A contingency theory perspective on the analysis of central government accounting disclosure under International Public Sector Accounting Standards (IPSAS)

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Abstract

Purpose – The purpose of this paper is to assess the extent of central government financial information disclosed in accordance with accrual-based International Public Sector Accounting Standards (IPSAS) and to investigate the environmental factors affecting this level, drawing on the contingency theory framework.

Design/methodology/approach – This study uses a self-constructed checklist of 116 items to measure the IPSAS disclosure level by 100 public sector entities from different countries across the globe during the period 2015–2017. Panel regressions have been used.

Findings – The results show significant differences in compliance levels with IPSAS disclosures across nations. They reveal a positive influence of the degree of government openness (political culture), quality of public administration and management and prior experience with International Accounting Standards (IAS)/ International Financial Reporting Standards (IFRS) in the public sector on this level, whereas government financial condition is a nonsignificant factor.

Practical implications – The research findings are potentially relevant to academics, researchers, practitioners, standard-setters and government policymakers. By examining the influencing factors of IPSAS disclosure level, this paper paves the way for further investigation of this topic with a more extensive set of micro and macroeconomic variables whether at the central or local government level in other jurisdictions

Originality/value – This study provides new insights into the assessment of the transparency and completeness of government accrual-based financial statements. Based on the contingency theory, this paper is the first to empirically investigate the factors affecting the level of disclosure under accrual-based IPSAS by central government entities in a cross-country analysis.

Keywords IPSAS disclosure, Environmental factors, Contingency theory,
Accrual-based accounting, central government, New public financial management

Paper type Research paper

1. Introduction

The movement from cash to accrual accounting and the development of universally recognized public sector standards (IPSAS) are considered among the major innovations in government accounting practices under what is commonly known as the New Public Financial Management (NPFM) reforms (Sellami and Gafsi, 2018). These changes in

financial reporting systems have been largely driven by the awareness of traditional government accounting drawbacks and the growing need for improving government accountability and promoting a more performance-based public sector (Hyndman and Connolly, 2011; Abushamsieh *et al.*, 2014). Proponents argue that IPSAS could be a useful tool for assisting in decision-making, creating a more stable government framework and ensuring effective corporate governance through improving the quality, transparency and comparability of financial reporting and enhancing consistency in the preparation of financial statements of public sector entities (PSEs) (Tanjeh, 2016; ACCA, 2017; Sellami and Gafsi, 2018). Recently, there is a growing acceptance of these standards around the world but mere adoption is not enough to reap the benefits of IPSAS implementation which rather requires the proper application of these standards. The International Federation of Accountants (IFAC) and the International Public Sector Accounting Standards Board (IPSASB) have made considerable efforts to improve the quality of government financial reporting through the development and dissemination of IPSAS around the world, but none of these international bodies obviously has the power to force IPSAS adopters to comply with all the requirements of these standards. Rather, it is up to each country's regulation to legislate (or not) the compliance with IPSAS disclosures (Benito *et al.*, 2007). In this regard, this study examines the extent of government financial information disclosed in accordance with accrual-based IPSAS, and most importantly the environmental factors influencing this level for central government entities from different countries across the globe over the 2015–2017 period.

A major motivation for this study is the lack of evidence on the factors associated with the level of government accounting disclosure under IPSAS. In fact, most previous studies focused on country-level determinants of compliance with IFRS/local GAAP requirements in the private sector (Mazzi *et al.*, 2018; Glaum *et al.*, 2013; Akman, 2011; Archambault and Archambault, 2003) or with national accounting standards disclosures in the public sector (Bolívar *et al.*, 2013; Garcia and Garcia-Garcia, 2010; Cheng, 1992). As regards to IPSAS, very little research investigated the level of public financial information disclosed in accordance with IPSAS 1 and 2 in specific contexts (Pérez and López-Hernández, 2009, in MERCOSUR member countries; Abushamsieh *et al.*, 2014, in the Middle East Arab Governments; Sukmadilaga *et al.*, 2015, in ASEAN countries). However, none of these studies empirically analyzed the factors associated with the extent of IPSAS disclosure. Another motivation for this study is the significant wave of reforms introduced in the public sector to address the failure of traditional government management which has been a subject of criticism for academics, politicians, citizens and private sector constituents. These innovations have dramatically stimulated the introduction of accrual-based accounting and the development of IPSAS. Moreover, given the socio-economic importance of PSEs, an intensive debate has surfaced regarding the growing need for these entities for a high-quality accounting framework to safeguard the public treasury by providing reliable and transparent financial reporting to help timely prevent and detect corruption.

