export and import of goods and services) conducted by the countries under this study as a percentage of GDP stood at 92.18 per cent. FDI (net inflows as per cent of GDP) had a mean value of 9.07 per cent, while the minimum and maximum statistics were -43.46 and 451.72 per cent, respectively. These figures indicate that the average percentage of FDI (net inflows) to GDP across all observations is 9.07 per cent. The next variable is the regulatory quality (RQ) variable, which recorded a mean value of 0.11, a minimum value of -2.41 and a maximum of 1.97. The control of corruption variable recorded 0.06, -1.63 and 2.55 for the mean, minimum and maximum values, respectively. These values reveal that on average, the corruption perception of the countries being studied was 0.06. Government expenditure on education recorded a mean value of 4.56 per cent, a minimum value of 1.1 per cent and a maximum value of 10 per cent. This is an indication that on average, the lowest percentage of GDP

Variable	Observation	Mean	SD	Minimum	Maximum	SWILK	VIF
AML.CFTCI (%)	175	40.24	16.41	6.06	79.29	0.01	-
FDI	138	9.07	39.31	-43.46	451.72	0.00	1.12
TradeOp	159	92.18	64.84	0.18	439.66	0.00	1.31
RQ	170	0.11	0.99	-2.41	1.97	0.01	1.82
Baco	132	22.78	28.87	1.22	264.53	0.00	1.39
FIC	168	0.69	0.46	0	1	0.41	2.36
CrimML	168	0.93	0.24	0	1	0.00	1.18
Tech	157	12.19	3.18	4.55	18.01	0.04	2.55
GovEdu	107	4.55	1.66	1.1	10	0.21	1.10

Table I. Descriptive statistics **Source:** Author’s calculations

spent on education by the countries under study was 1.1 per cent of GDP and the highest allocation of GDP to education was 10 per cent. After taking the natural log (to correct for scalar bias due to relatively large figures) of per capita income levels of the countries, the mean, minimum and maximum values stood at 24.72, 18.46 and 30.26, respectively.

The descriptive statistics for bank concentration showed that on average, for every 100,000 adults, there are 23 commercial bank branches that exist to serve their financial needs. Also, for every 100,000 adults, the highest number of commercial bank branches for a country was 265 and the lowest is 1. According to the descriptive statistics reported for technology, the mean value is 12.19 and the maximum and minimum values stood at 18.01 and 4.55, respectively. Finally, the FIC and criminalization of money laundering variables were included in the model as dummy variables. They record a value of 1 if yes and 0 otherwise.

Robustness

The results in Model 1 suggest that the independent variables explain 56 per cent (adjusted R^2) of the variation in AML/CFT compliance levels among the countries studied. However, because regulatory quality, control of corruption and GDP per capita were exhibiting high levels of correlation with the other independent variables, results were reported for three different models where these three variables were dropped in turns. While the Shapiro Wilk's normality test was used to test for the normality of the data, the variance inflation factor (VIF) was used to test for the acceptability of each variable in the model. With the maximum acceptable VIF being 10, all the variables were below the threshold of 10, indicating that the variables were good to be in the model. Also, the Shapiro Wilk's test with a null hypothesis of no normal distribution was rejected for all the variables, indicating that the variables were all normally distributed around their means.

Along came the issue of multicollinearity; the pair-wise correlation analysis was used as a detector of existence and degree of multicollinearity among the independent variables. An absolute value of more than 0.7 suggests a high degree of correlation between the two variables in question; therefore, one of the highly correlated variables must be dropped from the model to avoid the problem of multicollinearity. From the initial model (Table II), it is observed that there is a high-level correlation between regulatory quality and GDP per capita (0.79), FIC and tech (0.71). Also, regulatory quality and control of corruption were highly correlated; therefore, control of corruption was dropped from the main model. GDP per capita was also dropped from the main model due to high correlation with most of the variables. However, results were reported for two other models (2 and 3), which included control of corruption and GDP per capita (Table III).

The results from Model 1 show that five of the independent variables have a significant impact on the level of AML/CFT compliance of countries.

