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Accounting practice, fiscal decentralization and corruption

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ABSTRACT

In prior studies, accounting and decentralization corruption solutions have so far been analysed in isolation. In this article, we connect these two strands of literature on corruption. Understanding this connection is important because weak financial accounting and reporting systems can inhibit monitoring incentives and thus reduce decentralization benefits in countering corruption. We argue that the effectiveness of decentralization as an anti-corruption barrier is complemented by the quality of the accounting practice in a country. Using multiple sources of data, we find that decentralization has a positive and increasing effect on reducing corruption among countries with a high-quality accounting practice. In contrast, decentralization has a negative and decreasing effect on reducing corruption among countries with weak-quality accounting practices. These findings are robust to alternative measures of accounting, decentralization and corruption and to endogeneity tests. Our findings demonstrate the crucial information role of accounting in enhancing decentralization monitoring mechanisms and in thereby reducing corruption.

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1. Introduction

Corruption is a key concern on the agenda of supranational organizations and is enshrined under Goal No 16 of the new United Nations Sustainable Development Goals (SDGs).¹ It is estimated that businesses and individuals across the world pay about \$ 1.5 trillion annually in bribes and that the poor are more likely to pay a higher proportion of their income in bribes than the rich are likely to pay (World Bank, 2017). A central and recurring theme in policy debates and the corruption literature is how specific policy interventions, including accounting practice and decentralization reforms, can help reduce corruption. These two policy interventions are part of the key elements of public sector reforms, collectively referred to as “New” Public Management (NPM) (e.g., Hood, 1991, 1995; Pollitt, 1995), that continue to be promoted by supranational organizations as important mechanisms for enhancing transparency, accountability, and governance in the public sector and thereby helping to counteract corruption (e.g., IFAC, 1996, 2017; Moretti, 2016; World Bank, 1997).

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¹ For example, the targets set out under goal 16 include the following: (1) to substantially reduce corruption and bribery in all their forms; (2) to develop effective, accountable and transparent institutions at all levels; and (3) to ensure responsive, inclusive, participatory and representative decision-making at all levels (United Nations, 2017).

Prior research acknowledges that NPM mechanisms are interrelated and interlinked (Hood, 1991; Pollitt, 1995) and that weak financial accounting and reporting systems can stifle the citizens' monitoring incentives, thereby reducing decentralization benefits (Bardhan, 2002; World Bank, 2001). Additionally, most studies have separately examined both the relationship between accounting practice and corruption and the relationship between corruption and decentralization. However, research has not yet considered the combined roles of accounting practice and decentralization on corruption or whether they complement each other in reducing corruption. Our paper aims to fill this gap and stands at the intersection between the accounting and decentralization strands of corruption literature.

This paper is motivated by and builds upon the accounting, decentralization, and corruption literature. First, we build upon the literature on the relationship between accounting practice and corruption. Generally, the accounting literature on, particularly public sector accounting, has focused on the factors that determine a country's adoption and application of high-quality accounting practices, with reference to accrual accounting systems and International Public Sector Accounting Standards (IPSAS) (e.g., Adhikari & Gårseth-Nesbakk, 2016; Christiaens, Vanhee, Manes-Rossi, Aversano, & Van Cauwenberge, 2015; Pina, Torres, & Yetano, 2009). This focus is merited mainly because high-quality accounting practices can facilitate the production of credible accounting information with more monitoring information and regular and timely financial reports, which can enhance transparency and accountability in the public sector (e.g., Groot & Budding, 2008; Mack & Ryan, 2006). However, to date, the impact of these high-quality accounting practices on corruption has received little attention in this literature, except for a few explicit cross-country studies (Houqe & Monem, 2016; Kimbro, 2002; Malagueño, Albrecht, Ainge, & Stephens, 2010) and within-country case studies with mixed findings (e.g., Goddard, Assad, Issa, Malagila, & Mkasiwa, 2016; Neu, Everett, Rahaman, & Martinez, 2013b, 2013a; Sargiacomo, Ianni, D'Andreamatteo, & Servalli, 2015).² In this study, we consider the role of decentralization, and use an accounting measure that captures experts' perceptions on the strength of financial auditing and reporting practices in a country and thus extend on these prior studies.

Second, we contribute to a broad range of literature on the relationship between decentralization and corruption (e.g., Bardhan & Mookherjee, 2006; de Mello & Barenstein, 2001; Fan, Lin, & Treisman, 2009; Fisman & Gatti, 2002). The contested idea in this literature is that political accountability at the sub-national level can increase the voters' ability to punish corrupt politicians, as the voters can better monitor and evaluate the corrupt politicians' performance relative to that of national politicians. A contrasting view holds that decentralization can instead generate unintended consequences such as patronage-based politics, capture by local elites and interest groups, and a new set of winners and losers at the sub-national level (Bardhan & Mookherjee, 2000; Cheeseman, Lynch, & Willis, 2016; Prud'Homme, 1995). All of these can, in turn, weaken the intended monitoring mechanisms at the sub-national level resulting in localized corrupt patronage networks and hence decentralized corruption (D'Arcy and Cornell, 2016; Véron, Williams, Corbridge, & Srivastava, 2006). It is not surprising, therefore, that the decentralization literature on corruption documents mixed empirical findings. Most importantly, however, there is no known decentralization study on corruption that incorporates accounting as a crucial source of monitoring information, and the reverse is also true.³ We build upon these studies by incorporating accounting in our analysis, using recent data and alternative measures of decentralization.

Third, we extend on a nascent but growing body of literature that questions the implicit assumption that there is a direct relationship between decentralization and corruption. This body of literature suggests that other underlying mechanisms, such as political competition and a free press, determine the influence of decentralization on corruption and could help disentangle the mixed results reported in the literature (e.g., Albornoz & Cabrales, 2013; Lessmann & Markwardt, 2010; Kyriacou & Roca-Sagalés, 2011a, 2011b). Notwithstanding this, however, we argue that the quality of accounting information in a country determines the effectiveness of decentralization monitoring mechanisms. We posit that, in countries with high-quality accounting practices, decentralization monitoring mechanisms are likely to be more effective because voters, political competitors or the press can uncover easily corruption scandals and rent-seeking schemes that increase the likelihood that incumbent corrupt politicians will be punished in the ballot box by being voted out of office. Conversely, in countries with weak-quality accounting practices, corrupt politicians can easily withhold, disaggregate or manipulate monitoring information to conceal their rent-seeking behaviour making it difficult for voters to punish them in the ballot box and thereby rendering decentralization monitoring mechanisms ineffective in countering corruption. Thus, there is a plausible complementarity relationship between the quality of accounting practice and decentralization that might better explain observed variations in corruption across countries.

The novel contribution of our paper, therefore, concerns this plausible connection between the hitherto separate accounting and decentralization literature on corruption. To the best of our knowledge, this is the first cross-country study to document a differential impact of decentralization on corruption conditional on the quality of the accounting practice in a country. We construct a cross-sectional dataset from different sources of data comprising a representative sample of up to 128 countries. In our analysis, we address endogeneity concerns and use both ordinary least squares (OLS) and two-stage least squares (2SLS) regressions.

² Using case studies, several closely related studies document within country evidence (Goddard et al., 2016; Neu, Everett, & Rahaman, 2009; Neu et al., 2013a; Neu et al., 2013b; Sargiacomo et al., 2015) and provide theoretical explanations on why accounting—and accounting processes and outputs—can be problematic in curbing corruption (Everett et al., 2007; Hoskin, 2015; Johnston, 2015; Neu, Everett, & Rahaman, 2015; Roberts, 2015).

³ A comprehensive literature search revealed that most studies focus on financial and management accounting in local authorities but do not examine the impact of accounting practice on corruption (e.g., Anessi-Pessina and Stecollini, 2007; Bromwich & Lapsley, 1997; Jacobs, 1997).

In summary, our main results show that when analysed separately and together without interaction terms, both accounting and decentralization are positively associated with reducing corruption. However, these results change remarkably when interaction terms are included in the analysis. We find that decentralization has a negative and decreasing net effect on reducing corruption among countries with weak-quality accounting practices but that it has a positive and increasing net effect on reducing corruption among countries with high-quality accounting practices. When we include controls for accounting systems and cultural dimensions, we find that countries that have accrual accounting systems and low power distance are likely to be less corrupt. Most importantly, the inclusion of these variables reinforces and strengthens our complementarity Hypothesis but, at the same time, eliminates the impact of press freedom and reduces those of other popular determinants of corruption. These results are robust to endogeneity tests, alternative measures of accounting, decentralization, and corruption, and to different econometric approaches. Our results highlight the important role of accounting information in determining the effectiveness of decentralization in countering corruption.

The rest of the paper is structured as follows. In the next section, we review the accounting and decentralization corruption literature. Section three outlines our Hypothesis. Section four identifies the sources of data, describes the variables and discusses the empirical approach. Section five reports the results from our empirical analysis, and section six summarizes the conclusions drawn from the study.

2. Prior literature

2.1. Accounting practice and corruption

Accounting is considered an essential part of the NPM development, as it is a crucial source of monitoring information and thus an important corruption barrier. The reason accounting is considered in this way is because a good accounting system arguably plays an integral role in the development of a country's accountability framework (Everett, Neu, & Rahaman, 2007) and is an important anchor upon which a country's national integrity system can be established (Doig & McIvor, 2003; Pope, 2000). It is for these reasons that organizations, such as the World Bank, IMF, and International Federation of Accountants (IFAC), recommend that countries adopt high-quality accounting practices, one aspect of which is a shift from a cash basis to accrual basis accounting systems. This accounting basis shift is based upon the argument that accrual-based accounting systems provide credible accounting information with more disclosures (than cash basis systems provide) that can be used to ensure the 'financial accountability' and the 'political accountability' of decentralized units of government (e.g., Mack & Ryan, 2006; Pina & Torres, 2003; Stanley, Jennings, & Mack, 2008). Theoretically, it is argued that accrual-based accounting systems can help reduce agency conflicts arising from information asymmetries between politicians (principals) and voters (agents) (Banker & Patton, 1987; Zimmerman, 1977).⁴ In this respect, accrual-based financial statements can reduce information cost and by ensuring the regular and timely production and audit of accounting information, can in turn increase the stakeholders' monitoring incentives, thereby helping to deter corruption.

A growing number of countries have implemented various accrual accounting frameworks, such as IPSAS (IFAC, 2016; Moretti, 2016),⁵ and recent worldwide statistics also show that adoption rates are high among decentralized government units relative to that of central governments (Christiaens et al., 2015; Christiaens, Reyniers, & Rollé, 2010; Pina et al., 2009). One reason for this high uptake might be the increased accountability pressure on decentralized governments from different stakeholders, including local citizens, central government, and financial resource providers. Gore (2004), for example, finds that compared to those local governments with low-debt levels, local governments with high debt levels tend to produce high-quality accounting information that conforms to Generally Accepted Accounting Principles (GAAP). This is because such accrual-based accounting systems can enable local governments to improve the quality of accounting information and transparency, thereby helping them discharge their accountability obligations (Brusca & Martínez, 2016).