Unlike prior literature focusing only on IPSAS 1 and 2 disclosures, this research uses a more extensive set of accrual-based standards relating to the presentation of financial statements (IPSAS 1 and 2) and general disclosure requirements including adjustments to financial statements (IPSAS 3 and 14). Moreover, because budget information is needed to enhance the transparency of PSEs' financial reporting and ensure that these entities discharge their accountability obligations, IPSAS 24 is included in this study. These standards are selected as they contain the general and basic disclosures required to be provided in all accrual based-financial statements prepared by all PSEs other than government business enterprises (GBEs). Using a self-constructed checklist of 116 disclosure items for a sample of 100 PSEs, the study results show significant differences in

the extent of IPSAS disclosure across nations. Based on a theoretical contingency framework, this paper empirically demonstrates the significant impact of country-specific factors on government accounting disclosure. The study findings show a positive impact of the degree of government openness (political culture), quality of public administration and management and prior experience with IAS/IFRS in the public sector on the extent of information disclosed under IPSAS, whereas government financial condition is a nonsignificant factor. Unlike prior literature, this study is the first to examine the factors affecting the level of IPSAS disclosure by the central government at a transnational level.

This research contributes to the literature on public sector accounting by providing new insights into the assessment of the transparency and completeness of central government financial statements prepared under accrual-based IPSAS in different jurisdictions around the world as well as the impact of country-specific factors on the extent of IPSAS basic disclosures. The research findings are potentially relevant to various actors in the field of government financial reporting. They provide academics, researchers and practitioners with new insights into understanding the differences in the extent of IPSAS disclosure by PSEs on the central government level across countries. Furthermore, professional bodies and standard-setters such as IPSASB and IFAC might consider this document in their work of assessing and revising accounting standards to promote the development of international harmonization of public sector accounting with more emphasis on the public sector's specificities. By examining the level of IPSAS disclosure, this study might assist governments and policymakers in their accounting strategies to better support the implementation of accrual-based IPSAS, improve financial transparency and accountability and fight against corruption in the public sector. Moreover, this paper might be a stimulus for jurisdictions with low IPSAS disclosure to intensify their ongoing efforts to increase compliance with these standards by implementing and monitoring relevant policies and programs to strengthen public sector management systems.

This paper is organized as follows: the study context and the literature review are presented in Section 2. Then, the research hypotheses are highlighted in Section 3. Section 4 is devoted to describing the study methodology. Next, the research findings are reported in Section 5. Finally, the paper is concluded with a summary and discussion of policy implications in Section 6.

2. Historical background and literature review
2.1 Government accounting reform and development of accrual-based International Public Sector Accounting Standards
NPFM is an integral part of the New Public Management (NPM) reforms that have been introduced in the public sector since 1980 in response to the growing calls for improving transparency and accountability, fighting against opacity in government funds and promoting public sector performance (Sarker, 2006; Christiaens *et al.*, 2015). These reforms have involved radical changes in public sector accounting; the shift from cash to accrual accounting and the evolution of international harmonization of government financial reporting have been the most significant ones (Sellami and Gafsi, 2018). In fact, the pure cash accounting model has been widely criticized because of the incompleteness and irrelevance of financial reporting and the lack of reliable performance parameters. It is argued that, from a traditional perspective, the emphasis is put on budgeting, control and compliance with legal regulations, whereas, from a NPFM perspective, the focus is on the development of more efficiency-based public management.

Several countries such as New Zealand, the USA, Ireland, Australia, the UK, Singapore and Sub-Saharan Africa have implemented the NPFM reforms (Hyndman and Connolly, 2011;

Sellami and Gafsi, 2018). The diversity in the introduction of these new techniques, more specifically accounting practices, has stimulated the need to harmonize the financial reporting in the public sector (Benito *et al.*, 2007). Indeed, the complexity of the globalization phenomenon and the evolution of information system technologies have increasingly strengthened countries' interdependence, making it necessary to share reliable and standardized information to improve and facilitate inter-governmental communication in both private and public sectors (Manes-Rossi *et al.*, 2016). In this regard, the IFAC and its special committee IPSASB have developed since 1996 a high-quality set of universally accepted accounting standards (IPSAS) to meet various stakeholders' information needs (Aggestam-Pontoppidan and Andernack, 2016; Manes-Rossi *et al.*, 2016). The reliance on the IASB's standards (IAS/IFRS) was the starting point for the development of IPSAS, taking into consideration PSEs' specificities and needs (Aggestam-Pontoppidan and Andernack, 2016). In November 2011, an agreement between the IFAC and the IASB was published with the aim of strengthening cooperation between the two bodies in promoting quality for public and private financial reporting standards (Sellami and Gafsi, 2018).

