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Cultural factors, quality of government and the effectiveness of Supreme Audit Institutions in Sub-Saharan Africa

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Abstract. Given the importance of public financial management for people well-being, most countries around the world have Supreme Audit Institutions (SAIs) as an instrument to help achieve better Public Financial Management. SAIs play a key role in ensuring public management accountability. This paper aims to investigate the determinants of Supreme Audit Institutions' effectiveness in Sub-Saharan Africa. Models are estimated for a sample of Supreme Audit Institutions from 45 countries. The results indicate that the effectiveness of SAIs in Sub-Saharan Africa is associated with the Institutional Quality of Government which takes into account six dimensions of country governance: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption. In the same vein, SAI effectiveness is found to be associated with institutional and cultural aspects, mainly, the British colonial legacy and the continued adoption of the Westminster SAI model.
Keywords: Supreme Audit Institutions; Effectiveness; Determinants; Sub-Saharan Africa.

[es] Factores culturales, calidad de gobierno y eficacia de las Entidades Fiscalizadoras Superiores en el África Subsahariana

Resumen. Dada la importancia de la gestión de las finanzas públicas para el bienestar de las personas, la mayoría de los países del mundo cuentan con Entidades Fiscalizadoras Superiores (EFS) como instrumento para ayudar a conseguir una mejor gestión de las finanzas públicas. Las EFS desempeñan un papel fundamental a la hora de garantizar la responsabilidad de la gestión pública. Este trabajo tiene como objetivo investigar los determinantes de la eficacia de las Entidades Fiscalizadoras Superiores en el África Subsahariana. Modelos son estimados para una muestra de 45 Entidades Fiscalizadoras Superiores. Los resultados indican que la eficacia de las EFS en la región está asociada a la Calidad Institucional del Gobierno, que tiene en cuenta seis dimensiones: voz y reponsabilidad, estabilidad política, eficacia del gobierno, calidad reguladora, estado de derecho, control de corrupción. En la misma línea, se encuentra que la eficacia de las EFS está asociada a aspectos institucionales y culturales, principalmente, al legado colonial británico y a la adopción del modelo Westminster.
Palabras clave: Entidades Fiscalizadoras Superiores; Eficacia; Determinantes; África Subsahariana.

1. Introduction

The low effectiveness of the Supreme Audit Institutions (SAIs) in some African countries has worried potential donors and investors, since funds may be subject to misuse in bureaucratic corruption (Asamoah and Ofosu-Mensah, 2018; Kaufmann et al., 2011; Mbaku, 2007). However, there is no consensus regarding the reason why Sub-Saharan Africa has been severely affected by corruption (Forson et al., 2016; Levy, 2004; Mbaku, 2007; Mishra and Ab-

dullahi, 2020). Reports on the performance of Public Financial Management published by international organizations, the Public Expenditure and Financial Accountability Secretariat and the Open Budget Partnership, in the specific context of Sub-Saharan Africa, indicate low Supreme Audit Institutions effectiveness.

Many African nations have strengthened their legal basis to allow SAIs to supervise the implementation of the public budget independently and disclose results to mitigate the information asymmetry be-

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tween government and society. However, the positive impact of these reforms has been limited for some reasons. First, most countries' public accounting systems are often inaccurately reported, covering only part of public expenditure, and with long delays to deliver reports. Second, some African SAIs usually have insufficient financial and human resources. Third, the capacity for legislative control is weak in most countries without Public Accounts Committees (Levy, 2004).

Effectiveness of SAIs was previously assessed (Johnsen et al., 2019). An assessment model based on four indicators has been proposed for SAIs in Latin America (Santiso, 2007): independence, enforcement, credibility, and timeliness. The findings highlighted high levels of independence and enforcement, in addition to significant variations between countries, which seem to be linked to the history of institutions. Overall, the national institutional and cultural attributes, as well as the quality of country public governance seem to be relevant to the effectiveness of SAIs in Latin America and the Caribbean (Fukuyama, 2014; INTOSAI, 2001; Persson, 2005; Rothstein, 2011; Treisman, 2000). Additional research is needed to study the influence of institutional cultural aspects on the effectiveness of Supreme Audit Institutions. Indeed, cultural aspects of the African continent have been pointed out as the main causes of political instability, *coups d'état* and civil wars (Batty, 2010; Forson et al., 2016; Kadende-Kaiser and Kaiser, 2003; Mbah et al., 2020).

The objective of this work is to investigate the determinants the effectiveness of Supreme Audit Institutions in Sub-Saharan Africa. To have such analysis feasible, we appraised SAI effectiveness as the average of four SAI's indicators, namely independence, enforcement, timeliness and credibility (Santiso, 2007). To assess the determinants of SAI effectiveness, we examined the influence of two groups of country attributes: (i) the institutional and cultural factors: legal systems, colonial legacies, SAI models, and majority religion; (ii) the Institutional Quality of Government, which comprises six governance indicators (Kaufmann et al., 2011), on SAI's effectiveness.

2. Background and hypotheses

2.1. Supreme Audit Institutions

Supreme Audit Institutions (SAIs) are national agencies responsible for auditing government spending. According to INTOSAI (2001), the Supreme Audit Institutions are public law institutions of a country. Whatever their denomination, the form of constitution and organization, the country SAI exercise, by law, the function of external control, or public audit of public finance. SAIs should be independent bodies that report their opinions on government accounts

directly to the Legislative branch, promoting government accountability and transparency (Cordery and Hay, 2019; Durevall and Erlandsson, 2005; Liu and Lin, 2012).