The first determinant of AML/CFT compliance was trade openness. Total exports and imports as a percentage of GDP was used as a proxy for this variable. The results show that trade openness was significant in determining the level of AML/CFT compliance at a 1 per cent significant level. In a similar study conducted, [Yepes \(2011\)](#) found trade openness to be insignificant in explaining the AML/CFT compliance levels among countries. However, the results from this study are confirmed by a theory of money laundering known as TBML. Over the years, as the fight against money laundering/terrorist financing related to the financial sector intensifies, criminals also find new means of laundering money, just like [Unger and Den Hertog \(2012\)](#) put it, "Water finds its way" ([FATF, 2006](#)). TBML is one of such tricks that is being used to launder money. The large magnitude and value of international trade coupled with the relative ease of concealing the true origin of trade has

Table II.
Correlation matrix
for variables in
model 1

Dependent and independent variables	AML/CFTCI	FDI	Edu	RQ	Corr	CrimML	FIC	TradeOp	Baco	tech	gdppercap
AML/CFTCI	1.00										
FDI	0.14	1.00									
Edu	0.02	0.10	1.00								
RQ	0.59	0.10	0.10	1.00							
CO	0.43	0.10	0.27	0.91	1.00						
CrimDrugML	0.24	0.02	-0.01	0.22	0.26	1.00					
FIC	0.64	0.02	-0.09	0.49	0.38	0.37	1.00				
TradeOp	0.24	0.28	-0.06	0.15	0.12	-0.09	0.01	1.00			
BC	0.46	0.08	0.05	0.47	0.38	0.20	0.36	-0.10	1.00		
Tech	0.57	-0.10	-0.15	0.49	0.36	0.33	0.72	-0.18	0.31	1.00	
gdppercap	0.63	0.10	0.18	0.79	0.80	0.34	0.62	0.14	0.49	0.60	1.00

Source: Author's calculations

Table III.
Determinants of
AML/CFT
compliance (Models
1, 2, 3 and 4)

Variables	Dependent variables: AML/CFT compliance index and PCA results			
	AML/CFT index (model 1)	AML/CFT index (model 2)	AML/CFT index (model 3)	AML/CFT PCA index (model 4)
Independent variables				
FDI	0.01 (0.02)	0.01 (0.02)	0.02 (0.02)	0.63 (0.01)
Trade openness	0.06*** (0.02)	0.06*** (0.02)	0.06*** (0.02)	0.00*** (0.00)
Corruption		0.37 (1.36)		
Regulatory quality	2.72* (1.68)			0.09** (0.41)
Bank concentration	0.16*** (0.07)	0.02*** (0.07)	0.18** (0.07)	0.01*** (0.02)
GDP Per capita			1.24 (1.37)	
FIC	10.57** (4.28)	11.20** (4.34)	10.41** (4.42)	0.02** (1.11)
Criminalization of money laundering	-1.10 (6.66)	-1.05 (6.84)	-1.69 (6.81)	0.96 (1.63)
Technology	1.60*** (0.67)	1.90*** (0.66)	1.68** (0.70)	0.02*** (0.16)
Government expenditure on education	0.71 (0.73)	0.88 (0.78)	0.69 (0.78)	0.12 (1.18)
constant	3.98 (10.61)	-1.81 (10.97)	-6.93 (0.78)	0.00*** (2.58)
Observations	79	79	79	77
R^2	0.61	0.59	0.60	0.63
Adjusted R^2	0.56	0.55	0.55	0.58
Prob > χ^2	0.00	0.00	0.00	0.00

Notes: *Denotes significance at 10%; **denotes significance at 5%; ***denotes significance at 1%
Source: Authors calculations

made TBML very attractive to criminals (Sullivan & Smith, 2013). Just like the earlier typologies of money laundering, AML policies are tightened when a sector poses a threat to a country's AML regime. Therefore, countries with high volumes of international trade have more stringent AML/CFT policies than countries with relatively low volumes of world trade.

The second variable found to explain the AML/CFT compliance levels among countries is regulatory quality. The regulatory quality variable measures the perception of the ability of lawmakers of countries to pass sound laws, which create a favorable environment for businesses to thrive. The variable was found to be significant in explaining compliance

levels at a 10 per cent level of significance. A study conducted by [Yepes \(2011\)](#) confirms the findings churned out by this research that regulatory quality indeed is a determinant of AML/CFT compliance. The coefficients from both studies affirm the theory that stronger domestic governance have a positive and statistically significant impact on AML/CFT compliance.

The third of the five variables that was found to be statistically significant in explaining AML/CFT compliance is bank concentration. Bank concentration was measured by the ratio of commercial bank branches per 100,000 adults. The number of commercial bank branches per 100,000 adults is also used as a measure of bank competition. The assertions in extant literature on whether bank concentration explains AML/CFT compliance are diverging. While [Verdugo Yepes \(2011\)](#) asserts that bank concentration is not significant in predicting AML/CFT compliance, studies conducted by [Levine \(1996\)](#) and [Bayraktar *et al.* \(2006\)](#) suggest a positive relationship between bank competition, regulation and supervision, of which AML policy forms part. Therefore, per the findings in this study, one can glean that AML/CFT compliance levels can be improved by increasing competition in the banking sector.