However, accrual accounting adoption by a country in itself does not necessarily guarantee high-quality accounting practice; indeed, the quality of accounting information depends largely on the reporting and monitoring incentives of bureaucrats and politicians, on one side, and the demand for information by different stakeholders and their monitoring incentives, on the other side (e.g., Baber & Sen, 1984; Carpenter & Feroz, 2001; Evans & Patton, 1987; Ingram, 1984). In this respect, what has become evident is that there are substantial disparities between countries in the extent of implementation and depth of application of accrual accounting concepts, owing to differences in domestic reporting and monitoring incentives, which ultimately influence the quality of accounting practice in a country (e.g., Brusca & Condor, 2002; Christensen et al., 2015; Pina et al., 2009).⁶ We might, therefore, expect the impact of accounting on corruption to also vary between countries with a high-quality accounting practice and those with a weak-quality practice.

⁴ For a detailed theoretical discussion on the application of agency theory to describe the role of accounting information in reducing information asymmetry between politicians and voters, please see Banker and Patton (1987).

⁵ For example, a recent study from IFAC and the OECD shows that about 75% of OECD Countries have adopted accrual accounting practices (Moretti, 2016).

⁶ Brusca and Condor (2002) identify eight possible reasons why the harmonization of national accounting systems with international accounting systems might be difficult to achieve: political and administrative environment, interests and the formation of professionals, public accounting regulatory mechanisms, sources of financial resource, key users of financial reports, the objectives of public financial reporting, the organisation of the public sector and the legal system.

In the literature, an empirical determination of the relationship between an accounting practice and corruption has been debated with mixed findings. On the one hand, several cross-country studies explicitly examine the effect of different proxies of high-quality accounting practices on corruption. Using the Center for International Financial Analysis Research's (CIFAR) reporting index, the concentration of accountants and a composite index derived from these two variables, [Kimbrow \(2002\)](#) finds that countries with high scores of these three measures are less likely to be corrupt. [Malagueño et al. \(2010\)](#) report similar results, using two different proxies, namely, the World Economic Forum index of the strength of accounting standards and the percentage of firms audited by BIG4 accounting firms in a country. In a more recent study, [Houqe and Monem \(2016\)](#) show that countries with a long International Financial Reporting Standards (IFRS) experience and those with high scores in the World Bank's minority shareholders financial disclosure index have lower scores of perceived corruption.⁷

On the other hand, however, some studies argue that accounting practice and 'accounting assemblages' can be problematic in the fight against corruption (e.g., [Everett et al., 2007](#); [Hoskin, 2015](#); [Neu, Everett, & Rahaman, 2013a, 2013b, 2015](#); [Roberts, 2015](#)). For example, [Neu et al. \(2013a, 2013b\)](#) use a case study of a Canadian government sponsorship program to show how accounting actors play a salient role in facilitating networks of corruption and how accounting practices can be manipulated to avoid detection.⁸ Using the case of a protracted fight against corruption in Italy, [Sargiacomo et al. \(2015\)](#) show that 'accounting assemblages' are by themselves not sufficient corruption barriers but, rather, that there must be the political will to enforce these barriers. These latter series of studies bring to bear the fact that corruption can be deeply entrenched, even in countries with high-quality accounting practices and that publicising accounting information and encouraging more citizens to evaluate it can help counteract corruption ([Johnston, 2015](#)). We conjecture that high-quality accounting practices can complement decentralization monitoring mechanisms because citizens who benefit directly from local services are more likely to be willing to evaluate the performance of a local politician.

2.2. Fiscal decentralization and corruption

The aim of decentralization—that is, the transfer of power and responsibility for public services from the central government to independent or semi-autonomous regional and local governments—is to improve governance by providing mechanisms for continuous consultation and closer monitoring at smaller levels of government ([Faguet, 2004, 2014](#); [World Bank, 2001](#)). Thus, decentralization is also an important anti-corruption NPM development, and most supranational organizations, such as the World Bank, have continued to support decentralization and local governance projects across the world, especially among the developing countries (e.g., [United Cities & Local Governments, 2008](#); [Zhou, 2009](#)).

One theoretical underpinning of this policy intervention is that decentralization combined with local democracy can help reduce political accountability agency problems (see, e.g., [Persson & Tabellini, 2002](#); [Seabright, 1996](#)).⁹ The idea is that, at smaller levels of government, monitoring by voters is likely to be more effective because the voters are equipped with "better information about the local performance", they "are able to attribute credit or blame", and they "are able to coordinate on a voting strategy" to discipline the local politician ([Fan et al., 2009](#), p. 19). At smaller levels of government, political accountability can increase because both the local politician and the voter have an informational advantage and an incentive ([Bardhan, 2002](#)). However, conflicting theories postulate that decentralization can instead exacerbate corruption because local bureaucrats might face more pressing demands from local interest groups than national bureaucrats face and may thus be more susceptible to control by local elites ([Bardhan & Mookherjee, 2000](#); [Prud'Homme, 1995](#); [Reinikka & Svensson, 2004](#)). Two groups of empirical studies document the association between decentralization and corruption.

Although resulting in unclear findings, one group of studies investigates the unconditional (direct) association between fiscal decentralization and less corruption. For example, after controlling for various socioeconomic factors, [de Mello and Barenstein \(2001\)](#) and [Fisman and Gatti \(2002\)](#) find that more fiscally decentralized countries, as measured by the ratio of total subnational revenue/spending to total government revenue/spending, are less likely to be corrupt. [Dincer, Ellis, and Waddell \(2010\)](#) use a yardstick inter-jurisdictional competition model to show that expenditure decentralization can reduce corruption because voters, putting pressure on local political actors to perform, tend to compare the performance of the politicians in their region with that of the politicians of other neighbouring regions. Similarly, [Arikan \(2004\)](#) uses a tax-competition model to show that when there is competition for mobile capital between sub-national governments, political actors tend to be less corrupt.¹⁰ However, other studies report mixed findings. For example, [Treisman \(2000\)](#) finds that countries with a federal government structure experience higher corruption relative to that experienced by countries with a unitary government structure.

Using several measures of both decentralization and corruption, [Freille, Haque, and Kneller \(2007a\)](#) find that fiscal decentralization and constitutional centralization reduce corruption, but they also find that the positive impact of

⁷ The World Bank financial disclosure measure captures the extent to which minority shareholders are protected through disclosure against self-dealing in related-party transactions.

⁸ [Neu et al. \(2013b\)](#) identify two ways in which accounting practice is used for corruption purposes: (1) the skillful use of accounting, where simple bookkeeping techniques and discretionary powers are exploited to manipulate accounting information; and (2) the organisational ability of the accounting practice, where accounting can facilitate collaboration across different interest groups because it plays a central role in all anti-corruption solutions.

⁹ For a detailed discussion on alternative decentralization theories, please see [Mookherjee \(2015\)](#).

¹⁰ She finds a weak association between the decentralization measure, the share of non-central government employment to total government employment, and corruption and finds an insignificant impact of expenditure decentralization.

constitutional centralization diminishes in the presence of other forms of political decentralization. Similarly, [Fan et al. \(2009\)](#) also use different measures of both decentralization and corruption and although they report that fiscal decentralization reduces corruption, they also find that a large number of government or administrative tiers increase corruption. [Lessmann and Markwardt \(2010\)](#) find that the presence of a federal constitution, the number of tiers of government and the percentage of subnational employees have no significant effects on corruption. More recently, [D'Arcy and Cornell \(2016\)](#) use a recent elaborate fiscal decentralization situation in Kenya to show how devolution of central government functions resulted in a decentralization of patronage networks and corruption.

Another group of studies considers the influence of other determinants of corruption on the relationship between fiscal decentralization and corruption. Pointing out the importance of political institutions in this relationship, [Enikolopov and Zhuravskaya \(2007\)](#) suggest that decentralization benefits are conditional on the effectiveness of political accountability at the local level. In their study, they find that the impact of fiscal decentralization on corruption increases in countries with strong political parties (legislature fragmentation) but that administrative subordination (appointment of officials by higher levels of government) has no effect. [Kyriacou and Roca-Sagalés \(2011a\)](#) find that fiscal decentralization is positively associated with government quality (control of corruption, rule of law, regulatory quality, and government effectiveness) but that this positive influence diminishes when fiscal decentralization interacts with political decentralization (sub-national elections). In a closely related study ([Kyriacou & Roca-Sagalés, 2011b](#)), these authors also report similar results when they combine fiscal decentralization with indicators of regional elections and multi-level government. [Albornoz and Cabrales \(2013\)](#) provide a theoretical model of political competition and show that fiscal decentralization is more effective in reducing corruption when combined with greater degrees of political freedom. Focusing on the role of information freedom, [Lessmann and Markwardt \(2010\)](#) argue that successful decentralization depends not only on the presence of effective bureaucratic monitoring mechanisms but also on the free flow of information in a country. They find that decentralization has a positive impact in countries with high degrees of press freedom and a negative effect in those with low degrees of freedom. Elsewhere, this complementary role of a free press has also been reported in studies that examine the relationship between democratization and corruption ([Bhattacharyya & Hodler, 2015](#); [Chowdhury, 2004](#); [Vadlamannati & Cooray, 2016](#)).

Having reviewed the literature we note that both accounting practice and fiscal decentralization are positively associated with less corruption; however, their combined effect on corruption has not been explored in the extant literature. We contribute to closing this gap by connecting the two strands of literature and bringing together the two variables into one model to evaluate their combined impact on corruption. In this respect, we include an interaction term in our analysis to inquire whether the impact of decentralization on corruption is likely to be greater in countries that have high-quality accounting practices than in those that have weak-quality accounting practices.

3. Hypothesis development

In this section, we discuss how a complementary relationship between high-quality accounting practices and decentralization might better explain variations in corruption across countries. Complementarity is apparent in both the theoretical underpinnings and the empirical analyses of the accounting and decentralization corruption literature. For example, the common control variables used in the two strands of literature examined in this study include those that measure the level of economic development (Gross Domestic Product per capita and government size), the enforceability of contracts (rule of law, and voice and accountability), and autonomy (political system and civil liberty).¹¹ Since these common variables are important correlates of both accounting and decentralization, there is reason to believe that accounting and decentralization can have complementary influences on corruption and that this could also vary remarkably across countries. We posit that high-quality accounting practices help voters or political competitors to uncover corruption scandals and rent-seeking behaviour and that this information increases the likelihood that corrupt politicians will be removed from office. The literature provides several clues on why the quality of the accounting practices in a country might complement the effect of decentralization in reducing corruption.

First, the role of political competition and monitoring incentives has been revealed. Because political competition enhances government openness, it can not only increase the impact of decentralization on corruption ([Albornoz & Cabrales, 2013](#); [Enikolopov & Zhuravskaya, 2007](#)) but it can also increase the probability of adopting modern accounting methods ([Baber & Sen, 1984](#); [Carpenter, 1991](#)) and politicians' incentive to provide monitoring information ([Baber, 1983](#)). Therefore, if political competition is intense in a country, incumbent politicians are likely to face a greater threat of removal from office, while voters and political competitors are also likely to demand more monitoring information. In response, incumbent politicians are likely to adopt high-quality accounting practices that guarantee credible and verifiable accounting information ([Carpenter & Feroz, 1992](#)). Thus, high-quality accounting practices can allow the incumbent politicians to better demonstrate their political accountability and fend off political competitors, thereby increasing further the effectiveness of decentralization monitoring mechanisms in curbing corruption. Conversely, however, incumbent politicians are also likely to impede

¹¹ Although different additional control variables are used within and across the two strands of literature, most of these variables are either barely significant or have trivial impacts. The additional control variables used in the decentralization literature include measures of population, government size, openness to trade, ethnic fractionalization, and press freedom. Those used in the accounting literature include cultural values, investor protection, rule of law, and tax rate.

the adoption of modern accounting practices or enforcement mechanisms to defeat their purpose, especially in countries with deeply rooted political connections and vote-buying schemes (Cruz, Keefer, & Labonne, 2016; Kramon, 2016; Singer, 2009; World Bank, 2017). In this case, the resulting weak-quality accounting practice can provide opportunities for incumbent politicians to withhold, disaggregate or manipulate monitoring information to conceal their rent-seeking behaviour, which can weaken the role of decentralization monitoring mechanisms in reducing corruption.