SAIs assess the accuracy of government financial reports, as well as the degree of efficiency, effectiveness and optimization on the implementation of public budget (Funnel, 1997). SAIs differ in terms of institutional arrangements that may vary from one country to another. Historically, these institutional arrangements, in Sub-Saharan Africa, have evolved influenced by colonizers. Thus, such process has resulted in arrangement of three main distinct models for SAIs (Stapenhurst and Titsworth, 2002; Wynne, 2011): Napoleonic (French origin), Westminster (English origin), and Board (hybrid). In the Napoleonic model, the SAI is known as the Court of Auditors or Audit Chamber, while under the Westminster model the SAI is designated as the Office of Auditor General. Under the Board model, the SAI is called the Audit Board or Board of Accounts.

Under the Napoleonic model, the SAI is usually characterized as a Court (Judiciary), and has the authority, both judicial and administrative. In general, the court of auditor is independent of the Executive and the Legislative branches and can pass judgments on public accounts in accordance with the country's legal system (Dye and Stapenhurst, 1998; Stapenhurst and Titsworth, 2002). The model is found in Latin countries in Europe, some countries in Latin America, and in African countries whose official language is French or Portuguese. In most of the francophone and lusophone African countries, such as Cameroon, Mali, Togo, Madagascar, Sao Tome and Principe and more, there is yet an additional public audit body. This is the General State Inspectorate (*Inspection Généraux d'Etat*), which reports either to the country's president or prime minister, but being independent of the state bureaucracy, and having access to all state institutions' data (Wynne, 2011).

In the Westminster model, in general, SAIs are independent bodies and report their activities to the legislative branch. A Westminster SAI is composed of auditors and technical professionals with a high expertise, and the Auditor General issues periodic reports on government activities, but with less emphasis on legal compliance compared with those issued by the Court of Auditor in the Napoleonic model. The Westminster model is adopted in countries such as Australia, Canada, India, the United Kingdom and many other former British colonies in sub-Saharan Africa and the Caribbean.

In the Board model, which is prevalent in Asian countries, such as Indonesia, Japan and South Korea, SAIs are independent of the Executive and Legislative branches. They analyze government spending and revenue, and report its findings to the Legislative branch, as in the Westminster model (Stapenhurst and Titsworth, 2002).

Literature has discussed the main features of these models. In the Westminster model, the power is concentrated in the position of the Auditor General, and the institution ability to prevent corruption depends on his/her authority, as well as its independence from other institutions such as the Ministry of Finance. In the Board model, there are some variations in audit approaches in their own collegiate or among their members, which can help SAIs to curb corrupt acts (Blume and Voigt, 2011; Evans, 2008).

According to INTOSAI (2001) there is no ideal model for SAIs because there is variability in institutional arrangements that have been adopted successfully in different historical contexts and traditions of each country, as the colonial legacy. The literature has discussed the main features of each of these models, which may or may not contribute to an effective external control of public finance. The main difference between SAI models is that the Napoleonic model has administrative and legal authority, and is empowered to decide on the compliance of public agents while the other models analyze public expenditures and report to Parliament, and subsequent decisions on punishments are responsibility of the Legislative branch (Olivieri et al., 2011; Stapenhurst and Titsworth, 2002). Furthermore, in the Napoleonic model, SAIs have more extensive duties, being responsible for detecting and reporting violations, and have the responsibility to judge public accounts and impose administrative and criminal penalties on those who violate laws and regulations of Public Financial Management (Liu and Lin, 2012). Although the constitutional and organizational models vary from country to country, SAIs have common goals: assisting the Legislative branch in overseeing the public budget implementation, promoting government accountability; and mitigating information asymmetry in Public Financial Management.

Several important factors that help SAI effectiveness have been identified. One of the most frequently emphasized is independence (Blume and Voigt, 2011; Cordery and Hay, 2019; Dye and Stapenhurst, 1998; Funnel, 1997; Isaksson and Bigsten, 2012; Stapenhurst and Titsworth, 2002). SAI independence refers to the ability to perform their work without any interference. The critical factors that may affect the independence of an SAI include the appointment and stability of the SAI chief, allocation of financial resources and access to any necessary information and documents that must be publicly available (Wang and Rakner, 2005).

According to Streim (1994), Agency Theory is suitable to explain the importance of the independence of SAIs. Under this theoretical framework, there is a conflict between the principal (citizen) and the agent (public manager), as the agent may seek to act in his own interests. Agency relationship is a contract under which one or more persons, the principal, hires another person, the agent, to perform some service on behalf of the principal, involving the delegation of decision-making power to the agent (Jensen & Meckling, 1976). In Public Financial Management (PFM), the agency conflicts occur at three levels, and at each level, the principal (citizen) has informational disadvantages and is unable to monitor the agent without cost (Asamoah & Ofosu-Mensah, 2018; Blume & Voigt, 2011; Isaksson & Bigsten, 2012; Santiso, 2007; Streim, 1994). The first level is the relationship between the citizens (principal) and the Legislative branch (agent). At the second level, the Legislative branch assumes the role of the principal, and the Executive branch is the agent. At the third level, the Executive branch becomes the principal, and bureaucracy is the agent.

The agency problem that deserves greater emphasis in this work is derived from the principal-agent relationship, in which the society, or the citizens, is the principal, and the Executive branch is the agent. In this relationship, there are two main problems. The first is characterized as moral hazard, in which the Executive branch, by having privileged information, may act following its own interest. The second is characterized as adverse selection, in which the electorate, being unable to distinguish between good and bad politicians, may elect corrupt leaders. Under the theoretical Agency approach, solving agency conflicts requires monitoring action which has a cost (Jensen & Meckling, 1976). Thus, the electorate, having a huge informational disadvantage, creates a demand for an additional agent to monitor the government (Power, 1997). One strategy to reduce the information asymmetry between the principal and the agent in Public Financial Management (PFM) is to create a bureaucratic agency, specialized in public audits, to oversee and monitor the implementation of the public budget (Santiso, 2007). The bureaucratic agency is the SAI, which acts independently, providing reliable and timely information on budget performance, mitigating the information asymmetry between the electorate (principal) and the Executive branch (agent) in financial matters, and reducing agency costs.