The development of IPSAS mainly aims to increase the transparency of public financial reporting to hold governments responsible for their actions and help various stakeholders to better evaluate government accountability (Tanjeh, 2016). Indeed, when they are correctly interpreted and applied, IPSAS provide information users with a clear and more accurate view of PSEs' financial position and financial performance and thereby help to improve their decision-making. Furthermore, IPSAS implementation permits the comparability between different countries around the world, providing a reliable picture of each government's status and direction (Cîrstea, 2014). It also enhances the credibility of government financial reporting by reducing errors and fraud, facilitating controls and ensuring consistency in the financial statements (ACCA, 2017; Deloitte, 2019). Moreover, these standards promote effective financial management and better corporate governance by providing relevant tools for better resource allocation and cost rationalization (PwC, 2012; ACCA, 2017). They facilitate auditing, analysis of financial and economic results and the process of consolidation of financial statements (Christiaens *et al.*, 2010). By promoting a high-quality and transparent government financial information, IPSAS allow for better fiscal discipline and better credit rating and help to reduce borrowing cost (PwC, 2013).

The IPSASB has developed two types of IPSAS: accrual-based IPSAS (42 standards) and cash-based IPSAS (one standard). Based on the IASB's standards, accrual-based IPSAS allow for greater comparability between public and private sector reporting that includes similar types of transactions (ICPAK, 2017; Sellami and Gafsi, 2018). Unlike the cash-based standard, accrual-based IPSAS provide more accurate information not only on cash flows but also on revenue, cost, assets, liability and equity (PwC, 2012; Ijeoma and Oghoghomeh, 2014; Sellami and Gafsi, 2018). They ensure better performance service and maintain long-term fiscal sustainability (Kartiko *et al.*, 2018). They also provide better measurement tools for financial performance and financial position (Ijeoma and Oghoghomeh, 2014; ACCA, 2017). According to the Ernst and Young-CIPFA Eurostat (2013)'s IPSAS report, accrual-based IPSAS are undeniably beneficial despite their challenging implementation by the EU Member States. The worldwide diffusion of accrual-based IPSAS has been largely stimulated by the significant contributions of international organizations such as the Organization for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF) and the World Bank (WB) (Manes-Rossi *et al.*, 2016). Based on data from 150 jurisdictions, the IFAC-CIPFA (2018)'s International Public Sector Financial Accountability Index indicates that 25% of the sampled population report on accrual-based accounting, 51% of which use IPSAS in different ways (directly, indirectly and for

developing their local GAAP). Likewise, the IFAC (2018)'s Standard Adoption Report which provides further details on country-by-country information on IPSAS and other standards' adoption status shows that there is an increasing number of countries using IPSAS as the basic accounting reference in their public sector. However, the IPSAS adoption status (mandatory/voluntary, full/partial, direct/indirect) depends on each country's institutional context and the extent of changes introduced in the public sector. It is expected that IPSAS disclosure level would not be the same either for all governments or for all PSEs belonging to the same country as shown in the Ernst and Young's (2012a) report on public accounting and auditing practices in the 27 EU Member States prepared for Eurostat. The above-cited comparative analysis reveals significant diversities in compliance levels with IPSAS disclosures across European countries (ranging from 42% to 69% for most jurisdictions) and between government levels (the overall mean score for central and local governments is 63% and 64%, respectively).

2.2 Theoretical framework and literature review
In accounting literature, theories such as signaling theory, agency theory and political cost theory have been largely used to examine the impact of company-specific factors on corporate accounting disclosure level. However, in contingency theory, it is argued that corporate accounting practice can also be affected by country environmental characteristics besides company-level factors (Lopes and Rodrigues, 2007). In the government accounting field, the contingency theory was primarily used to investigate the transition from traditional government accounting to a more informative accounting system (Abu Hasan and Abu Bakar, 2015). Indeed, a Contingency Model of Government Accounting Innovations was developed by Lüder (1992) to explain the transition from traditional government accounting to a more informative system and investigate the impact of the sociopolitical and administrative environment on government accounting innovations. This model includes four modules:

(1) stimuli (financial condition issues, professional bodies' interest, etc.);
(2) government's social environment (socioeconomic status, political culture, stakeholders, etc.);
(3) politico-administrative system features (staff training and recruitment, political competition, administrative characteristics, etc.); and
(4) implementation barriers (government size, legal system, accountant qualification and organizational characteristics).