Second, studies have emphasized the impact of reporting and monitoring incentives of bureaucrats and appointed officials. Bureaucrats produce, control and have unfettered access to monitoring information, and, at the same time, they can also influence the adoption and application of high-quality accounting practices (Giroux & Shields, 1993; Ingram, 1984; Zimmerman, 1977). If the benefits (e.g., promotion, recognition or wages) outweigh the costs of monitoring politicians (e.g., being fired or demoted), bureaucrats have greater incentive to provide monitoring information to voters and political opponents (Zimmerman, 1977). This argument is consistent with the finding that civil-service pay, and corruption are positively correlated (Van Rijckeghem & Weder, 2001). Similarly, if a country has strong accounting controls and audit mechanisms (Baltaci & Yilmaz, 2006; Giroux & Shields, 1993), the bureaucrats' reporting incentives are likely to be greater, as the bureaucrats have minimal control over monitoring information and are thus more likely to be willing to share this information with voters and political opponents. Therefore, if decentralization increases the bureaucrats' reporting and monitoring incentives at the local level (Fisman & Gatti, 2002; Tabellini, 2000), we should expect this to be more effective in countries with a high-quality accounting practice than in those with a weak-quality practice.

Third, the press has been shown to have an incentive to monitor politicians and to play an important role in promoting good governance and controlling corruption by raising awareness about the impact of corruption and by investigating and reporting incidences of corruption (see e.g., Brunetti & Weder, 2003; Charron, 2009; Freille, Haque, & Kneller, 2007b; Stapenhurst, 2000). A strong press can, therefore, influence the level of disclosures because the press can demand more information to meet their monitoring incentives or because politicians may be willing to provide information as a self-defence mechanism (Ingram, 1984) or to implement laws that enhance information access (Berliner & Erlich, 2015). As a result, the press can not only help reduce voters' total information cost of monitoring politicians but also increase the cost of corrupt behaviour for the politician or bureaucrat (Lessmann & Markwardt, 2010).

Furthermore, it is also evident that publicising accounting information, such as audit reports, can influence the electoral performance of incumbent politicians and that the likelihood of losing office increases even more when there is extensive coverage of such information in local newspapers and radio stations (Costas-Pérez, Solé-Ollé, & Sorribas-Navarro, 2012; Ferraz & Finan, 2008; Larreguy, Marshall, & Snyder Jr, 2014). As Brender (2003) suggests, changes in the political environment, enforcement of audit and financial reporting requirements, and the status of local media can in combination determine the likelihood of re-election during sub-national elections. In contrast, however, a weak press makes it easy for corrupt politicians to deflect, hide or suppress incriminating information to avoid public scrutiny, thereby resulting in weak-quality accounting practices and high information costs (Charron, 2009; Zimmerman, 1977). For example, politicians can weaken the monitoring role of the media by offering bribes or lucrative government-related advertising contracts (di Tella & Franceschelli, 2011; World Bank, 2017). Thus, if monitoring mechanisms are more effective in countries with a free press, we should expect the impact of decentralization to be greater in those countries that also have a high-quality accounting practice.

Finally, the strength of professional accounting and government institutions can impact the quality of a country's accounting system. Institutional pressure from well-organized professional and government institutions, the educational process of participating in professional activities, and the prestige gained from participating in compliance programmes or financial reporting practice awards (Carpenter & Feroz, 2001; Evans & Patton, 1983) are all likely to influence both the adoption of innovative accounting practices and the level of disclosure.¹² Similarly, a strong central government and independent oversight agencies, such as supreme audit institutions, anti-fraud agencies and the office of the ombudsman, are likely to exert more pressure on decentralized governments and to demand accountability information (World Bank, 1997, 2001; Santiso, 2006). All of these can reduce voters' information cost and increase the effectiveness of decentralization monitoring mechanisms.

In contrast, however, countries with weak professional accounting and government institutions are likely to have weak monitoring mechanisms, thereby increasing the information cost of monitoring politicians. In such countries, there is a high probability that professional misconduct is not sanctioned, that fraud is covered up through manipulation of records and that these institutions can also be entangled in networks of corruption (Neu et al., 2013a; Nielsen, 2003). Therefore, because monitoring mechanisms can be intensive in countries that have strong professional accounting and government institutions, again, it is likely that the impact of decentralization is greater in those countries that also have high-quality accounting practices.

Taken together, all the above arguments suggest that the impact of decentralization monitoring mechanisms can be more effective in countries with high-quality accounting practices than in those with weak-quality accounting practices. Thus, the Hypothesis to be tested is.

¹² For example, the Certificate of Achievement for Excellence in Financial Reporting Program in the US (<http://www.gfoa.org/cafr>); the Public Finance Innovation Awards in the UK (<http://www.publicfinanceawards.co.uk/2017-winners/>); and Public Sector Financial Management Awards in Canada (<https://www.cpacanada.ca/en/connecting-and-news/awards/public-sector-financial-management-awards>).

Table 1
Data sources and description of the variables.

Variable	Definition	Year	Source
Corruption measures			
<i>TICPI</i>	Transparency International Corruption Perception Index (0 = highest corruption; 10 = absence of corruption). Rescaled to 0 (high) to 1 (low)	1990–2014	Transparency International
<i>ICRGCP</i>	International Country Risk Guide (ICRG) corruption measure (1 = highest corruption; 6 = absence of corruption). Rescaled to 0 (high) to 1 (low)	1984–2016	ICRG
<i>WBCPI</i>	World Bank corruption measure (−2.5 = highest corruption; +2.5 = absence of corruption). Rescaled to 0 (high) to 1 (low)	1990–2014	World Bank
Accounting measures			
<i>FARP</i>	An index that measures the strength of financial auditing and reporting standards in a country [1 = extremely low; 7 = extremely high]	2006–2015	World Economic Forum
<i>ACCTBASIS</i>	A categorical variable that takes the value 0 if a country uses a cash basis or a modified cash-basis accounting system and the value 1 if it uses an accrual basis of accounting system	2007	IFAC
<i>IPSASADOPTION</i>	A categorical variable that takes the value 1 if a country has adopted IPSAS as a basis of financial reporting and takes the value 0 otherwise	2007	IFAC
Decentralization measures			
<i>EXPENDITURE</i>	The share of subnational government expenditures in total government expenditures	1980–2015	IMF GFS
<i>REVENUE</i>	The share of subnational government revenues in total government revenues	1980–2015	IMF GFS
Control variables			
<i>POPUL</i>	The log of the population		World Bank WDI
<i>GDPPC</i>	The log of the Gross Domestic Product per capita in 2005 dollars	1996–2014	World Bank WDI
<i>GOVCONEXP</i>	Government consumption expenditures as a share of the GDP	1996–2014	World Bank WDI
<i>OPENNESS</i>	Imports plus exports as a share of the GDP	1996–2014	World Bank WDI
<i>ETHNOFRAG</i>	The degree of ethnolinguistic fractionalization		Ethnologue
<i>FREEPRESS</i>	The index of freedom of the press (inverted)		Freedom House
<i>POWDIST</i>	Hofstede's cultural value that describes the extent to which the less powerful members of society accept, expect or prefer injustice		Hofstede (2011)
<i>INDLISM</i>	Hofstede's cultural value that reflects the degree to which people in society are primarily concerned with their own self-interest over that of the collective		Hofstede (2011)

Hypothesis. Decentralization has a more positive influence on reducing corruption in countries with a high-quality accounting practice than in countries with a weak-quality accounting practice: that is, the impact of decentralization on reducing corruption increases with the quality of the accounting practice in a country.

4. Research design

4.1. The data

4.1.1. Variables description

The sources of the data used and how each variable is measured are outlined in Table 1. Our key dependent variable is the Transparency International (TI) Corruption Perception Index (CPI), *TICPI*, which ranks countries in terms of the perceived levels of corruption among public officials and politicians (Transparency International, 2016). Countries are ranked on a scale of 0–100, with high scores indicating less corruption and low scores indicating high corruption. The index captures perceptions of business people and country experts on the level of corruption in the public sector in the respective countries. For robustness, we first use the International Country Risk Guide (ICRG) measure of corruption provided by the PRS Group.¹³ This measure is denoted, *ICRGCP*, and has a scale ranging from 1 to 6, with low values representing high corruption. We then use the worldwide governance indicator for control of corruption, produced by Daniel Kaufmann and Aart Kray (World Bank, 2015). This corruption variable is abbreviated as *WBCPI* and has a scale ranging from −2.5 to +2.5, with low values representing weak governance and vice versa. To allow a comparison with previous studies and between estimates, the three corruption measures are rescaled to values ranging from 0 (high corruption) to 1 (less corruption).

To measure the quality of the accounting practice in a country, we use an index produced by the World Economic Forum that captures perceptions about the strength of financial auditing and reporting standards (World Economic Forum, 2015). These data are part of the Executive Opinion Survey of the World Economic Forum and captures the opinions of business leaders in approximately 141 countries.¹⁴ This measure is denoted *FARP*, with a scale ranging from 1 (poor) to 7 (best). The World Economic Forum index has been used in a series of accounting studies (e.g., Karabrahimoglu & Cangarli, 2016; Kaya & Koch, 2015; Wysocki, 2004). In addition, we take into account the accounting systems in a country using two measures: (1) an

¹³ Details about the ICRG data are available at <https://www.prsgroup.com/explore-our-products/international-country-risk-guide/>.

¹⁴ The Global Competitiveness Report provides a snapshot of a country's productivity and its potential to achieve sustainable levels of prosperity and growth, and the report is commonly used by policymakers, business executives, and academics.

indicator variable, *ACCTBASIS*, that takes the value 0 if a country uses a cash basis or a modified accrual accounting system and the value 1 if it uses an accrual basis of accounting; and (2) an indicator variable, *IPSASADOPTION*, that takes the value 1 if the country has adopted IPSAS as a basis of public sector financial reporting and takes the value 0 otherwise. These two variables, *ACCTBASIS* and *IPSASADOPTION*, are extracted from a detailed report produced by IFAC on accounting systems and IPSAS adoption across countries (IFAC, 2016).

There is an inconclusive debate on what constitutes decentralization and how to measure the degree of decentralization in a country (e.g., Schneider, 2003; Treisman, 2002; World Bank, 2001). Decentralization can take three different forms, namely, fiscal, political, and administrative, and these forms might have different impacts on socio-economic outcomes (Treisman, 2002). To measure the degree of decentralization in a country we use the share of subnational expenditure in total government expenditure (*EXPENDITURE*) and the share of subnational revenue in total government revenue (*REVENUE*). The two measures are commonly used in the literature and are taken from the IMF's Government Finance Statistics (IMF, 2016). For robustness, we use three alternative measures of decentralization—fiscal, administrative and political—recently produced by Ivanyna and Shah (2014).