In developing countries, such as many of those in sub-Saharan Africa, which depend on external aid, a new principal-agent relationship arises, in which donors become the principal and the national Government is the agent (Isaksson & Bigsten, 2012). This new principal-agent relationship strengthens the importance of SAIs in mitigating information asymmetry between donors and local governments (Zhou, 2007). It is in this context that international organizations like the World Bank, African Development Bank and the European Union have been concerned with the limited effectiveness of SAIs in Sub-Saharan Africa.

2.2. Hypotheses

Institutional Quality of Government

The quality of government is a complex concept that tries to express how seriously public management

is taken into account. It comprises traditions from which authority is exercised in a country, including the process by which governments are selected, monitored and replaced, government's ability in the formulation and effective implementation of sound policies, the respect of citizens and State towards public institutions, and the interaction between the economy and society. The World Bank suggested a set of indices to assess a country Institutional Quality of Government considering six dimensions of governance (World-Bank, 2017): Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption.

Indices for public governance have been used as proxies for institutional quality of the government. Rule of Law and Control of Corruption are positively associated with SAI effectiveness in Latin America and the Caribbean (Santiso, 2007). Government Effectiveness and Control of Corruption is linked to Westminster SAI model (Blume and Voigt, 2011).

Taking into account that the Institutional Quality of Government integrates a set of country attributes that reflects the national history and traditions (voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption) it is feasible to propose that this set of institutional attributes is able to shape a better control system integrated into the SAI. Higher standards of traditional and historical nation attributes tend to foster a more effective SAI in Sub-Saharan African countries as stated in the following hypothesis:

> **Hypothesis 1**: Institutional quality of government is associated with the effectiveness of SAIs in Sub-Saharan Africa.

Institutional and cultural factors

Countries' institutional factors, such as inheritance of the legal system, colonial legacy, and cultural characteristics as the majority religion are considered as able to matter for government effectiveness (Grier, 1997; Grier, 1999; La Porta et al., 1999), as well as corruption (Persson, 2005; Treisman, 2000). Following this stream of research, we propose that some historical, institutional and cultural factors may be related to the effectiveness of SAIs in Sub-Saharan Africa since such national attributes have conditioned many country government characteristics historically.

The legal system comprises a set of interdependent legal rules, assembled under a unifying principle. Common Law legal system has been developed in England to some extent to protect the Parliament and property owners against expropriation attempts from the monarch which makes it a system that tries to limit the excess monarch power. On the other hand, Civil Law has evolved more as an instrument used by the monarch for State building and controlling economic

life (La Porta et al., 1999). Thus, the Civil Law system stresses State protection, while Common Law system emphasizes fostering private ownership (La Porta et al., 1998) and corruption restrictions (Persson, 2005; Treisman, 2000). There is evidence that countries that adopted Common Law legal system have better quality of government in relation to those under the Civil Law legal system (La Porta et al., 1999). The authors argue that this difference is explained by the nature of the Common Law legal system that protects citizens and private ownership against powerful monarchs which also benefits corruption control (La Porta et al., 1999; Treisman, 2000).

Sub-Saharan African countries largely follow the English legal system (Common law) or the French legal system (Civil Law) (Joireman, 2001; La Porta et al., 1999; Persson, 2005). Following the argument that countries under the Common Law legal system are more prone to limit excess power of sovereigns and protect private ownership and citizens and that the Civil Law system may facilitate the existence of powerful malicious monarchs, we suggest that Common Law countries in Sub-Saharan Africa tend to have more skillful and more effective SAIs that are able to better protect citizens from malicious public managers.

> **Hypothesis 2**: Common Law legal system is associated with greater effectiveness of SAIs in Sub-Saharan Africa.

Despite the assumptions concerning the legal system, we follow previous literature that proposes the hypothesis regarding the influence of the SAI model on its effectiveness (Blume and Voigt, 2011; Santiso, 2007). According to the literature, the Napoleonic SAI model is mostly linked to Civil Law legal system, while the Westminster model is mostly associated to Common Law legal system. Evidence has been found that countries with Napoleonic SAI model are more prone to higher levels of corruption than those with Westminster model, due to the reduced involvement of the legislative branch in the cycle of government accountability (Blume and Voigt, 2011). Thus, we suggest that there may be differences in effectiveness between these models, since not all of the Civil Law legal system countries adopt the Napoleonic SAI model. To this end, we propose a research hypothesis on the influence of the institutional models of the SAIs:

> **Hypothesis 3**: Westminster SAI model is associated with greater effectiveness of SAIs in Sub-Saharan Africa.

Country culture is usually linked to former colonizers. Research has suggested that the adoption of the legal system and the adoption of the SAI organizational model depend on the influences of the colonial legacy (Dreher et al., 2007; Grier, 1999; La

Porta et al., 1999; Persson, 2005; Treisman, 2000). The results of the colonial process on former colonies are multiple and highly complex. However, it is sufficient to say that values, religion and European standards were systematically transplanted and imposed on the former colonies, especially the African colonies, whose traditions were very different from European traditions. Thus, African countries faced drastic social changes with the presence of Europeans (Kadende-Kaiser and Kaiser, 2003; La Porta et al., 1999; Lenshie and Johnson, 2012; Persson, 2005; Treisman, 2000). The degree of such drastic social changes varies from country to country, since the British colonial traditions diverge from the French, and Portuguese. This may lead to differences between colonies of different countries, with the same legal system.