Since then, this model has undergone several revisions as it became the reference model for comparative international government accounting research (CIGAR) (Monsen and Nasi, 1998). Likewise, Ouda (2004) uses the Lüder (1992)'s contingency model to propose a specific framework intended for examining the factors influencing the implementation of accrual-based accounting in the public sector of New Zealand, UK and Australia. The Ouda (2004)'s study includes a comprehensive set of environmental and organizational factors such as management changes, willingness to change (staff motivation, training, and qualification), political and bureaucracy support, professional and academic support, communication strategy and information technology. Based on contingency theory, Woods (2009) reveals that accounting management and control systems in the public sector are contingent upon central government policies, information and communication technology and organization size. More recently, Tanjeh (2016) which relies on the contingency model reveals that

political context, legal system, qualification, staff training and recruitment and public management support significantly affect IPSAS acceptance in Cameroon.

Regarding the determinants of public sector accounting disclosure, previous studies (Cheng, 1992; Carvalho *et al.*, 2007; Garcia and Garcia-Garcia, 2010; Bolívar *et al.*, 2013; Tejedo-Romero and Araujo, 2018) show the significant impact of environmental and organizational factors on the transparency of government financial reporting. Indeed, Cheng (1992) states that central government accounting disclosure depends on environmental and institutional forces such as government's financial condition, legislative and legal framework, political system, bureaucratic accounting/auditing features and government size. Carvalho *et al.* (2007) stipulate that government entity size, financial condition, urban characteristics and diffusion across neighboring municipalities are significant factors explaining the diversity in compliance level with accounting rules in Portuguese local government. In the Spanish context, Garcia and Garcia-Garcia (2010) show that municipality size, capital investment, political competition and press affect online reporting of accounting information by local government authorities. Using the meta-analysis technique on 39 empirical studies, Bolívar *et al.* (2013) reveal that disclosure level of public financial information is associated with government financial condition, political competition, inter-governmental grants, income level of citizens and government size. Based on a sample of 100 Spanish local municipalities, Tejedo-Romero and Araujo (2018) examine the determinants of government financial transparency which is significantly influenced by economic and political factors such as unemployment rate, gender, electoral turnout and political strength. Prior literature on public sector accounting provides a useful framework for understanding how country-specific factors influence the transparency and accounting disclosure level in central and local government. However, there is a lack of evidence on the factors affecting compliance level with IPSAS. Very few studies analyze IPSAS disclosure level in specific contexts (Pérez and López-Hernández, 2009, in MERCOSUR member countries; Abushamsieh *et al.*, 2014, in the Middle East Arab governments; Sukmadilaga *et al.*, 2015, in ASEAN countries). Although they provide an insight into the degree of public accounting transparency in the selected countries, none of these studies empirically investigated the association between environmental factors and IPSAS disclosure level.

3. Hypotheses development

Based on the study's theoretical framework (contingency theory) and prior literature on government accounting disclosure, the following factors are selected in this research: government openness (political culture), government financial condition, quality of public administration and management, and prior experience with IAS/IFRS in the public sector.

3.1 Government openness (political culture)

In the Lüder's (1992) contingency model, it is argued that political culture affects information users' attitudes regarding government information disclosure and therefore influences their need for a more informative accounting system. A country's political culture reflects the way in which social value concepts are expressed and the extent to which citizens are involved in public policy-making. In this context, political culture is revealed by the degree of government openness (Lüder, 1992). Government openness is the extent to which the government provides and shares transparent, reliable and complete information, protects freedoms of opinion and expression and empowers citizens with tools to hold the government accountable by fostering their participation in public decision-making processes (WJP, 2018; Birkinshaw, 2006).

According to Bolívar *et al.* (2013) and Lüder (1992), the more open the government's political culture is, the greater the civic participation, the higher the level of public information disclosure, the greater the government's transparency and accountability. Furthermore, Moaddel (1994) states that corporate financial disclosure is adjusted in response to the needs of information users whose power and influence increase with the degree of government openness and the level of political rights and civil liberties. Birkinshaw (2006) argues that government openness fosters information freedom and allows various stakeholders to scrutinize the actions of the government which is brought to disclose more transparent and regulatory-compliant financial statements to meet the expectations of a broader set of interest groups. In this respect, countries with a high degree of government openness are expected to be more familiar with producing IPSAS-compliant financial reporting as these high-quality standards allow for greater transparency and accountability in the public sector.

H1. IPSAS disclosure level by the central government is positively associated with the degree of government openness.