Although accounting and decentralization have separately been shown to be important right-hand side variables in corruption analyses, a number of other variables have also been found to be important determinants of corruption. Following the literature, we include these control variables to mitigate omitted variable bias. First, we control for the size of a country, using two variables, namely, government expenditures as a share of the GDP and the log of the population, due to the following reason: large countries are also likely to be highly decentralized and it is possible that our model might capture the impact in such countries of low public services per capita, which may force citizens to engage in corruption in order to more quickly receive essential public services (Banerjee, 1997; Fisman & Gatti, 2002). Second, we control for a country's degree of openness, using the share of imports plus exports in the GDP. In the absence of this variable, our results can be contaminated since countries with high-quality accounting practices are also likely to be more open and competitive—as they can attract larger foreign direct investments—and are thus less corrupt (Ades & Di Tella, 1999; Mauro, 1995).

Third, we include the log of the gross domestic product per capita (in 2005 Dollar) to control for a country's level of economic development. Countries with a high GDP per capita are likely to have strong institutions and accounting traditions, which counteract corruption (Ades & Di Tella, 1997), and our accounting proxy can be capturing this effect. Fourth, we control for a country's degree of ethnolinguistic fractionalization, which captures the likelihood that two individuals picked randomly from a country's population will belong to different ethnic groups. In our results, this variable controls for the likely impact of ethnicity on corruption (Maruo, 1995) since decentralization is also typically promoted as a means of addressing ethnic fractionalization. Fifth, because access to information can inhibit the monitoring of public officials, we control for a country's degree of press freedom. As noted earlier, this variable can explain variations in corruption and is also correlated with decentralization (Lessmann & Markwardt, 2010). Finally, using Hofstede's (2011) cultural dimensions, we control for two dimensions of culture, namely, the degree of power dispersion and individualism in a country, following Houqe and Monem (2016) and Kimbro (2002), because in large power distance countries, the acceptance of a hierarchical order and distinct socioeconomic classes can promote corruption, as appointed officials might feel that they are entitled to personal benefits (Getz & Volkema, 2001).

4.1.2. Descriptive statistics

The summary statistics for the variables are reported in Tables 2 and 3. In line with the literature (see e.g., Enikolopov & Zhuravskaya, 2007; Freille et al., 2007a; Lessmann & Markwardt, 2010), our sampling strategy was to include as many countries as the data could allow. Because we collated our variables of interest and control variables from different data sources and these variables are not observable in some countries we ended up with a dataset that has representative samples of up to 128 countries with varied socioeconomic characteristics.¹⁵ These restricted samples are consistent with those used in the literature, comprise both developed and developing countries, and are not an issue to our research approach; on the contrary, they permit us to carry out robustness tests, using different specifications, and to compare our results with findings in previous studies. From Table 2, we can see that the means of both the Transparency International (*TICPI*) and the World Bank (*WBCPI*) corruption indices equal to 0.46, while that of the ICRG (*ICRCPI*) is 0.48, which is 20 basis points higher but is not significantly different from the *TICPI* ($t = -0.9153$, $p = 0.3626$) or the *WBCPI* ($t = -1.1682$, $p = 0.2459$). Thus, we should expect our results to be consistent, regardless of the measure used. On a scale of 1–7, on average, the measure of the accounting practice (*FARP*) is 4.72, with a standard deviation of 0.91.

Approximately one-fifth of the countries in our sample use an accrual basis of accounting, while more than one-third have adopted IPSAS as the preferred framework for financial reporting. The data shows that the average share of both subnational

¹⁵ The 96 countries in our main sample that do not have missing values for both the accounting practice and expenditure decentralization measures include Albania, Argentina, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belgium, Benin, Bosnia and Herzegovina, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Finland, France, Germany, Guatemala, Greece, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, Rep., Kyrgyz Republic, Latvia, Lesotho, Lithuania, Luxembourg, Macedonia FYR, Madagascar, Malawi, Malaysia, Mauritius, Mexico, Mongolia, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Senegal, Serbia, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Tanzania, Tajikistan, Thailand, The Gambia, Trinidad And Tobago, Tunisia, Turkey, Uganda, the United Arab Emirates, the United Kingdom, the United States, Uruguay, and Zimbabwe.

Table 2
Descriptive statistics.

Country	Count	Mean	Std. Dev.	Min.	Max.
TICPI	128	0.46	0.20	0.19	0.92
ICRGCP1	112	0.48	0.19	0.14	0.94
WBCPI	128	0.46	0.22	0.14	0.96
FARP	128	4.72	0.91	2.49	6.22
ACCTBASIS	128	0.19	0.39	0	1
IPSASADOPTION	128	0.31	0.47	0	1
EXPENDITURE	96	0.20	0.17	0.01	0.84
REVENUE	92	0.20	0.19	0.01	1.00
FREEPRESS	128	58.29	21.98	8.00	91.90
GDPGAPITA	128	12282.60	16510.71	145.49	79165.38
GOVCONEXP	128	16.47	9.52	5.08	106.27
POPULTTL (Millions)	128	48.00	162.00	0.28	1330.00
OPENNESS	128	88.99	52.57	25.17	391.34
ETHNOFRAG	128	0.42	0.29	0.00	0.97
POWDIST	73	59.96	21.30	11.00	100.00
INDLISM	73	42.59	23.69	6.00	91.00

Table 3

Cross-tabulations of corruption means by the degree of fiscal decentralization and type of accounting systems against the quality of an accounting practice. The likelihood-ratio test is for the null Hypothesis of equal corruption means across different groups of countries.

Panel A: Fiscal decentralization		Weak_FARP	Mid_FARP	High_FARP	Total	LR chi2(2)	p-value
Expenditure	Low	0.31	0.40	0.53	0.39	15.22	0.001
	Mid	0.33	0.45	0.70	0.50	29.93	0.000
	High	0.31	0.45	0.76	0.59	44.30	0.000
	Total	0.32	0.43	0.69	0.49		
	LR chi2(2)	1.26	1.18	10.36			
	p-value	0.533	0.554	0.006			
Revenue	Low	0.31	0.39	0.59	0.41	23.66	0.000
	Mid	0.29	0.41	0.67	0.48	30.42	0.000
	High	0.33	0.48	0.78	0.58	40.00	0.000
	Total	0.31	0.43	0.70	0.49		
	LR chi2(2)	1.08	5.83	8.8			
	p-value	0.583	0.054	0.012			
Panel B: Accounting systems		Weak_FARP	Mid_FARP	High_FARP	Total	LR chi2(2)	p-value
Accounting system	Cash	0.32	0.41	0.65	0.45	80.06	0.000
	Accrual	0.32	0.52	0.78	0.64	33.41	0.000
	Total	0.32	0.43	0.69	0.49		
	t-value	0.25	-2.33	-3.47			
	p-value	0.807	0.025	0.001			
IPSAS adoption	Not adopted	0.33	0.42	0.71	0.50	83.34	0.000
	Adopted	0.30	0.44	0.66	0.48	35.75	0.000
	Total	0.32	0.43	0.69	0.49		
	t-value	-0.26	-0.66	0.42			
	p-value	0.799	0.510	0.675			

government expenditure to total government expenditure and subnational government revenue to total government revenue is approximately 20 percent. However, there are two noticeable outlier countries in our sample, namely, the United Arab Emirates and China, in which their degree of expenditure decentralization is 83% and 80%, respectively. In addition, the United Arab Emirates has an unusual 100% degree of revenue decentralization. However, our results remain virtually unchanged whether we include or exclude these two outlier countries or any other country in our sample.

Table 3 reports cross-tabulations of the means of corruption for different groups of countries and provides a first look at the possible relationships between our key variables. A likelihood-ratio test of the null Hypothesis of equal corruption means for these different groups of countries are also reported. In Panel A, countries are split by the quality of their accounting practice (*Weak_FARP*, *Mid_FARP*, and *High_FARP*) and by the degree of expenditure and revenue decentralization (low, mid, high).¹⁶ The results clearly show that among countries with a high-quality accounting practice, corruption means are significantly different and increase with the degree of expenditure decentralization (*High_FARP*); for countries with low

¹⁶ We also checked this three grouping of countries using an exploratory cluster analysis (with K = 3) based on the three key variables of interest in our study (corruption, accounting practice, and decentralization). The results from this cluster analysis are consistent with our grouping approach.

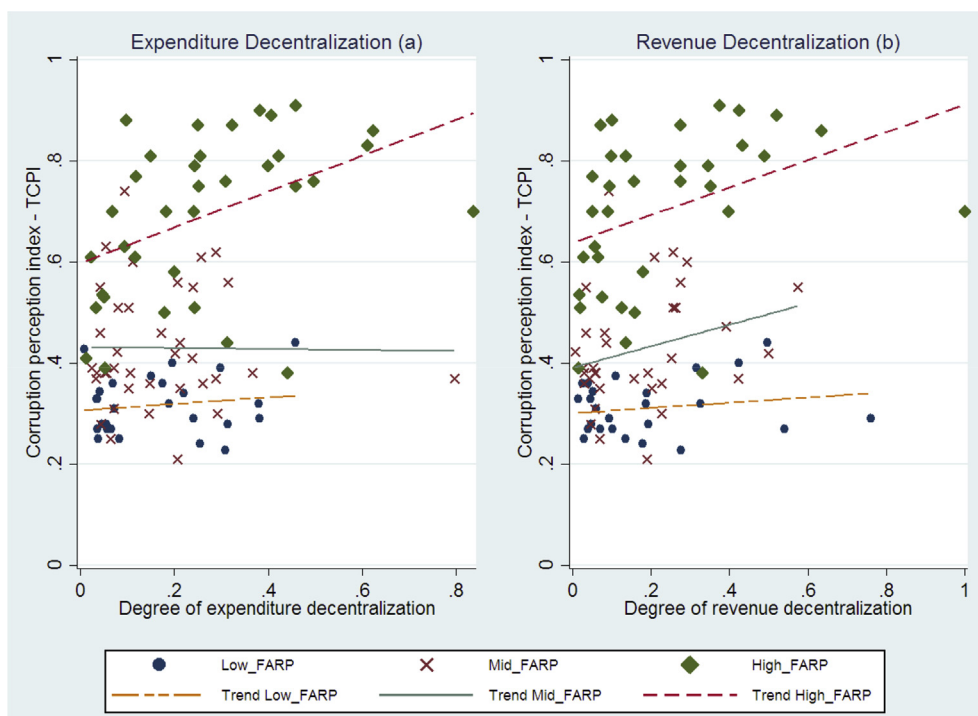


Fig. 1. Scatter plot of corruption against fiscal decentralization and the quality of the accounting practice.

degrees of decentralization, the corruption mean is 0.53, and this increases to 0.76 for countries with high degrees of decentralization. In contrast, the means of corruption are not significantly different for countries with either weak (*Weak_FARP*) or mid-quality (*Mid_FARP*) accounting practices.

For revenue decentralization, among countries with mid- (*Mid_FARP*) and high-quality (*High_FARP*) accounting practices, the corruption means are significantly different and increase with the degree of decentralization. In Panel B, countries are split by the quality of the accounting practice and the accounting frameworks (accrual basis and IPSAS adoption). We find that among countries with mid- and high-quality accounting practices but not in countries with weak-quality practices, corruption means are significantly different between countries that have adopted accrual accounting systems and those that have not. Corruption means are not significantly different for countries that have adopted IPSAS and those that have not, regardless of the strength of the accounting practice. Overall, the corruption means in countries with weak-quality accounting practices are ambiguous.