The former French colonizers imposed the Napoleonic Code in all conquered territories. Moreover, the Napoleonic Code influenced the Portuguese and Spanish legal system, which also led the old Spanish and Portuguese colonies to remain dominated by French code. Similarly, the British spread the Common Law legal system to all its colonies. The expansion of colonial rule meant that, after independence, most of the former colonies followed the legacies left by the colonizers, especially in Africa (Beck et al., 2003).

Two reasons have been pointed out to explain the adoption of the colonial legacy left by the old settlers in the former African colonies (Joireman, 2001): First, the native people were forced to live under a particular legal system (Common Law and Civil Law). Second, the elites of African countries have become experts at working with their legal systems, particularly during the struggle for independence. African leaders were expected to choose the legal system that was already familiar to them, rather than building something completely new. However, Public Choice Theory defends the opportunity that country "rebuilders" (parliament and government) had in drafting the national constitutional design for the post-independence period. Under the Public Choice Theory, a politician is seen as interested in maximizing his well-being (Black, 1948).

Political actors in African countries had choices in the process of reconstruction and reorganization of government through the democratic constitution in the post-independence period, since soon after independence. Without European rule, African nations faced two important choices (Mbaku, 2008): the choice of a political system and the choice of an economic development model. These choices should reflect the values, culture and customs of society, as well as their aspirations. All of these things should be secured through a democratic process in drafting the country's constitution, i.e. a bottom-up process, participatory, inclusive and driven by people. Unfortunately, many leaders of these "new" countries adopted opportunistic behavior, favored personal interests and promoted institutional changes that were not in the public interest (Mbaku, 2008). An effective SAI arises as an important instrument to reduce the possibility of such malicious behavior by controlling Public Financial Management and minimizing asymmetric information between public management and society.

Most of the former African colonies kept the rules left by the colonizers which could serve as a guide for their political system and economic development for three different reasons: enforcement, familiarity with the rules, and personal interest (Joireman, 2001; Mbaku, 2008). These differences in adoption of the rules between countries may cause differences in SAI effectiveness in Sub-Saharan African nations, since most of the region was colonized by different settlers (British, French, and Portuguese). Besides the distinct legal systems (Civil Law and Common Law), Sub-Saharan countries may also differ in cultural terms, which also suffered the influence of colonial legacy. This variation may make some difference in the effectiveness of SAIs in Sub-Saharan Africa. Taking into account that the British colonial legacy is associated with the legal system that protects private ownership against expropriation from malicious political leaders we suggest that British colonial legacy is able to foster the effectiveness of SAIs.

Hypothesis 4: British colonial legacy is associated with the effectiveness of SAIs in Sub-Saharan Africa.

It can also be argued that the majority religion could have an influence on the effectiveness of government agencies. This is because religious traditions have long been viewed in the sense of social hierarchy, in which Catholicism, Orthodoxy and Islam have dominated the top hierarchy. Moreover, they are more interventionist, partly because the doctrines of these religions are more interventionist (they like to tell people what to do) than Protestantism, and in part because these religions grew to support State power. Cultural theories would probably also predict that governments in predominantly Catholic and Muslim countries are less efficient, partly as a consequence of excessive power, and partly because bureaucracies, particularly the Catholic ones, developed from religious ranks, and hence were not as dependent on the sovereign (Grier, 1997; La Porta et al., 1999).

Religion may influence how government agents see their loyalty to the family, which can affect the level of nepotism. A second way in which religion can affect the level of government institutional performance is through the historical pattern of influence that was developed in different settings between Church and State. In religious traditions, such as Protestantism, which appeared in some versions as dissident sects who opposed the state-sponsored religion, religious organizations can play an important role in monitoring government activities and denounce abuses practiced by public officials. In other traditions, such as Islam,

in which the religion hierarchy and state are closely intertwined, this practice does not happen (Grier, 1997; La Porta et al., 1999). Furthermore, religion has been suggested as able to transform social attitudes in the social hierarchy and family values, and thus can determine the acceptance or rejection of corruption practices (Dreher et al., 2007). In religions like Catholicism, Eastern Orthodoxy and Islam, whose hierarchy prevails, challenges to the *status quo* are less frequent than in more egalitarian or individualistic religions such as Protestantism (La Porta et al., 1999).

Evidence has been found that economic growth and development in the former Spanish, Portuguese and French colonies (Catholic tradition) in Africa and Latin America and the Caribbean is lower than in former British colonies (Protestant tradition) (Grier, 1997). There is also evidence that in countries with protestant traditions governments are superior in quality compared with those in countries with Catholic and Muslim traditions (La Porta et al., 1999).

The common argument is that the weaker connection of Protestantism with government structures compared to other traditional religions makes protestant people more eager to pressure for adequate government behavior. Besides, considering the empirical evidence of religion impacting institutional performance and corruption (La Porta et al., 1999; Grier, 1997; Treisman, 2000; Persson, 2005), we propose that the majority religion can interfere in the effectiveness of SAIs in Sub-Saharan Africa. Specifically, for its greater independence, we propose the following hypothesis about the Protestant majority religion on the effectiveness of SAIs in Sub-Saharan Africa.

> *Hypothesis 5*: Protestant as majority religion is associated with the effectiveness of SAIs in Sub-Saharan Africa.