3.2 Government financial condition

Under the Lüder's (1992) contingency model, the succession of financial crises and the rapid rise in the state indebtedness level constitute a real stimulus for several governments to demonstrate sound financial management to the public by developing a more informative accounting system (Lüder, 1992). According to Bolívar *et al.* (2013), government financial condition, as revealed by the extent of state indebtedness, is an important incentive for greater accounting disclosure as it is an integral component of the government's ability to honor its payment commitments and of its financial credibility *vis-à-vis* external agents wishing to better control government actions. Ingram (1984) and Cheng (1992) argue that when there is outstanding debt, state government officials are more incentivized to improve the quality and quantity of financial disclosure to reduce debt cost and maintain the country's credit rating.

Prior research (Carpenter, 1991; Laswad *et al.*, 2005; Carvalho *et al.*, 2007; Bolívar *et al.*, 2013) shows a positive association between public sector accounting disclosure and government financial condition. Based on an analysis of 39 empirical studies, Bolívar *et al.* (2013) reveal that the impact of financial condition on accounting disclosure is more significant and positive in the central government than in local agencies. According to these authors, the central government is responsible for issuing public debt and it is exposed to the external pressures exerted by stakeholders to disclose more relevant and transparent financial reporting to facilitate future access to credit markets and to keep debt cost down. In fact, the lack of transparency and credibility in public finances, poor monitoring of compliance with accounting and fiscal standards and low disclosure and incompleteness of information on the government's financial position have made it difficult to access credit markets (IMF, 2012). According to PwC (2013), central government information disclosed under IPSAS constitutes an effective remedy for the increased pressure on countries' credit ratings and a relevant tool for demonstrating the central government's capacity to repay debts. According to Duenya *et al.* (2017) and Nistor and Deaconu (2016), the adoption of and compliance with IPSAS in Nigeria and Romania, respectively, are primarily the result of pressures from transnational lending institutions.

H2. IPSAS disclosure level by the central government is positively associated with government financial condition.

3.3 Quality of public administration and management

Improving financial transparency and accountability is one of the main objectives of the NPFM reforms. It depends on the quality of financial reporting and the degree of compliance with accounting standards that require an effective administration and management system. Using an extended model based on that of Lüder (1992) (contingency model), Ouda (2004) states that the successful implementation of accrual accounting depends on the strength and effectiveness of public management systems that require substantial changes in administrative procedures and in management methods and culture as well. Ijeoma and Oghoghomeh (2014) state that only competent and ethical public management can develop strong policies and relevant programs and efficiently monitor their application to maintain sustainable public finance and achieve other government goals and aspirations. According to Hope (2001), effective public management systems create a supportive atmosphere of professionalism and ethical behavior that permits politicians, public managers and auditing/accounting staff to demonstrate the highest standards of personal accountability, integrity and fairness as well as compliance with laws and regulations. A good public administration increases citizens' trust in politicians, parliament and various government entities through strengthening transparency and accountability, ensuring better resource allocation and fighting against corruption (Bovaird and Löffler, 2003).

Ouda (2004) states that the transition to accrual-based accounting in the public sector is very challenging for developing countries because of the weakness and inadequacy of public management structures leading to high corruption and lack of capacity to apply and comply with the required accounting standards for the public sector. According to Ijeoma and Oghoghomeh (2014), effective administrative budgeting with a modern government financial management information system (GFMIS) facilitates IPSAS implementation and maintains higher compliance with these standards. In the ASEAN context, Sukmadilaga *et al.* (2015) stipulate that IPSAS disclosure level might increase by strengthening the public financial management structure.

> *H3.* IPSAS disclosure level by the central government is positively associated with the quality of public administration and management.

3.4 Prior experience with IAS/IFRS in the public sector

In the Contingency Model of Public Sector Accounting Innovations (Lüder, 1992), it is established that accountant qualifications influence government accounting practice. More precisely, Lüder (1992) states that private sector accounting experience has a positive effect on the implementation of a more informative system in the public sector as well as on the accounting staff's willingness to introduce changes in government accounting, as the case of Canada and the USA where there is a large number of private sector accounting specialists on their public sector staffs. In the Australian public sector, Kober *et al.* (2010) reveal that government financial statements' preparers with private sector experience and familiarity with IFRS-based accounting framework are more competent and efficient for the decision-making relating to resource allocation and for the assessment of public service performance than those who don't have such prior experience. According to Laswad and Redmayne (2015), the use of IFRS-based financial reporting in the New Zealand public sector is relevant and still maintained during the transition period to IPSAS.