Another variable that was found to be a determinant of AML/CFT compliance is financial intelligence center or unit (FIC/FIU). This is one of two dummy variables included in the model. One of the requirements of AML policy is that countries should commission FIUs to serve as collation centers for all money laundering and terrorist financing-related information ([The Egmont Group, 2004](#)). [Azevedo Araujo \(2008\)](#) posits that banks are more willing to comply with AML regulations if there exist an external body that is responsible for screening and analyzing suspicious transactions at a faster pace and a larger volume. [Masciandaro \(2005\)](#) suggest that the more exclusive and financially distinguished an AML agency is, the more effective it will be. These two papers solidify the findings put forward by this research that countries with FICs/FIUs tend to have a relatively high AML/CFT compliance score than countries without FICs/FIUs.

The fifth significant variable from the results produced by the model is technology. The natural log of the total number of broadband subscriptions is used as a proxy for technology. The technology variable was found to be statistically significant at 1 per cent. Technology has been a necessary tool in the fight against money laundering/terrorist financing. Infact, right from the inception of AML, the concept was based on technology ([Demetis, 2010](#)). [Lavorgna \(2015\)](#) also laid much emphasis on the necessity of technology to the AML policy framework. The importance of technology to AML policy cannot be overemphasized because criminal in modern-day technology-driven society are deploying every means available at their disposal to launder the proceeds from their illicit activities ([Gao and Xu, 2009](#)).

Failing to base AML policy on a strong technology backbone has been the mistake of many jurisdictions across the globe. All these assertions confirm the findings in this study that the level of technology of a particular country is a key determinant of the AML/CFT compliance level of that country. ([Table IV](#))

It was quite interesting to find that some of the variables the were found to be statistically insignificant in explaining AML/CFT compliance levels were found to be statistically significant in explaining one or more of the seven components that make up the FATF Recommendations.

FDI, for instance, was found to be statistically significant in explaining level of compliance with legal measures, although the same variable was found not to be significant in explaining AML/CFT compliance levels. This finding is confirmed by a study conducted by [Naheem \(2015\)](#), who coined the term “investment laundering”. Naheem posited that investment inflows have an impact on the AML compliance, howbeit a negative impact. The

Table IV.
Determinants of compliance with the seven (7) components of the FATF recommendations

Independent variables	Dependent variables (seven components of FATF recommendation)						
	Legal (%)	Institutional factors (%)	Financial institutions prevention (%)	DNFBPs prevention (%)	Informal sector prevention (%)	Entity transparency (%)	International cooperation (%)
FDI	0.02** (0.01)	0.02*** (0.01)	-0.001 (0.02)	0.05*** (0.01)	0.02 (0.02)	0.05*** (0.01)	0.03** (0.01)
Trade openness	0.02 (0.02)	0.06*** (0.1)	0.08*** (0.02)	0.01 (0.02)	-0.01 (0.04)	0.05*** (0.01)	0.04** (0.02)
Regulatory quality	4.83** (2.40)	3.98* (2.04)	1.31 (2.08)	3.77 (2.51)	10.18*** (3.24)	3.57** (1.64)	0.91 (2.41)
Bank concentration	0.12 (0.08)	0.09 (0.08)	0.16** (0.07)	0.13 (0.09)	0.21** (0.12)	0.15 (0.10)	0.28*** (0.08)
FIC	13.12** (5.49)	12.33*** (4.50)	7.84 (6.25)	3.94 (5.80)	-2.7 (7.49)	9.55 (5.98)	21.88*** (5.94)
Criminalization of money laundering	4.05 (12.73)	1.15 (7.89)	-3.75 (11.91)	-6.23 (7.39)	-13.9 (17.88)	-2.45 (4.57)	6.62 (9.10)
Technology	1.59* (0.83)	2.06*** (0.61)	2.37*** (0.76)	0.05 (0.74)	3.01** (1.17)	-0.42 (0.10)	-0.04 (1.02)
Government expenditure on education	1.76 (1.1)	1.1 (0.83)	0.25 (0.99)	0.79 (0.87)	0.96 (1.41)	-0.85 (0.76)	1.30 (1.54)
constant	-3.63 (17.21)	1.98 (11.54)	-2.40 (16.07)	6.73 (10.70)	15.06 (25.97)	20.87 (10.43)	20.02 (18.21)
Observations	79	79	79	79	79	79	79
R ²	0.54	0.63	0.46	0.20	0.43	0.34	0.48

Notes: *Denotes significance at 10%; **denotes significance at 5%; ***denotes significance at 1%.

findings in this study suggest a positive relationship between FDI and compliance with legal measure. The idea conveyed here is that countries with sound, strong legal systems are more attractive to foreign investors than those perceived to have weak legal systems. However, the FIC and technology variables were found to explain both AML/CFT compliance levels and compliance with the legal measures component. FDI was also found to explain compliance with institutional measures, DNFBPs preventive measures, entity transparency and international cooperation measures.