In addition, shown in Fig. 1 in a scatter plot with fitted lines, the Transparency International measure of corruption (*TICPI*) is plotted against both the measure of expenditure decentralization and that of revenue decentralization. As in Table 3, in order to examine the effectiveness of the decentralization monitoring mechanisms, using the variable *FARP*, countries are ranked and split into three groups by the quality of their accounting practice. In the scatter plot, countries with a weak-quality accounting practice (*Weak_FARP*) are indicated by circles and a dotted line with dashes; those with mid-quality (*Mid_FARP*) are indicated by multiplication signs and a continuous line; and those with high quality (*High_FARP*) are indicated by diamonds and a line with small dashes. Again, from this figure, it is likely that the effectiveness of decentralization monitoring mechanisms in curbing corruption depends on the quality of the accounting practice in a country. Regardless of the type of decentralization, countries with a high-quality accounting practice are mainly in the upper part of the two graphs in Fig. 1, those with mid-quality are in the middle, and those with weak quality are in the lower part of the figure. Most importantly, Fig. 1(a) suggests that among countries with a high quality of accounting practice, the effectiveness of monitoring mechanisms increases with the degree of the decentralization expenditure. However, among countries with either a mid- or weak-quality accounting practice, the degree of decentralization expenditure has a minimal impact on the effectiveness of monitoring mechanisms. Similarly, Fig. 1 (b) suggests that the effectiveness of monitoring mechanisms increases with the degree of revenue decentralization among countries with a high- and a mid-quality accounting practice but is trivial with respect to the degree of revenue decentralization, in those countries with a weak-quality practice.

4.2. Empirical approach

In our analysis, we employ a lagged structure of the dependent and independent variables. For the dependent variable, we use averages for the period 2010 to 2015, while for the independent variables, we use averages for longitudinal data, covering

the period 2000 to 2009, or cross-sectional data reported during this period. This approach has been used in the literature to handle data gaps and to address endogeneity problems (see e.g., [Fisman & Gatti, 2002](#); [Lessmann & Markwardt, 2010](#)). We use four nested models to examine the influence of the quality of an accounting practice on the relationship between decentralization and corruption. To permit a comparison with previous studies that analyse the impacts of accounting and decentralization separately, we first run the following three models:

$$CORRUPTION_i = \alpha + \beta FARP_i + \delta CONTROLS_i + \varepsilon_i, \quad (1)$$

$$CORRUPTION_i = \alpha + \gamma DECENTRALIZATION_i + \delta CONTROLS_i + \varepsilon_i, \quad (2)$$

$$CORRUPTION_i = \alpha + \beta FARP_i + \gamma DECENTRALIZATION_i + \delta CONTROLS_i + \varepsilon_i, \quad (3)$$

where the dependent variable, *CORRUPTION*, is the corruption perception index for country *i*, with high values representing less corruption; *FARP* is a measure of the quality of accounting practice, while *DECENTRALIZATION* is a measure of the degree of decentralization (either expenditure or revenue decentralization) in a country; and *CONTROLS* is a vector of country characteristics, as used in both the accounting and decentralization strands of literature.

To test our complementarity Hypothesis, we then include an interaction term between the variables accounting and decentralization. To appropriately capture the interactive effect of these two variables, we transform the continuous measure of accounting to three dummy variables, by ranking and splitting countries into three groups, as described earlier. The regression model is:

$$CORRUPTION_i = \alpha + \gamma_1 DECENTRALIZATION_i + \beta_1 Mid_FARP_i + \beta_2 High_FARP_i + \gamma_2 (Mid_FARP_i \times DECENTRALIZATION_i) + \gamma_3 (High_FARP_i \times DECENTRALIZATION_i) + \delta CONTROLS_i + \varepsilon_i, \quad (4)$$

where *Weak_FARP*, *Mid_FARP*, and *High_FARP* are dummy variables equal to one if a country is categorized as having a Weak, Mid or High_FARP and equal to zero otherwise. Countries with a weak FARP are the reference group. *Mid_FARP* \times *Decentralization* and *High_FARP* \times *Decentralization* are interaction terms, and the other variables are as described before.

Our focus in equation (4) is on the coefficient estimates γ_1 , γ_2 , and γ_3 , which represent the differential impacts of decentralization in countries with weak, mid and high scores of FARP. We predict that the coefficient estimate γ_1 should be negative—implying that decentralization is associated with more corruption; γ_2 should be either negative (but higher than γ_1) or positive—indicating that a *FARP* increases the benefits gained from decentralization in reducing corruption; and the coefficient estimate γ_3 should be positive but with a higher magnitude than γ_2 —again, indicating the incremental decentralization benefits gained with a greater quality of accounting practice. The impact of decentralization should be an increasing function of FARP so that $\gamma_1 < \gamma_1 + \gamma_2 < \gamma_1 + \gamma_3$.

Although the lagged structure of our dependent and independent variables can help mitigate endogeneity problems, a major concern is how to establish causal relationships because corruption and the determinants of corruption are interlinked (see e.g., [Arikan, 2004](#); [Everett et al., 2007](#); [Lessmann & Markwardt, 2010](#)). One endogeneity issue in the above equations exists in the relationship between the levels of corruption and the quality of the accounting practice. As discussed earlier, it is reasonable to suspect that corrupt political actors might block the adoption of modern accounting systems that guarantee a high-quality accounting practice, as this will reduce the room to manipulate accounting information and opportunities for rent seeking. Thus, the direction of causality might run from corruption to the quality of the accounting practice in a country and not to the reverse. To address this, an instrument is required that can affect the quality of the accounting practice in a country and not the level of corruption. The origin of the legal system of a country is one such instrument, which has been found to determine the accounting systems and the level of market transparency in a country ([Ball, 1995](#); [Nobes, 1998](#)). We use three dummy variables that represent countries whose legal origin is either common law, civil law or a mixture of different laws. This variable has also been used as an instrument for decentralization ([Fisman & Gatti, 2002](#)).

Another endogeneity issue with our analysis concerns the possibility that national political actors can frustrate decentralization, to shield their ability to extract rents since decentralization reduces the resources at their disposal (see e.g., [Fisman & Gatti, 2002](#); [Lessmann & Markwardt, 2010](#)). The direction of causation might run from corruption to decentralization; it is possible that reduced corruption is driven by other political and economic changes and not necessarily as a result of decentralization ([Bardhan, 2002](#)). Therefore, the degree of decentralization is determined by corruption and not the reverse, as we would ideally expect. Again, we need an instrument that can affect the degree of decentralization in a country but not the level of corruption. Following the literature, we choose an instrument for decentralization, using the log of the surface area because the geographic size of a country determines the degree of decentralization and has no impact on the level of corruption in a country ([Arikan, 2004](#); [Everett et al., 2007](#); [Lessmann & Markwardt, 2010](#)).

5. Empirical results

Table 4 presents our main results in which we report both the OLS and 2SLS regression estimates for comparison. In Column (1), we regress corruption against the proxy for the quality of an accounting practice in a country and the control

Table 4

OLS and 2SLS regressions examining the separate and combined impacts of an accounting practice and fiscal decentralization on reducing corruption. Robust standard errors are reported in parenthesis (***, **, * represent statistical significance at 1%, 5%, and 10%, respectively).

Dependent variable: Corruption (TICPI)	Accounting		Expenditure Decentralization			Revenue Decentralization			
	OLS	OLS	OLS	OLS	2SLS	OLS	OLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>FARP</i>	0.080*** (0.014)		0.076*** (0.016)				0.089*** (0.015)		
<i>DECENTRALIZATION</i>		0.227*** (0.053)	0.229*** (0.045)	-0.079 (0.102)	-0.268** (0.117)	0.139*** (0.052)	0.152*** (0.043)	-0.123* (0.066)	-0.265*** (0.102)
<i>Mid_FARP</i> × <i>DECENTRALIZATION</i>				0.180* (0.093)	0.300*** (0.092)			0.126 (0.077)	0.176 (0.110)
<i>High_FARP</i> × <i>DECENTRALIZATION</i>				0.468*** (0.111)	0.763*** (0.142)			0.458*** (0.088)	0.746*** (0.135)
<i>FREEPRESS</i>	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.000)	0.003*** (0.000)	0.002*** (0.001)	0.003*** (0.001)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.001)
<i>GDPPC</i>	0.042*** (0.011)	0.069*** (0.008)	0.039*** (0.010)	0.050*** (0.009)	0.039*** (0.011)	0.080*** (0.009)	0.043*** (0.009)	0.052*** (0.010)	0.035*** (0.013)
<i>GOVCONEXP</i>	0.001 (0.001)	0.004* (0.002)	0.003* (0.002)	0.004** (0.002)	0.005** (0.002)	0.001 (0.003)	0.001 (0.002)	0.005** (0.002)	0.007*** (0.003)
<i>POPULATION</i>	0.007 (0.008)	-0.005 (0.009)	-0.017** (0.006)	-0.013* (0.007)	-0.013* (0.008)	0.002 (0.009)	-0.011 (0.007)	-0.003 (0.007)	-0.000 (0.008)
<i>OPENNESS</i>	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
<i>ETHNOFRAG</i>	0.009 (0.032)	0.046 (0.039)	0.006 (0.033)	0.004 (0.037)	-0.030 (0.039)	0.041 (0.039)	-0.003 (0.032)	-0.000 (0.037)	-0.042 (0.039)
Constant	-0.586*** (0.139)	-0.348** (0.170)	-0.202 (0.124)	-0.012 (0.142)	0.130 (0.144)	-0.486*** (0.173)	-0.312** (0.133)	-0.194 (0.138)	-0.113 (0.152)
Shea's adjusted partial R-Squared of first-stage regressions:									
<i>DECENTRALIZATION</i>					0.618				0.641
<i>Mid_FARP</i> × <i>DECENTRALIZATION</i>					0.579				0.504
<i>High_FARP</i> × <i>DECENTRALIZATION</i>					0.447				0.430
Wooldridge's overidentifying restrictions test (p-value)									
					0.266				0.178
Wooldridge's endogeneity test (p-value)									
					0.012				0.007
Adjusted R-Squared	0.79	0.77	0.86	0.85	0.84	0.77	0.86	0.85	0.83
Observations	128	104	96	96	96	103	92	92	92

variables *FREEPRESS*, *GDPPC*, *GOVCONEXP*, *POPULATION*, *OPENNESS*, and *ETHNOFRAG*. The results show that the accounting proxy, *FARP*, is positive and highly significant, in line with the findings in [Kimbrow \(2002\)](#) and [Houqe and Monem \(2016\)](#). Among the control variables, only *FREEPRESS* and *GDPPC* are significant. In Column (2), we replace the accounting proxy with the degree of expenditure decentralization in a country and include the above control variables. This variable, expenditure decentralization, is also highly significant and is consistent with the findings in previous studies (e.g., [Kyriacou & Roca-Sagalés, 2011a](#); [Lessmann & Markwardt, 2010](#)). The results for the control variables remain unchanged, but the variable *GOVCONEXP* becomes significant at the 10% level when compared to the results in Column (1). In Column (3), we bring together in one regression our key independent variables—accounting practice and expenditure decentralization. These two variables remain virtually unchanged, suggesting that both have independent influences on corruption. In fact, the explanatory power of this regression increases by 7% and 9%, when compared to the model results in Column (1) and (2), respectively.