Given that accrual-based IPSAS are largely based on private sector-oriented standards (IAS/IFRS), there are significant similarities between the two types of standards, mainly related to the presentation of financial statements and general disclosure requirements including adjustments to financial statements. Although IAS/IFRS are mainly designed to

be used by private sector entities, this does not prevent several governments from applying them in their public sector such as New Zealand and Australia which follow a "sector-neutral" accounting framework (adopting IAS/IFRS in both the private and public sectors), South Africa (more especially in the case of filling the gaps in the Standards for Generally Accepted Municipal Accounting Practice "GAMAP"), Central African Republic, Cameroon, and Gabon which developed IFRS-based national Standards for their PSEs, and Cayman Islands, Tanzania and Mauritius whose public sector financial reporting systems are based on IPSAS and IFRS disclosures (Dhliwayo, 2018; IFAC, 2018; Kober *et al.*, 2010). Like IAS/IFRS, IPSAS are high quality and complex standards whose proper application requires an adequate accounting framework and well-qualified staff to effectively ensure compliance with these standards. According to Christiaens *et al.* (2010), government entities' unfamiliarity with IPSAS and the lack of experience in applying these standards are among the key factors behind low compliance with IPSAS. Governments that have previously applied IAS/IFRS in their public sector have acquired sufficient expertise to implement similar standards (IPSAS) because they have already introduced the necessary changes and training programs to improve the knowledge, skills and experience of their accounting staff (Sellami and Gafsi, 2019). Such jurisdictions are expected to be more familiar with preparing financial statements under accrual-based IPSAS.

> *H4.* IPSAS disclosure level by the central government is positively associated with prior experience with IAS/IFRS in the public sector.

4. Research methodology

4.1 Sample and data sources

This study assesses the transparency and completeness of central government entities' financial statements prepared under accrual-based IPSAS during the 2015–2017 period in different countries around the world. In this research, compliance level with IPSAS disclosures is used as a benchmark for the evaluation of government transparency. However, given that IPSAS adoption by countries takes several forms (formal and direct adoption, indirect adoption via national standards, voluntary adoption, simple convergence to IPSAS without formal adoption, etc.), the definition of "the extent of compliance" with these standards' disclosures will not be the same for all countries as it depends on each jurisdiction's accounting regulation framework which may (or may not) require full compliance with IPSAS disclosures. The current study precisely focuses on the extent of compliance with IPSAS as published by the IPSASB and required to be directly applied in their current versions without any national modification. Based on this criterion, this research sample exclusively covers jurisdictions that have formally and directly adopted accrual-based IPSAS as the primary set of accounting standards applicable for their PSEs which are required to comply with IPSAS disclosures without any national amendment (source: the IFAC's Standard Adoption Status by Country Report, 2018; the IFAC-CIPFA's International Public Sector Financial Accountability Index, 2018). Table 1 describes the sample selection procedure.

The initial sample consists of 727 organizations. 201 GBEs are excluded because this type of business is not within the scope of IPSAS. GBEs include trading and financial enterprises. 249 entities are eliminated because of the unavailability of their annual reports. Then, 23 organizations that do not publish English language reports are excluded from the study sample. In fact, most international stakeholders primarily focus on English reports. 64 others are excluded because no reference to IPSAS appeared in either the audit opinion or in the accounting policies footnote. Given that this study focuses on accrual-based financial

www.

Table 1.
Sample selection
process

Initial sample	727
(-)GBEs	(201)
(-) Government entities with unavailable annual reports	(249)
(-) Government entities with no English language reports	(23)
(-) Government entities with no reference to IPSAS in audit opinion or in accounting policy	(64)
(-) Government entities preparing financial statements under the cash-based IPSAS	(32)
(-) Government entities belonging to the local government level	(13)
(-) Government entities belonging to countries with no formal and direct IPSAS adoption	(45)
Final sample	100
Categorized by	
Government activity**	
General public services	33
Defence	3
Public order and safety	9
Economic affairs	31
Environmental protection	5
Health	4
Recreation, culture and religion	2
Education	9
Social protection	4
Country	
Barbados	10
Burundi	6
Cayman Islands	11
Chile	5
Ghana	7
Kazakhstan	8
Mauritius	7
Mongolia	5
Peru	9
Switzerland	12
Tanzania	9
Uganda	11

Note: **Government activity divisions are defined according to the classification of the functions of governement (COFOG, 1999) developed by the OECD and published by the United Nations Statistical Division (European Commission, 2011)

statements, 32 PSEs which use the cash-based IPSAS are removed from the sample. Moreover, 13 local government entities are eliminated as the study's sample does not cover this type of PSEs. Then, 45 others are excluded because they belong to countries that have not formally and/or directly adopted IPSAS and therefore may not attempt to comply with these standards. These countries include:

- jurisdictions that voluntarily apply IPSAS without a formal adoption;
- those which simply converge their local GAAP to IPSAS; and
- those that indirectly adopt/apply IPSAS through their national standards.