The next independent variable, trade openness, was found to explain AML/CFT compliance levels and compliance with institutional measures, financial institutions preventive measures, entity transparency and international cooperation measures.

Regulatory quality was also found to be a determinant of AML/CFT compliance and also legal, institutional, informal sector prevention and entity transparency measures. Bank concentration was reported as a determinant of AML/CFT compliance and three of the components; financial institutions prevention, informal sector prevention and international cooperation. The existence of a financial intelligence center was also found to determine the AML/CFT compliance level of a country, as well as the country's compliance with legal, institutional measure and international cooperation. These findings confirm the postulations of [Azevedo Araujo \(2008\)](#) and [Masciandaro \(2005\)](#), who argued that AML regulations are more effective when the task of analyzing and reporting suspicious transactions is exclusively conducted by an AML agency such as FIUs.

Interestingly criminalization of money laundering beyond drug money laundering was not found to be significant in explaining AML/CFT compliance levels and country compliance with any of the seven components of the FATF Recommendations. This could be because of the perceived low level of executive commitment to the fight against money laundering. Thus, although many countries have tonnes of laws to detect and prosecute money laundering activities, these laws are mostly rendered ineffective because of lack of commitment on the part of the executive arm of government. This assertion was made by [Johnson \(2003\)](#), citing the post-9/11 situation in the USA as an example.

Unlike criminalization of money laundering, technology was found to be key determinant of AML/CFT compliance and compliance with legal measure, institutional measures, financial institutions prevention measures and informal sector prevention. This findings confirm the arguments advanced by [Demetis \(2010\)](#) and [Lavorgna \(2015\)](#) and many other authors in extant literature. It also echoes the suggestion that AML agencies must have a strong technology system to be well equipped to fight tech-savvy money launderers.

The final variable is government expenditure of education. This variable was included in the models to determine whether the level of education of a particular country has any bearing on the AML/CFT compliance level of that country. Interestingly, the results from this study suggest that spending more money on education does not enhance or detract from a country's level of AML/CFT compliance and does not impact on the level of compliance with any of the seven components of the 49 FATF Recommendations.

Conclusion

Over the past two decades, several millions of dollars have been committed to AML and the counter-financing of terrorism activities mainly because of the dire nature of the consequences of money laundering and terrorist financing. However, though AML/CFT compliance costs have been on the rise and show no signs of reducing; global incidence of money laundering and terrorist financing also keep increasing at an even higher rate. This paper set out to measure the level of AML/CFT compliance that exists among countries and also to unravel the key factors that promote or inhibit compliance with the AML/CFT

recommendations commissioned by FATF. After composing an AML/CFT compliance index to measure compliance levels across countries, a cross-sectional regression model was used to identify the key determinants of AML/CFT compliance. A good number of interesting findings were produced by this study; the first from the AML/CFT compliance index indicates that AML/CFT compliance levels have improved slightly over the past decade, though compliance levels remain low and leave so much room for improvement. The results from the regression model specified in this research indicates that factors such as countries' level of technology and regulatory quality and trade openness have the capacity to improve a country's compliance with AML/CFT regulations.

The findings give all stakeholders in the fight against money laundering and terrorist financing a lot to be concerned and optimistic about. This is because from the findings, there is no clear indication that countries are putting in a lot of effort to improve their AML/CFT compliance levels. It seems as though countries are doing just enough to avoid being blacklisted by FATF giving the reputational repercussions of blacklisting.

Also, agencies such as the police, judiciary and FIU tasked with checking money laundering activities in most countries must be technologically equipped as many of these agencies are miles behind money launderers in terms of technology. Finally, FATF must collaborate with other international stakeholders such as the World Bank, IMF and the UN to build a database for money laundering and other related financial crimes. Many authors shy away from conducting research in the area of money laundering due to the lack of data on that topic. A database for financial crimes will go a long way to encourage many researchers to study the topic and produce useful and relevant findings that will aid in the successful combat of the menace.

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