Next, we interact the proxy for accounting practice and the degree of expenditure decentralization in Columns (4) and (5). The results in Column (4) show that the net effect of expenditure decentralization is positive and significant among countries with a mid- and high-quality accounting practice. However, the impact of expenditure decentralization is negative but insignificant among countries with a weak-quality accounting practice. Turning to the 2SLS regression results reported in Column (5), we can see that the magnitudes of the impact of decentralization increase across the three groups of countries and that the levels of significance also increase for countries with weak- and mid-quality accounting practices. This finding remains unchanged, even when we include an interaction term between decentralization and press freedom, in line with [Lessmann and Markwardt \(2010\)](#). These results support our complementarity hypotheses and show that the quality of accounting practice in a country influences the impact of decentralization in reducing corruption. The impact of expenditure decentralization is -0.268 in countries with a *Weak_FARP*; however, the marginal effect of decentralization is 0.032 (=0.300 - 0.268) in countries with a *Mid_FARP* and is 0.495 (=0.763 - 0.268) in countries with a *High_FARP*.

The results for revenue decentralization are reported in Columns (6) to (9) of [Table 4](#) and are similar to the expenditure decentralization estimates. When analysed separately, the revenue decentralization variable is positive and highly significant, as shown in Column (6). In the regression in which we include the proxies for the quality of accounting and revenue decentralization in one model, Column (7), we find these two variables are positive and highly significant. The estimates with interaction terms between revenue decentralization and the three dummies for the quality of accounting practice are

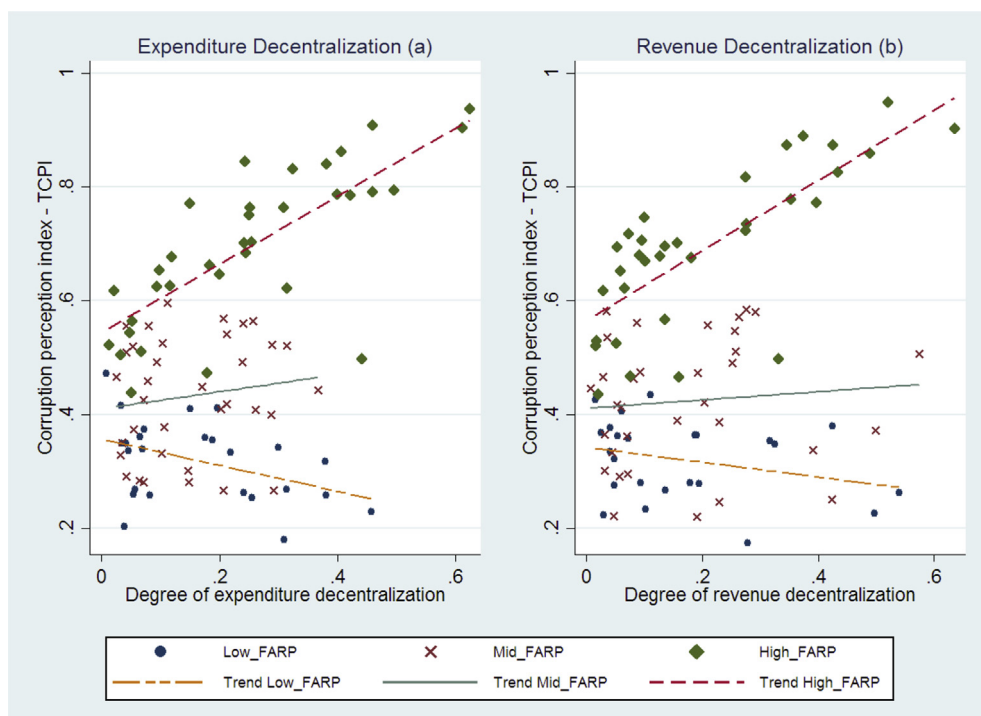


Fig. 2. Scatter plot of predicted probabilities of corruption against the degree of fiscal decentralization and the quality of the accounting practice.

reported in Column (8) and (9). The results reported in Column (8) show that among countries with a *Weak_FARP*, the impact of revenue decentralization is negative. In contrast, among countries with a high-quality accounting practice, the impact of revenue decentralization is positive and highly significant and among countries with a mid-quality practice, the impact of revenue decentralization is positive but insignificant. The results for the 2SLS regressions shown in Column (9) increase in magnitude and level of significance. Again, these results support our complementarity hypotheses. The impact of revenue decentralization is -0.265 in countries with a *Weak_FARP*; however, the marginal effect of decentralization is -0.089 ($= 0.176 - 0.265$) in countries with a *Mid_FARP* and is 0.481 ($= 0.746 - 0.265$) in countries with a *High_FARP*.¹⁷

To better demonstrate the above complementary effect, Fig. 2 plots the predicted probabilities of corruption against the incremental degrees of decentralization for the three groups of countries split by the quality of accounting practice. The predictions are based on the 2SLS estimates in Column 5 and 9 of Table 4. As in Fig. 1, we can see that countries with a high-quality accounting practice are predominantly at the top, followed by those with mid-quality, and that those with weak quality are at the bottom. Fig. 2 (a) shows that the impact of the degree of expenditure decentralization on reducing corruption increases sharply among countries with a high-quality accounting practice and increases slightly in those with a mid-quality accounting practice. In contrast, the impact of expenditure decentralization on reducing corruption decreases in countries with a weak-quality accounting practice. Similarly, Fig. 2 (b) shows that the impact of revenue decentralization on reducing corruption also increases sharply in countries with a high-quality accounting practice and increases slightly in those with a mid-quality one but decreases in countries with a weak-quality practice. The predicted probabilities of corruption are significantly different across the three groups of countries (weak, mid- and high-quality accounting practices),^{18 19}

¹⁷ Considering that the distribution of our measures of decentralization suggests that a linear regression might not be appropriate, as depicted in Fig. 1, we checked our results using a log transformation of this variable. The results from this robustness test are consistent with the results reported in Table 4 and are available from the authors.

¹⁸ For robustness, we replayed the results reported in Columns 4, 5, 8 and 9 of Table 4 without transforming the continuous measure of accounting practice into three dummies. The results from this robustness test are similar to those reported in Table 4. In addition, a plot of the marginal effect of decentralization on corruption at three representative values of accounting practice (that is, at the mean of the estimation sample (4.86), two standard deviations below the mean (3.16) and at two standard deviations above the mean (6.56)) reveals fitted lines that are consistent with those reported in Fig. 2.

¹⁹ Additionally, to interpret the incremental R-square values appropriately, we fitted nested models without transforming the accounting practice index to a categorical variable with three dummies. We then carried out Wald tests to compare the models with interaction terms to those without by sequentially adding blocks of variables including the measures of accounting practice, decentralization and an interaction term of these two variables to a baseline model with control variables only. The F Statistics derived from these comparison tests show that the blocks of variables (individual variables) in these nested models are all jointly significant and that each block of variables (individual variables) increased the R-square significantly. These results are available from the authors.

Table 5

OLS and 2SLS regressions examining the effect of an accounting practice and fiscal decentralization on reducing corruption, controlling for the impacts of the accounting framework and Hofstede's cultural dimensions. Robust standard errors are reported in parenthesis (***, **, * represent statistical significance at 1%, 5%, and 10%, respectively).

Dependent variable: Corruption (TICPI)	Accounting Framework				Cultural Dimensions			
	Expenditure Decentralization		Revenue Decentralization		Expenditure Decentralization		Revenue Decentralization	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>DECENTRALIZATION</i>	-0.127 (0.117)	-0.314*** (0.118)	-0.177** (0.077)	-0.312*** (0.096)	-0.323*** (0.094)	-0.380*** (0.116)	-0.226*** (0.076)	-0.288*** (0.080)
<i>Mid_FARP</i> × <i>DECENTRALIZATION</i>	0.228** (0.104)	0.351*** (0.095)	0.144 (0.087)	0.211** (0.102)	0.342*** (0.085)	0.331*** (0.105)	0.128 (0.084)	0.175* (0.096)
<i>High_FARP</i> × <i>DECENTRALIZATION</i>	0.501*** (0.121)	0.791*** (0.133)	0.523*** (0.094)	0.767*** (0.119)	0.646*** (0.121)	0.762*** (0.144)	0.577*** (0.117)	0.696*** (0.127)
<i>FREEPRESS</i>	0.002*** (0.000)	0.002*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
<i>GDPPC</i>	0.045*** (0.008)	0.034*** (0.010)	0.042*** (0.009)	0.028** (0.011)	0.035** (0.017)	0.029* (0.016)	0.031* (0.017)	0.027* (0.016)
<i>GOVCONEXP</i>	0.005*** (0.002)	0.005*** (0.002)	0.006*** (0.002)	0.008*** (0.002)	0.004 (0.003)	0.005* (0.003)	0.005* (0.003)	0.006** (0.003)
<i>POPULATION</i>	-0.014** (0.007)	-0.015** (0.007)	-0.005 (0.007)	-0.002 (0.007)	-0.008 (0.011)	-0.008 (0.010)	-0.000 (0.010)	-0.002 (0.008)
<i>OPENNESS</i>	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.001* (0.000)	0.001** (0.000)	0.001** (0.000)
<i>ETHNOFRAG</i>	-0.001 (0.035)	-0.033 (0.036)	-0.011 (0.036)	-0.045 (0.035)	-0.056 (0.064)	-0.077 (0.059)	-0.080 (0.057)	-0.094* (0.054)
<i>ACCTBASIS</i>	0.068*** (0.026)	0.073*** (0.023)	0.081*** (0.025)	0.096*** (0.023)	0.092*** (0.032)	0.095*** (0.028)	0.108*** (0.032)	0.113*** (0.028)
<i>IPSASADOPTION</i>	-0.023 (0.017)	-0.018 (0.017)	-0.015 (0.017)	-0.015 (0.016)	-0.046* (0.025)	-0.045** (0.022)	-0.037 (0.022)	-0.035 (0.022)
<i>POWDIST</i>					-0.002** (0.001)	-0.002*** (0.001)	-0.002** (0.001)	-0.002*** (0.001)
<i>INDLISM</i>					0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Constant	0.058 (0.144)	0.203 (0.142)	-0.099 (0.136)	-0.024 (0.135)	0.250 (0.268)	0.319 (0.238)	0.139 (0.254)	0.201 (0.229)
Shea's adjusted partial R-Squared of first-stage regressions:								
<i>DECENTRALIZATION</i>		0.608		0.631		0.730		0.654
<i>Mid_FARP</i> × <i>DECENTRALIZATION</i>		0.564		0.492		0.702		0.507
<i>High_FARP</i> × <i>DECENTRALIZATION</i>		0.431		0.426		0.590		0.427
Wooldridge's overidentifying restrictions test (p-value)		0.319		0.117		0.476		0.443
Wooldridge's robust endogeneity test (p-value)		0.004		0.024		0.224		0.576
Adjusted R-Squared	0.87	0.85	0.87	0.86	0.84	0.83	0.86	0.86
Observations	96	96	92	92	64	64	61	61

In the results reported in Table 5, we include additional variables that may be correlated with both our key variables of interest or corruption. First, we include two indicator variables to control for the impact of the accounting system adopted by a country, *ACCTBASIS* and *IPSASADOPTION*. As shown in Table 3, corruption means are significantly different between countries that use a cash-basis and those that use an accrual-basis governmental accounting system. In addition, although supranational organizations recommend the adoption of IPSAS in the belief that this can help increase transparency and accountability, Table 3 suggests that there is no significant difference in corruption means between countries that have adopted IPSAS and those that have not. It is possible that some countries that opt not to adopt IPSAS already have in place better and more comprehensive public sector accounting standards (Chan, 2006). Column (1) to (4) of Table 5 report the estimates that include the accounting basis and the IPSAS adoption dummy variables. Overall, the results for both the OLS and 2SLS regressions show that the accounting basis dummy variable is significant and positively associated with less corruption but that the IPSAS adoption dummy is negative and insignificant. Moreover, the inclusion of these two variables increases the magnitudes and levels of significance of the interaction terms between our two decentralization measures and the quality of the accounting practice. The control variables remain unchanged when compared to the results in Table 4. These results lend further support to our complementarity Hypothesis.