This study exclusively covers countries that have directly and formally adopted IPSAS for use in the preparation of their PSEs' accrual-based financial statements, including both jurisdictions that have fully and partially adopted IPSAS, regardless of their economic development level (developing/transitional/developed countries). IPSAS adoption status for the study's jurisdictions is reported in Table 2.

Country	Public sector legislative framework and IPSAS adoption	Adoption status	Source
Barbados	The Financial Management Act 2007 states that IPSAS are the applicable accounting standards in the Barbados public sector. Accrual-based IPSAS have been subsequently adopted as the standards to be applied by Barbados Government entities	Directly and fully adopted	IFAC (2017) www.ifac.org/about-ifac/ membership/country/ barbados IFAC (2018)'s report on standards adoption by country*
Burundi	IPSAS have been directly adopted and applied as the public sector standards for Burundi Government entities which prepare their financial statement on the accrual basis of accounting	Directly and fully adopted	IFAC (2017) and IFAC (2018)'s report on standards adoption by country www.ifac.org/system/files/ Standards-Adoption-by-Country.pdf
Cayman Islands	The public management and finance law (2013 Revision) specifies IPSAS as the Cayman Islands GAAP. IFRS can be used when there is no guidance provided by IPSAS. All the government ministries and 30% of statutory authorities apply accrual-based IPSAS	Directly and fully adopted	IFAC (2017) www.ifac.org/about-ifac/ membership/country/ cayman-islands IFAC (2018)'s Report on Standards Adoption by Country
Chile	Accrual-based IPSAS have been adopted since 2015 by the Chilean Government through Resolution No. 16 of 2015	Directly and fully adopted	IFAC (2019) www.ifac.org/ about-ifac/membership/ country/chile IFAC (2018)'s Report on Standards Adoption by Country
Ghana	The Ministry of Finance and Economic Planning (MoFEP) announced in 2015 the adoption of accrual-based IPSAS for use by the Government entities of Ghana within a period of five years	Directly and partially adopted	IFAC (2016) www.ifac.org/ about-ifac/membership/ country/ghana IFAC (2018)'s Report on Standards Adoption by Country
Kazakhstan	The Ministry of Kazakhstan has announced that accrual-based IPSAS are adopted and are required to be applied as national standards by all PSEs effective 1 January 2013	Directly and fully adopted	IFAC (2018) https://www.ifac.org/ about-ifac/membership/ country/kazakhstan IFAC (2018)'s report on standards adoption by country
Mauritius	Amendment of the Statutory Bodies Act in 2011 to require the use of IPSAS for all ministries and public sector bodies. Many parastatal bodies have adopted full accrual IPSAS	Directly and partially adopted	IFAC (2016) https://www.ifac.org/ about-ifac/membership/ country/mauritius IFAC (2018)'s report on standards adoption by country
Mongolia	Under paragraph 26.3 of the Management and Financing Law for Budget Entities, state government	Directly and partially adopted	IFAC (2017) https://www.ifac.org/ about-ifac/membership/ (*continued*)

Table 2.
IPSAS adoption status in the study's countries

Country	Public sector legislative framework and IPSAS adoption	Adoption status	Source
	entities should apply the accrual basis of accounting. As amended in 2015, the Law of Mongolia on Accounting of 1993 specifies IPSAS as the applicable standards in the Mongolian public sector		country/mongolia IFAC (2018)'s report on standards adoption by country
Peru	Under Resolution N° 011–2013-EF/51.01, IPSAS (2011 version) have been adopted by National Direction of Public Accounting (DGCP)	Directly and fully adopted	IFAC (2016) https://www.ifac.org/about-ifac/membership/country/peru IFAC (2018)'s report on standards adoption by country
Switzerland	The Swiss Federal Finance Administration (FFA) has adopted IPSAS effective from 2007. Likewise, the standards have been adopted by the government of the state/canton of Geneva and the state/canton of Zurich from 2008 and 2009, respectively. The governments of the states/cantons of Lucerne and Berne have initiated projects adopting IPSAS, with effective dates 2012 and 2013, respectively	Directly and fully adopted	IFAC (2015) https://www.ifac.org/about-ifac/membership/country/switzerland IFAC (2018)'s report on standards adoption by country
Tanzania	In 2012, a pronouncement was issued by the Tanzanian Government declaring the adoption of accrual-based PSAS for both central and local governments	Directly and fully adopted	IFAC (2017) https://www.ifac.org/about-ifac/membership/country/tanzania-united-republic
Uganda	The Institute of Certified Public Accountants of Uganda (ICPAU) reports that IPSAS (all current versions) have been adopted in Uganda without modifications.	Directly and fully adopted	IFAC (2016) www.ifac.org/about-ifac/membership/country/uganda

Table 2. Note: *IFAC (2018)

The final sample is therefore composed of 100 entities whose 2015, 2016 and 2017 annual reports are obtained from the websites of various departments, ministries, agencies and other central government bodies of the sampled countries which are grouped according to the World Bank (2018)'s classification based on countries' level of development as measured by GNI per capita (high/middle/low-income groups). The sample country classification by income and by region is shown in Table 3.