3. Methods and data

3.1. Sample

INTOSAI and AFROSAI websites were consulted to obtain an accurate and comprehensive list of 49 SAIs in Sub-Saharan Africa. South Sudan SAI was removed from the sample due to the recent country institutionalization. Due to political instability and civil war, Somalia SAI was also kept out of sample. Djibouti and Eritrea were also kept out of the study for insufficient data to assess SAI effectiveness. Thus, our sample consisted of Supreme Audit Institutions from 45 Sub-Saharan Africa countries. The measurement of an Index for SAI effectiveness was based on four indicators (Santiso, 2007), calculated using data from international organizations such as the Public Expenditure and Financial Accountability (PEFA) Secretariat and International Budget Partnership (IBP), country constitution and SAIs' organic laws.

3.2. Method

Econometric model of Equation (1) is proposed to assess the influence of country institutional quality of government (IQG) and cultural factors (CF) on SAI effectiveness (SAIE) in Sub-Saharan Africa. Natural logarithm of Gross Domestic Product proxies for country size (CSIZE), following literature (Defond and Hung, 2004; Blume and Voigt, 2011; Hearn, 2013). Models are estimated using OLS regression.

$$SAIE_i = \beta_0 + \beta_1 IQG_i + \beta_2 [CFdummies_i] + \beta_3 CSIZE + \varepsilon_i \quad (1)$$

In which:

a. $SAIE_i$: Country SAI effectiveness index;
2. IQG_i: *Institutional Quality of Government of the country, calculated by the average of the six Worldwide Governance Indicators (WGIs) from 2006 to 2015;*
3. $CFdummies_i$: *Institutional and Cultural Factors dummies (Common Law dummy; Protestant dummy; British colony dummy; and Westminster dummy)*
4. $CSIZE$: natural logarithm of Gross Domestic Product; and the natural logarithm of country population.

3.3. SAI effectiveness

The assessment of SAI effectiveness is based on a model that comprises an average of four SAI indicators, two related to formal institutional power (independence and enforcement), and two others based on institutional practices (timeliness and credibility) (Santiso, 2007). The index ranges from 0 (lowest effectiveness) to 1 (highest effectiveness).

Independence

The independence indicator has three dimensions: head independence, financial independence, and institutional independence. Head independence refers to political independence of the SAI chief. Financial independence consists on the availability of sufficient funds to meet its legal audit power. Institutional independence is related to an SAI's ability to independently define its work plan and operational priorities, be granted full and unrestricted access to all data the SAI requires from the entire public management. These three dimensions of independence are split into specific indicators (Santiso, 2007) (Table 1). Each indicator rates from 0 (lowest) to 1 (highest independence). The independence indicator is the average of the 12 indicators. Each country data were collected from the following sources: Constitution, organic laws, budget laws and SAI websites.

TABLE 1: Assessment model of SAI independence

Independence dimension	Specific independence indicator
i. Individual Independence	1. **Constitutional guarantees of independence**. 0: external audit office does not possess constitutional rank; 0.5: possesses constitutional rank; 1: possesses constitutional rank and organic law. 2. **Mandate autonomy**. 0: no; 0.5: yes, but as an auxiliary or technical institution; 1: yes, as an autonomous institution. 3. **Legal independence from executive branch is established**. 0: no; 0.5: yes, independent from executive branch but dependent on legislative branch; 1: yes, independent from both the executive and the legislative branches. 4. **Nomination procedures guarantee independence**: 0: no (executive branch nomination); 1: yes, mixed nomination in which several branches of government participate; 5. **Term of office provides stability**. 0: no; 0.25: 1 to 4 years; 0.5: 4 to 8 years; 0.75: beyond 8 years; 1: life tenure (with age limit). 6. **Irrevocable nomination and immunity**. 0: no; 0.5: yes (but not specified or moderately); 1: yes (specified and strong). 7. **Dismissal procedures provide sufficient guarantees**. 0: no; 0.25: yes (dismissal by appointing authority); 0.5: yes (by special or absolute majorities); 0.75: yes (through impeachment process); 1: yes (by the judiciary).
ii. Financial Independence	8. **Budgetary autonomy is sufficient**. 0: no; 0.25: yes, SAI drafts its budget, which is intermediated before being submitted through the regular budget process; 0.5: yes, SAI drafts its budget, which is submitted through the regular budget process; 0.75: yes, SAI drafts its budget and special provisions exist; 1: yes, the SAI´s budget is a specific percentage of the country's budget or public finance.
iii. Institutional Independence	9. **Managerial autonomy is sufficient**. 0: no; 0.5: yes, sets its work program which is intermediated before being approved; 1: yes, sets its work program independently. 10. **Administrative autonomy**: 0: no; 0.5: yes, moderate or unspecified; 1: yes, specified and strong. 11. ***Esprit de corps* (there exists a strong *esprit de corps* enshrined in the selection procedures, administrative status and remuneration and benefit levels)**. 0: none; 0.33: weak; 0.67: moderate; 1: strong. 12. **Publicity of Audit reports**: 0: no; 0.5: yes, obligations but with restrictions; 1: yes, obligation without restrictions.

Source: Adapted from Santiso (2007)

Enforcement

The enforcement indicator reflects the binding nature of audit opinions' decisions and SAI ability to impose penalties. For enforcement, we used secondary data from United Nations Development Programme (UNDP, 2004), which measures the degree of SAI enforcement based on legal measures of each country. The index is coded as follows: None: 0 (no); Weak: 0.33 (non-binding decisions); Moderate: 0.67 (binding decisions, but without legal guarantees to impose sanctions); Strong: 1 (binding decisions and legal guarantees to impose penalties).