Additionally, in the results reported in Columns 5 to 8 of Table 5, we include two of Hofstede's cultural dimensions, namely, power distance and individualism, following Kimbro (2002) and Houqe and Monem (2016). As mentioned earlier, a country's culture is not only associated with fiscal decentralization and the adoption of modern accounting practices but is also linked with corruption. Across all specifications, the power distance variable is negative and significant, while the individualism variable is positive but insignificant. When compared to the OLS results in Columns (1) and (3), the OLS

results in Columns (5) and (7) show that these two variables increase the interactive impact of decentralization and an accounting practice, except in the case of revenue decentralization in countries with a mid-quality accounting practice, in which the interactive impact of decentralization and an accounting practice decreases. In the 2SLS regression estimates in Columns (6) and (8), the magnitude of the impacts of decentralization decline slightly, but the negative impact of revenue decentralization increases among countries with a weak-quality accounting practice. Surprisingly, the inclusion of these two cultural dimensions eliminates the impacts of press freedom and population, reduces the impacts of *GDPPC* and *GOVCONEXP*, and increases the impacts of the variables *ACCTBASIS*, *IPSASADOPTION*, and *OPENNESS*. Another important observation is that we now cannot reject the null Hypothesis that our key variables of interest are exogenous, based on Wooldridge's robust endogeneity test.²⁰

Next, for robustness, we check further several plausible issues with our analysis and the consistency of our results, using different measures of corruption and decentralization and a different econometric approach.²¹ The first issue that we check is the consistency of our results, using two alternative measures of corruption: the International Country Risk Guide Corruption Perception Index (*ICRCPI*) and the World Bank Corruption Perception Index (*WBCPI*). The results reported in Table A1 of the Appendix are consistent with those reported in Columns 5 and 8 of Table 5 and support our general conclusions. Indeed, when compared to the results in Table 5, the magnitudes and in some cases the levels of significance increase for our key variables and their interaction terms in both sets of regressions. The *ICRCPI* regressions coefficients have high magnitudes, but the models have low explanatory power; however, the *WBCPI* coefficient estimates fall in between those of the *TICPI* in Table 5 and the *ICRCPI*, with moderate explanatory power. Thus, these results support and reinforce our conclusion that the quality of accounting practice in a country increases the decentralization benefits.

Second, because most corruption indices are essentially scores in which countries are ranked as most corrupt or less corrupt, we check whether the way our dependent variable is measured might bias our results and whether indeed the corruption index can be considered to be a continuous variable. To address this concern, we use Ordered Probit regressions to check the consistency of our results. We transform the corruption index into a categorical variable by ranking and splitting countries into three groups by the score of corruption: a high-, medium- and low-level of corruption. The results are reported in Table A2 of the Appendix. We find that countries with a *Mid_FARP* and a *High_FARP* are less likely to have high corruption and are more likely to have less corruption when compared to countries with a *Weak_FARP*. Concerning the net effect of decentralization, we follow Ai and Norton (2003) and calculate at different degrees of both expenditure and revenue decentralization, the marginal effect of a *Weak_FARP*, a *Mid_FARP* and a *High_FARP* on corruption. Figure A1 of the Appendix shows that having a weak-quality accounting practice increases the probability that a country's level of corruption is high, and this probability increases with the degree of decentralization. In contrast, having a *Mid_FARP* or a *High_FARP* increases the probability that a country's level of corruption is low, and these effects increase with the degree of decentralization.

Finally, we check whether the decentralization measures that we use capture how authority is dispersed across countries. It is possible that the share of subnational government expenditure or revenue are not good indicators of how decision-making is decentralized to the local level (Bardhan, 2002). As noted by Lessmann and Markwardt (2010), for example, a country such as France has a sub-national government structure but with limited authority, and this could imply that our results are biased. Furthermore, as mentioned earlier, our sample size is constrained by the available data on fiscal decentralization indicators. For robustness, we use a recent dataset developed by Ivanyna and Shah (2014), which increases the sample used in the complementarity analysis reported in Tables 4–128 countries. The dataset has three alternative decentralization indices—fiscal, administrative and political decentralization. For a detailed discussion on how each index is constructed, see Ivanyna and Shah (2014).²² Table A3 in the Appendix reports 2SLS regression estimates, using these three alternative decentralization measures. Among countries with a *Weak_FARP*, we find that fiscal decentralization and political decentralization have negative impacts on corruption. In addition, across the three models, the interaction between the different decentralization measures and the accounting practice measure are all significant. Compared to the results in Table 4, the magnitudes of these different decentralization measures and their interaction terms are generally lower. This is hardly unexpected, as some of the components of the three decentralization measures may be capturing information that is uncorrelated with corruption. Nonetheless, these results support our general conclusion that decentralization monitoring mechanisms are more effective in reducing corruption in countries with high-quality accounting practices.

²⁰ For robustness, we also used CIFAR's financial statement standards general index, with a scale ranging from 1 (poor) to 100 (best). This composite index is derived from scores based on the inclusion or omission of ninety items in the financial statements of a selection of companies in a country. The measure has been used in various studies (e.g., Kimbro, 2002; La Porta, Lopez-de-Silanes, 1998). The results from this robustness test are consistent with our main results and are available from the authors.

²¹ Tables and figures for the results of all robustness checks are presented alongside the main results.

²² In summary, the fiscal decentralization index is derived using five measures: the fraction of local government expenditure to total government expenditure; the fraction of local government development grants to total local government revenue; taxation autonomy; the conditionality and predictability of intergovernmental transfers; and borrowing freedom. The administrative decentralization index is measured by using the fraction of local government employment to total government employment and by the degree of discretion of human resource management. The political decentralization index measures how secure the existence of local government is, the nature of council elections, the nature of executive elections and whether there is direct democratic participation by citizens.

6. Discussion and conclusions

Over the last three decades, supranational organizations have promoted accounting and decentralization as essential anti-corruption mechanisms. The assumption is that a high-quality accounting practice can promote financial controls and reporting, while decentralization can enhance democratic accountability by facilitating continuous consultation and a closer monitoring of politicians and bureaucrats at smaller units of government. Consequently, it is believed that accounting and decentralization promote transparency and accountability in public sector organizations, thereby reducing corruption. However, the two strands of literature utilised within this study separately document mixed empirical evidence. In the accounting literature, particularly studies concerned with the adoption of modern accounting methods, some studies show that a high-quality accounting practice is associated with less corruption (Houqe & Monem, 2016; Kimbro, 2002; Malagueño et al., 2010) but other studies also indicate that accounting can facilitate corruption even in countries with a presumably high-quality accounting practice (Neu et al., 2013b, 2013a; Sargiacomo et al., 2015). Similarly, there is evidence that supports the argument that fiscal decentralization can help reduce corruption (de Mello & Barenstein, 2001; Fisman & Gatti, 2002) but findings elsewhere also show that other forms of decentralization increase corruption (Fan et al., 2009; Freille et al., 2007a).

In an attempt to clarify further the mixed findings in the decentralization literature, a few studies have considered the influence of other corruption determinants on the relationship between decentralization and corruption (e.g., Albornoz & Cabrales, 2013; Lessmann & Markwardt, 2010). These studies take into account the complex interrelations between different anti-corruption solutions (Hood, 1991; Pollitt, 1995) and demonstrate that the use of multiple anti-corruption mechanisms is necessary as they complement, rather than dominate, one another (Lagunes, 2012; World Bank, 2017). However, to the best of our knowledge, there is no cross-country study that investigates whether there is a plausible interrelationship between the quality of accounting practice and decentralization and whether they complement each other in reducing corruption. Our study therefore contributes to closing this gap in knowledge and understanding of their combined effect. Using a cross-section of up to 128 countries and multiple sources of data to examine these relationships we argue that the quality of accounting practice in a country plays a crucial role in determining the effectiveness of decentralization monitoring mechanisms – voters' ability to monitor and punish the politician in the ballot box at the local level.

Overall, we find support for our key complementarity Hypothesis that the quality of accounting practice in a country determines the extent to which decentralization helps to reduce corruption in that country. Our study makes several contributions to the literature. First, we extend two hitherto separate strands of literature on the relationship between accounting practice and corruption and the relationship between corruption and decentralization. To this end, when brought together in one model without interaction terms, we show that the quality of accounting practice and the degree of decentralization in a country are positively associated with less corruption. This result is consistent with the findings in both the accounting (Houqe & Monem, 2016; Kimbro, 2002; Malagueño et al., 2010) and decentralization (e.g. de Mello & Barenstein, 2001; Lessmann & Markwardt, 2010) corruption literature. In our case, however, these two variables in combination explain more variations in the data than documented in the two strands of literature, and this indicates that models that do not include the two variables are likely to be misspecified.

Second, as discussed in section 2, there is an emerging consensus in the literature that decentralization is a complex and multifaceted phenomenon. In this regard, several studies have documented the impact of other mechanisms on the relationship between decentralization and corruption (e.g. Enikolopov & Zhuravskaya, 2007; Freille et al., 2007a; Lessmann & Markwardt, 2010). Our paper builds on these studies by showing that decentralization only has a positive and an increasing net effect in reducing corruption in countries that have a high-quality accounting practice, but it has a negative and decreasing influence in reducing corruption in those that have a weak-quality accounting practice. These results remain unchanged even when we include an interaction term between fiscal decentralization and a measure of press freedom (Lessmann & Markwardt, 2010). Additionally, we find that countries with accrual accounting systems and low power distance culture are less likely to be corrupt and that the inclusion of the two variables increases the net effect of decentralization and reinforces our complementarity Hypothesis. However, in our analysis adoption of IPSAS has no influence on corruption. Our results are robust whether we use alternative measures of corruption, accounting or decentralization, different econometric approaches, and different model specifications.

We conclude that the information role of accounting is crucial for increasing the effectiveness of decentralization monitoring mechanisms, as it minimizes information asymmetry between political actors and voters at local levels, thereby increasing political accountability and reducing corruption. Our results suggest that governments and supranational organizations should focus more attention on strengthening the quality of financial reporting standards in order to maximize the benefits of decentralization in reducing corruption. The results buttress the commitment recently made by world leaders to develop high-quality financial information to make institutions become more transparent, accountable and trusted (World Bank, 2018). The finding that adoption of accrual basis accounting systems has a positive influence on reducing corruption but that the adoption of IPSAS has no influence on corruption justifies the position taken by IFAC of recommending a cash-basis IPSAS as a transitory measure and not as an end by itself as countries work towards adoption of the full accrual accounting IPSAS. Similarly, because political connections are inevitable and are likely to be more extensive at local levels, our results suggest that politically connected firms should adopt high-quality accounting practices in line with the International Accounting Standards Board (IASB) recommendation for small firms to adopt IFRSs for Small and Medium Enterprises (SMEs). This can allow firms that do not unduly exploit their political connections to demonstrate financial reporting transparency

and to enhance their credibility, thereby increasing firm valuation and decreasing financing costs (Guedhami, Pittman, & Saffar, 2014).