Timeliness

The Timeliness indicator is based on secondary data from the sub-index of quality and timeliness of fiscal information contained in the Index of Budget Transparency (Lavielle et al., 2003). The sub-index assesses the timeliness of tax and audit information during the control phase of the budget process. This variable measures the degree to which the timing for making public government budget implementation report and the SAI opinion on it (Santiso, 2007). We used secondary data from the Open Budget Index (OBI)

reports available from the (International Budget Partnership, 2015) and the Public Expenditure and Financial Accountability (PEFA) Reports available from the (PEFA_Secretariat, 2016). From OBI, we used the indicator that corresponds to the timing in issuing the SAI opinion on the audit report. From the PEFA Secretariat, data on subsection II of the indicator PI-26 and on subsection II of the indicator PI-30 were used.

Credibility

The credibility of the audit findings depends on the extent to which the Head of the SAI is considered impartial and competent. It is also determined by the history of the SAI and how much its recommendations assisted the fight against corruption, i.e., the SAI reputation. The credibility indicator is based on secondary data from the sub-index of credibility of external auditing, included in the Index of Budget Transparency (Lavielle et al., 2003). We used secondary data from reports published by the Open Budget Index (OBI), issued by the International Budget Partnership, and the Public Expenditure and Financial Accountability (PEFA) report, issued by the PEFA Secretariat, following important studies (Harrison

and Sayogo, 2014; Haque et al., 2015). These reports assess the society access to information on the public budget and Public Financial Management, respectively. From the Open Budget Index reports, we used only data from countries that were not evaluated by the Public Expenditure and Financial Accountability reports until 2016. From the OBI report, we used the indicators that assess how SAIs help public budget accountability and transparency - indicators 130, 131, 132 and 133. From the PEFA reports, we used indicator PI-26, for data published before February 2016, and indicator PI-30 onwards.

3.4. Institutional Quality of Government and cultural attributes

Attributes on quality of government comprise the six governance dimensions taken into account by the Worldwide Governance Indicator (WGI), an index created by the World Bank Research Department (Apaza, 2009; Kaufmann et al., 2007; Kaufmann et al., 2011). The six dimensions (Worldwide Governance Indicators - WGIs) try to express the country quality of government: Voice and Account-

ability; Political Stability and Absence of Violence/ Terrorism; Government Effectiveness, Regulatory Quality; Rule of Law; and Control of Corruption. WGI values range from -2.5 to +2.5, being higher values related to better governance. Governance indicators integrate institutional traditions from which authority is exercised in a country, including the process by which governments are selected, monitored and replaced, government's ability in formulating and effectively implementing sound policies, the respect of citizens and State towards public institutions, and the interaction between the economy and society (Kaufmann et al., 2011). Relevant studies used WGIs to explain the economic and social phenomena (Defond and Hung, 2004; Adserà et al., 2003; Blume and Voigt, 2011; Hearn, 2013; Oberoi, 2013).

Cultural factors include legal system, colonial legacy, SAI model and majority religion, as suggested by literature (Blume and Voigt, 2011; Collier, 2000; Dreher et al., 2007; Grier, 1999; Joireman, 2001; La Porta et al., 1999; Lenshie and Johnson, 2012; Persson, 2005; Treisman, 2000). Table 2 presents model explanatory variables.

TABLE 2: Explanatory variables

Variable	description
Institutional Quality of Government (IQG)	Obtained by the average among the six Worldwide Governance Indicators (WGIs) from 2006 to 2015.
Legal System	Classified in this work as Civil Law and Common Law. Thus, the variable is a dummy, which takes the value of 1 when the countries are from the legal system common law and 0 when they are from another legal system.
SAI Model	Classified as Westminster or another model. It is a dummy variable, which assumes a value of 1 when the SAI is of the Westminster model and 0 otherwise.
Majority Religion	Three majority religions: Muslim, Roman Catholic, and Protestant. The dummy variable takes the value 1 when the majority religion of the country is Protestant and 0 otherwise.
Colonial Legacy	Colonial Legacy indicates the colonization origin until the independence period. Thus, countries were classified in binary variables: former British colonies and former colonies of other countries. The dummy variable is set to 1 if the country was a former British colony and 0 otherwise.

4. Results

4.1. SAI effectiveness in Sub-Saharan Africa

Table 3 shows descriptive statistic of SAI effectiveness index in Sub-Sahara Africa, and country indicators (Timeliness, Enforcement, Independence, and Credibility).

TABLE 3: Descriptive statistics for SAI effectiveness, and their indicators

Descriptive statistic	Effectiveness Index	Timeliness	Enforcement	Independence	Credibility
Mean	0.62	0.40	0.96	0.85	0.28
Std. dev.	0.16	0.40	0.13	0.11	0.27
Coef. of var.	0.26	1.00	0.14	0.13	0.96
Min.	0.37	0.00	0.33	0.38	0.00
Max.	0.95	1.00	1.00	1.00	0.83
N	45	45	45	45	45

Note: Each index ranges from 0 (lowest) to 1 (highest effectiveness).

Table 3 shows that the mean SAI effectiveness in the Sub-Saharan Africa is 0.62, with a highest score of 0.95 for Mauritius (National Audit Office) and a lowest score of 0.37 for Cameroon (*Chambre des Comptes de la Cour Suprême*). It is worth mentioning the high standard of Enforcement and Independence while Timeliness and Credibility are scored very low. This situation is similar to Latin America and the Caribbean (Santiso, 2007).

4.2. Institutional and cultural attributes and SAI effectiveness

Tests for the difference in SAI effectiveness means (t test) between countries grouped by institutional and cultural factors are shown in Table 4. These tests indicate that, as suggested, certain groups of countries present higher SAI effectiveness: Common Law legal system, Westminster SAI Model, former British colonies, and countries with Protestant as majority religion. The result converges with the literature of political economy and law and finance as the explanatory power of these cultural characteristics on the effectiveness of government and control of corruption (Blume and Voigt, 2011; Collier, 2000; Dreher et al., 2007; Grier, 1997; Joireman, 2001; La Porta et al., 1999; Lenshie and Johnson, 2012; Persson, 2005; Treisman, 2000).

TABLE 4: Comparison of SAI effectiveness between countries with different institutional and cultural factors

Institutional/Cultural factors	N	Mean	Std. dev.	t-test (p-value)
Common Law	17	0.69	0.159	0.031
Other legal systems	28	0.58	0.159	
Westminster	19	0.71	0.151	0.002
Other SAI models	26	0.56	0.144	
British colony	17	0.73	0.160	0.001
Non-British colony	28	0.56	0.138	
Protestant	7	0.75	0.149	0.025
Other religions	38	0.60	0.159	

Note: Tests for the difference in means (t test)

4.3. Institutional Quality of Government and SAI effectiveness

Descriptive analysis of the Worldwide Governance Indicator, which is used as proxy for the institutional quality of the government, provides a notion of relevant government indicators (Table 5).

TABLE 5: Descriptive statistics of the Worldwide Governance Indicators (WGIs) (2006-2015)
that proxies for Institutional Quality of Government (IQG)

Variables	N	Mean	Min.	Max.	Std. dev.
Rule of Law	45	-0.67	-1.65	0.88	0.59
Government Effectiveness	45	-0.74	-1.66	0.82	0.60
Voice and Accountability	45	-0.54	-1.90	0.90	0.69
Political Stability	45	-0.50	-2.30	1.02	0.82
Regulatory Quality	45	-0.63	-1.84	0.58	0.49
Control of Corruption	45	-0.61	-1.59	0.92	0.57

It is worth mentioning that the indicator Political Stability exhibits the lowest value (-0.50 and -0.52) which signals the existence of countries with serious political stability problems.

To gauge the association between the quality of government and SAI effectiveness, a correlation analysis was run between SAI effectiveness and Institutional Quality of Government (IQG) which is proxied by the Worldwide Governance Indicators (WGIs) (2006-2015) (Table 6).

TABLE 6: Correlation between SAIs effectiveness index and the Institutional Quality of Government (IQG)
(proxied by the Worldwide Governance Indicators) and its components.

Variables	SAIE	1 RL	2 GE	3 VA	4 PS	5 RQ	6 CC
IQG	0.332						
	(0.031)						
1 Rule of Law (RL)	0.404	1					
	(0.001)						
2 Gov. Effectiveness (GE)	0.505	0.934	1				
	(0.000)	(0.000)					
3 Voice and Accountability (VA)	0.223	0.803	0.753	1			
	(0.141)	(0.000)	(0,000)				
4 Political Stability (PS)	0.098	0.734	0.653	0.626	1		
	(0.522)	(0.000)	(0.000)	(0.000)			
5 Regulatory Quality (RQ)	0.220	0.780	0.745	0.697	0.515	1	
	(0,147)	(0.000)	(0.000)	(0.000)	(0.000)		
6 Control of Corruption (CC)	0.311	0.831	0.781	0.697	0.595	0.735	1
	(0.037)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Note: Coefficients and probability values (p-value) (in parentheses) are exhibited.

Correlation analysis reveals that the SAI effectiveness index in Sub-Saharan Africa (SAIE) is positively correlated to Institutional Quality of Government (IQG).

4.4. Model estimates

Five distinct models, based on Equation (1), are estimated to assess the effect of the Institutional Quality of Government (IQG) (average among the six Worldwide Governance Indicators -WGIs- in the period 2006-2015) and the institutional and cultural factors, over SAI Effectiveness (SAIE) controlling by country size, proxied by GDP and population for robustness of results.

Table 7 presents the results of the five model estimates that assess the effect of the Institutional Quality of Government in the period 2006-2015, and the institutional and cultural factors, over SAI Effectiveness (SAIE), controlling by country size that is proxied by country GDP (Table 7; models i to v). From the different models estimated one can see that the IQG has a positive association with SAI effectiveness in Sub-Saharan African countries as suggested (Hypothesis 1). This result signals that, in fact, the set of institutional country traditions related to how authority is exercised in the country, including the process of selecting and monitoring governments, the government's ability in the formulation and effective implementation of sound policies, respect of citizens and State towards public institutions, and the interaction between economy and society, is able to influence SAI effectiveness. That means that the better the institutional country traditions and governance the higher SAIs effectiveness as

can be depicted from the positive coefficient observed (Table 7; models i to v). Better indices observed for voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption, are in-deed related to higher SAI effectiveness. This result is robust to different model estimates taking into account distinct institutional and country cultural attributes, controlling for different proxies for country size, GDP (Table 7) and population (Table 8).

TABLE 7: Model estimates for the effect of the institutional and cultural factors and the Institutional Quality of Government on SAI Effectiveness controlled by GDP

Variable	Model				
	i	ii	iii	iv	v
IQG	0.123***	0.118***	0.114***	0.096**	0.106***
Common Law		0.023			
Protestant			0.036		
British colony				0.089*	
Westminster					0.088**
GDP	0.044***	0.042***	0.042***	0.036**	0.039***
Constant	-0.312	-0.274	-0.270	-0.169	-0.240
Number of observations	45	45	45	45	45
R² (adjusted)	0.281	0.268	0.269	0.326	0.336
F	9.60	6.36	6.40	8.08	8.43
p-value	0.00	0.01	0.01	0.00	0.00

Note: IQG (average among the six WGIs in the period 2006-2015) measures Institutional Quality of Government. Table shows ß-coefficients. ***, ** or * refer to significance at 1, 5, or 10% level.