In our analysis, however, we do not explicitly test whether there could be a link between the quality of accounting practice with democratization, a free press, bureaucrats' incentives, and the strength of professional and government institutions. Future research can explore these relationships and their impact on corruption. These factors, in the words of Johnston (2014), are likely to 'increase pluralism', 'open up safe political and economic space', increase 'reform activism' and help 'maintain accountability' (p.47–48). Additionally, because socioeconomic and cultural factors across and within countries influence the scope and nature of decentralization and accounting practice, the effectiveness of monitoring mechanisms and the quality of accounting information are likely to vary and so would their impact on corruption. It might, therefore, be misleading to generalize the results of this study. In line with recent individual country case studies (e.g. Neu et al., 2013; Sargiacomo, 2015), future research can exploit within-country variations to investigate further the interrelationships between different determinants of corruption and hence link their findings with existing cross-country evidence.

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Appendix

Table A1

OLS and 2SLS regressions examining the impact of accounting practice and decentralization, using alternative corruption perception indices. Robust standard errors are reported in parenthesis (***, **, * represent statistical significance at 1%, 5%, and 10%, respectively).

Dependent variables	International Country Risk Guide Corruption Perception Index			World Bank Corruption Perception Index		
	OLS	OLS	2SLS	OLS	OLS	2SLS
	No interaction terms	Interaction terms	Interaction terms	No interaction terms	Interaction terms	Interaction terms
	(1)	(2)	(3)	(4)	(5)	(6)
<i>FARP</i>	0.100** (0.038)			0.101*** (0.032)		
<i>DECENTRALIZATION</i>	0.042 (0.122)	-0.777*** (0.255)	-0.744*** (0.221)	0.137 (0.094)	-0.624*** (0.154)	-0.745*** (0.157)
<i>Mid_FARP × DECENTRALIZATION</i>		0.746*** (0.267)	0.686*** (0.245)		0.694*** (0.172)	0.801*** (0.175)
<i>High_FARP × DECENTRALIZATION</i>		1.000*** (0.295)	1.045*** (0.284)		0.929*** (0.206)	1.070*** (0.225)
<i>IPSASADOPTION</i>	-0.015 (0.034)	-0.043 (0.034)	-0.045* (0.030)	-0.020 (0.030)	-0.047 (0.031)	-0.048* (0.027)
<i>ACCTBASIS</i>	0.037 (0.046)	0.088** (0.041)	0.095*** (0.035)	0.061 (0.040)	0.104** (0.039)	0.107*** (0.035)
<i>FREEPRESS</i>	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
<i>GDPPC</i>	0.039 (0.025)	0.041* (0.022)	0.052** (0.024)	0.052** (0.021)	0.057*** (0.020)	0.058*** (0.017)
<i>GOVCONEXP</i>	-0.003 (0.005)	0.003 (0.005)	-0.000 (0.004)	-0.001 (0.004)	0.004 (0.004)	0.004 (0.004)
<i>POPUL</i>	0.002 (0.015)	0.011 (0.015)	0.004 (0.013)	-0.010 (0.012)	-0.003 (0.013)	-0.003 (0.012)
<i>OPENNESS</i>	-0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.001 (0.000)	0.001 (0.000)
<i>ETHNOFRAG</i>	-0.043 (0.085)	-0.044 (0.083)	-0.045 (0.078)	-0.076 (0.074)	-0.068 (0.074)	-0.072 (0.064)
<i>POWDIST</i>	-0.001 (0.001)	-0.002** (0.001)	-0.001* (0.001)	-0.001 (0.001)	-0.002** (0.001)	-0.002** (0.001)
<i>INDLISM</i>	0.001 (0.001)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)
Constant	-0.337 (0.360)	0.086 (0.363)	0.093 (0.327)	-0.318 (0.314)	0.100 (0.306)	0.116 (0.254)
Adjusted R ²	0.648	0.694	0.677	0.798	0.813	0.812
Shea's partial R ² of first-stage regressions:						
<i>DECENTRALIZATION</i>			0.864			0.864
<i>Mid_FARP × DECENTRALIZATION</i>			0.775			0.775
<i>High_FARP × DECENTRALIZATION</i>			0.788			0.788
No of Observations	64	64	64	64	64	64

Table A2

Ordered probit regressions examining the impact of the accounting practice and decentralization on corruption. Robust standard errors are reported in parenthesis (***, **, * represent statistical significance at 1%, 5%, and 10%, respectively).

Dependent variable: Corruption (TICPI)	Expenditure decentralization				Revenue decentralization			
	Raw Coefficient	Predicted probabilities			Raw Coefficient	Predicted probabilities		
		(1)	(2)	(3)		(4)	(5)	(6)
<i>DECENTRALIZATION</i>	-9.532*** (3.593)	0.099 (0.113)	-1.079** (0.454)	0.980* (0.516)	-12.442*** (3.485)	-0.234*** (0.076)	-2.039*** (0.588)	2.274*** (0.603)
<i>Mid_FARP</i> × <i>DECENTRALIZATION</i>	13.514*** (5.176)				30.357*** (6.495)			
<i>High_FARP</i> × <i>DECENTRALIZATION</i>	26.965*** (9.770)				99.589*** (23.202)			
<i>FREEPRESS</i>	-0.005 (0.019)	0.000 (0.001)	0.000 (0.002)	-0.001 (0.002)	0.011 (0.031)	-0.000 (0.000)	-0.000 (0.001)	0.001 (0.002)
<i>GDPPC</i>	1.422*** (0.468)	-0.048*** (0.016)	-0.113*** (0.031)	0.161*** (0.042)	4.545*** (1.075)	-0.063*** (0.021)	-0.169*** (0.044)	0.232*** (0.051)
<i>GOVCONEXP</i>	-0.042 (0.081)	0.001 (0.003)	0.003 (0.007)	-0.005 (0.009)	-0.361*** (0.102)	0.005*** (0.002)	0.013*** (0.005)	-0.018*** (0.006)
<i>POPUL</i>	-0.417 (0.294)	0.014* (0.008)	0.033 (0.024)	-0.047 (0.032)	-0.879* (0.533)	0.012* (0.007)	0.033 (0.023)	-0.045 (0.029)
<i>OPENNESS</i>	0.027*** (0.010)	-0.001** (0.000)	-0.002*** (0.001)	0.003*** (0.001)	0.078*** (0.026)	-0.001** (0.000)	-0.003*** (0.001)	0.004*** (0.001)
<i>ETHNOFRAG</i>	-3.412* (1.826)	0.116** (0.056)	0.271* (0.147)	-0.387** (0.196)	-11.418*** (2.872)	0.159*** (0.045)	0.424*** (0.121)	-0.583*** (0.130)
<i>POWDIST</i>	-0.025** (0.013)	0.001* (0.000)	0.002* (0.001)	-0.003** (0.001)	-0.071** (0.029)	0.001** (0.000)	0.003** (0.001)	-0.004** (0.001)
Observations	64	64	64	64	61	61	61	61

Table A3

2SLS regressions examining the impact of accounting practice and decentralization on corruption, using alternative measures of decentralization. Robust standard errors are reported in parenthesis (***, **, * represent statistical significance at 1%, 5%, and 10%, respectively).

Dependent variable: Corruption (TICPI)	Fiscal Decentralization	Administrative Decentralization	Political Decentralization
	(1)	(2)	(3)
<i>DECENTRALIZATION</i>	-0.132** (0.054)	-0.053 (0.036)	-0.156*** (0.044)
<i>Mid_FARP</i> × <i>DECENTRALIZATION</i>	0.180*** (0.045)	0.139*** (0.046)	0.118*** (0.027)
<i>High_FARP</i> × <i>DECENTRALIZATION</i>	0.434*** (0.064)	0.354*** (0.053)	0.343*** (0.049)
<i>FREEPRESS</i>	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
<i>GDPPC</i>	0.045*** (0.008)	0.054*** (0.008)	0.050*** (0.007)
<i>GOVCONEXP</i>	0.001 (0.001)	0.000 (0.000)	-0.000 (0.001)
<i>POPULATION</i>	0.011** (0.005)	0.012** (0.005)	0.015** (0.006)
<i>OPENNESS</i>	0.000 (0.000)	0.000** (0.000)	0.000* (0.000)
<i>ETHNOFRAG</i>	0.000 (0.028)	0.029 (0.028)	0.002 (0.029)
Constant	-0.144** (0.073)	-0.252*** (0.066)	-0.178** (0.073)
<i>Shea's partial R2 of first-stage regressions</i>			
<i>DECENTRALIZATION</i>	0.783	0.741	0.923
<i>Mid_FARP</i> × <i>DECENTRALIZATION</i>	0.742	0.597	0.815
<i>High_FARP</i> × <i>DECENTRALIZATION</i>	0.651	0.647	0.712
Adjusted R-square	0.85	0.85	0.83
Observations	127	127	127

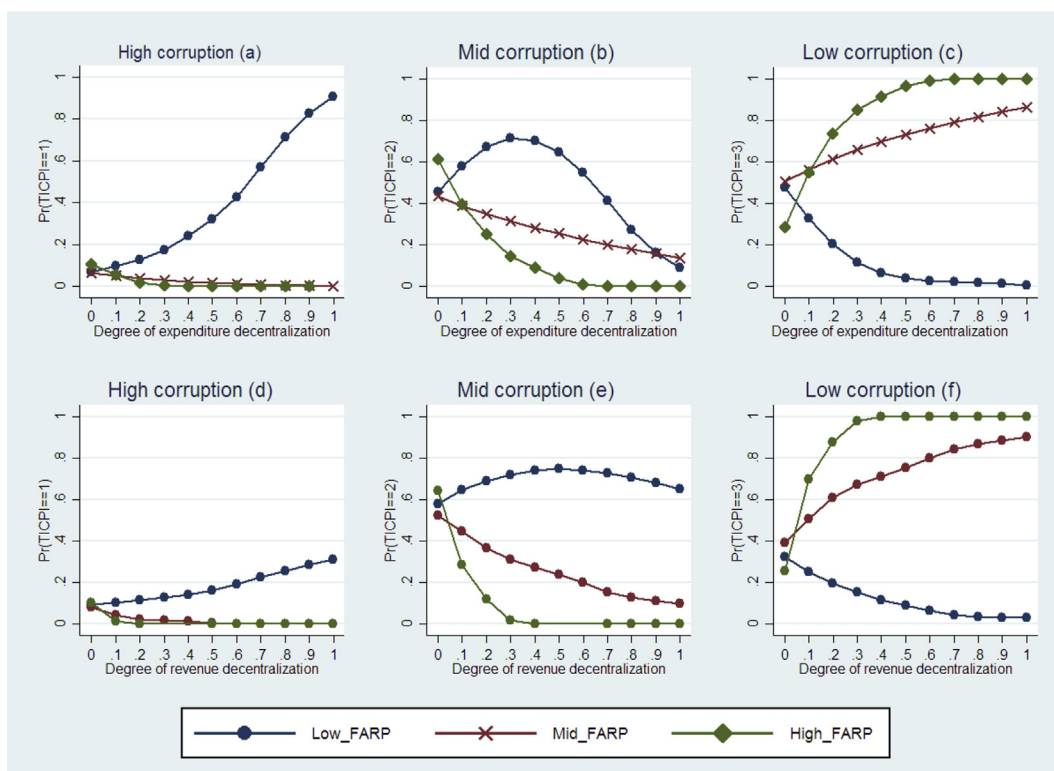


Fig. A1. Predicted probabilities of corruption

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