The findings also indicate that Sub-Saharan African countries with British colonial legacy tend to present higher SAI effectiveness as proposed (Hypothesis 4). This status is proposed as able to provide more controls for public managers which can be obtained through the enactment of more effective SAIs. This result is also robust to all distinct model specifications (Tables 7 and 8; model iv).

Furthermore, Sub-Saharan African countries with Westminster model have more effective SAIs as pro-posed (Hypothesis 3). The Westminster SAI model is adopted by countries with distinct legal system origins although most of them have the Common Law legal system. In fact, as expected, the independence of SAIs under Westminster model, the fact that it reports their activities to the parliament, and the periodic issuing of reports about government activities are able to promote SAI effectiveness. This finding is robust to all alternate model specifications (Tables 7 and 8; model v).

TABLE 8: Model estimates for the effect of the institutional and cultural factors and the Institutional Quality of Government on SAI Effectiveness controlled by country population

Variable	Model				
	i	ii	iii	iv	v
IQG	0.068***	0.058**	0.059**	0.044**	0.054***
Common Law		0.071			
Protestant			0.057		
British colony				0.141***	
Westminster					0.127***
Population	0.038**	0.031**	0.033**	0.029**	0.032**
Constant	-0.231	-0.113	-0.140	-0.047	-0.136
Number of observations	45	45	45	45	45
R² (adjusted)	0.207	0.229	0.202	0.355	0.342
F	6.62	5.27	4.63	8.89	8.43
p-value	0.00	0.00	0.01	0.00	0.00

Note: IQG (average among the six WGIs in the period 2006-2015) measures Institutional Quality of Government. Table shows ß-coefficients. ***, ** or * refer to significance at 1, 5, or 10% level.

Besides the association of the Institutional Quality of Government and institutional and cultural country attributes with the SAI effectiveness, it is worth mentioning the fact that larger countries tend to present higher levels of SAI effectiveness (Tables 7 and 8; models i to v). This finding was robust to model estimates with country size proxied by country GDP (Table 7) and by population (Table 8). It means that SAIs in more populous and richer countries seem to present better formal institutional power, being more independent and powerful, and adopting better institutional practices, being more well-timed and gaining more credibility for its competence.

The findings about the British colonial legacy, Westminster model, and country size, are also ratified. The status of the country as British colonial legacy indeed signals higher SAI effectiveness, as proposed (Hypothesis 4).

5. Conclusions

The importance of Public Financial Management has been highlighted worldwide. The need for democratically accountable public management is recognized given the consequences that it may have on citizens' well-being. Supreme Audit Institutions (SAIs) have a critical role in ensuring public sector accountability. The main task of SAIs is managing the audit of public sector entities' management and appraising their financial statements integrity and compliance, providing consultation to parliamentary committees, and undertaking performance audits. The study analyzes the effectiveness of Supreme Audit Institutions in Sub-Saharan Africa and aims to investigate the determinants of their effectiveness. SAI effectiveness is appraised based on four SAI indicators, two related to formal institutional power (independence and enforcement), and two others based on institutional practices (timeliness and credibility).

Research results provide evidence that, in fact, SAI effectiveness in Sub-Saharan Africa is associated with country cultural aspects, especially the Institutional Quality of Government which comprises a set of country attributes that reflect the national history and traditions. Thus, some country attributes which are linked to its tradition indeed matter for SAI effectiveness in Sub-Saharan African nations: people freedom to express opinion and to choose government (voice and accountability), political stability and absence of violence, quality independence of public services and workers (government effectiveness), government ability to promote sound policies that are able to foster economic development (regulatory quality), legal system effectiveness (rule of law), and control of corruption. These findings signal that social country evolution seems to be important for promoting public management accountability. Citi-

zens with freedom to declare opinions and to press government for their demands are able to improve SAIs effectiveness. In a similar fashion, more stable countries in terms of politics, violence and public services are able to have more effective SAIs. It can also be said that countries which, historically, have been able to boost economic development, provide more effective legal systems, and avoid high levels of corruption, were able to structure more effective SAIs. These country attributes that compose the Institutional Quality of Government are indeed important elements that determine the SAI effectiveness in Sub-Saharan Africa countries. Under the Agency Theory perspective, this finding could be interpreted as more active citizens, the principal in agency relation, being indeed able to more adequately pressure public manager (the agent) for higher public management accountability through the structuring of more effective SAIs. Besides, there is also evidence that some other country attributes are associated to SAI effectiveness. The findings signal that the British colonial legacy is associated with higher SAI effectiveness. The same situation is observed for the adoption of the Westminster model for the country SAI. Westminster model tend to be characterized by solid SAI institutions with qualified staff with numerous members. African countries with French colonial legacy, in a different fashion, usually have reduced staff and even more than one public institution to audit public management which may be counterproductive. It is also worth mentioning that larger countries tend to have more effective SAIs.

We envision some contributions of this work. Regarding academic contributions, this paper presents theoretical approaches on SAIs, which may serve as a foundation for further studies on SAIs and their effectiveness. Second, the work proposes econometric models to estimate the SAI effectiveness index from institutional characteristics and the Worldwide Governance Indicator which proxies for Institutional Quality of Government. From a practical point of view, citizens from countries with less effective SAIs should try to boost country attributes that are associated with higher SAI effectiveness. Such boosting process may be mid or long lasting but it may be fruitful given that SAI is an important instrument to increase public management accountability.

We envision some avenues for future research. One possible work is investigating whether there is a desirable favorable effect of SAI effectiveness on public management. In fact, control exercised by SAI may serve as feedback to public management that may benefit from such control institution. We also see as worthwhile the analysis of the determinants of SAI effectiveness in other regions of the world, such as Asia and Europe.

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