4.2 Dependent variable
In this study, the IPSAS disclosure index (DISCLOSURE) is measured by developing a self-constructed IPSAS disclosure checklist based on that provided by Ernst and Young (2012b) and in accordance with IPSAS revised texts (in these standards' current versions as

By income By region	Low-income economies ($995 or less)	Lower-middle-income economies ($996 to $3,895)	Upper-middle-income economies ($3,896 to $12,055)	High-income economies ($12,056 or more)
East Asia and Pacific		Mongolia		
Europe and Central Asia			Kazakhstan	Switzerland
Latin America and Caribbean			Peru	Barbados Cayman Islands Chile
Sub-Saharan Africa	Burundi Tanzania Uganda	Ghana	Mauritius	
Source: The World Bank (2018)'s country classification				

Table 3.
Classification of the study's countries

published by the IPSASB and without any national modification/adaptation). The study checklist consists of 116 disclosure items from the following accrual-based standards:

- IPSAS 1 (presentation of financial statements);
- IPSAS 2 (cash flow statements);
- IPSAS 3 (accounting policies, changes in accounting estimates and errors);
- IPSAS 14 (events after the reporting date); and
- IPSAS 24 (presentation of budget information in financial statements).

In accordance with IFAC guidelines, the above-selected accrual-based IPSAS contain the general and basic disclosures required to be provided in all accrual based-financial statements prepared by all PSEs other than GBEs. Taking into consideration that IPSAS are not fully adopted for all countries, the study disclosure index includes the minimum requisites for the information to be disclosed in government financial statements as recommended by the IFAC/IPSASB and which should be reliable, understandable and relevant to its users' decision-making needs (e.g. the basis of preparation of the financial statements, the management judgment, significant accounting policies, key sources of estimation uncertainty, etc.). To minimize errors, the research instrument was carefully prepared by eliminating a few items whose applicability for a given entity cannot be judged by an external review. Thus, the content reliability of the checklist [1] was verified by an independent IPSAS expert. Study checklist details are reported in Table 4.

The study's disclosure index is unweighted, dichotomous and adjusted for non-applicable items. In fact, two methods of measuring disclosure index were used in prior literature; weighted and unweighted disclosure index. In this research, the unweighted index method is applied to avoid subjectivity and bias (Archambault and Archambault, 2003; Lopes and Rodrigues, 2007). Each disclosure item is coded as disclosed (1), not disclosed (0) or not applicable (NA), taking into account that an entity should not be penalized for omitting irrelevant disclosure items. Irrelevant items are determined based on a number of criteria such as the government entity's principal activities, the nature of its operations and the components of its assets and

Accrual-based standard	Nbr. of items by standard	Disclosure category	Nbr. of items by disclosure category
IPSAS 1	59	1. General disclosures	9
		2. Statement of financial position	15
		3. Statement of financial performance	11
		4. Statement of changes in net assets/ equity	7
		5. Notes to financial statements	17
IPSAS 2	18	1. Presentation of cash flow statement	3
		2. Other cash flow information	8
		3. Acquisitions of controlled entities and other operating units	4
		4. Components of cash and cash equivalents	3
IPSAS 3	24	1. Changes in accounting policies	17
		2. Changes in accounting estimates	3
		3. Correction of errors	4
IPSAS 14	6	1. Date of authorization	3
		2. Events after the reporting period	3
IPSAS 24	9	1. Comparison of budget and actual amounts	4
		2. Note disclosure	4
		3. Reconciliation of actual amounts on a comparable basis and actual amounts in the financial statements	1
Table 4. Checklist content	Total disclosure items	116	116

liabilities. For example, the following items are considered as irrelevant and are therefore removed from the study's checklist: elements relating to discontinued operations when a PSE has no discontinued operations during the current or the comparative period and items relating to accounting policies on financial instruments that a PSE does not have. An overall disclosure index ($CIjt$) is computed for each entity and for each standard separately. $CIjt$ is the ratio of the total number (T) of items (di) provided by the entity (j) to the maximum number of applicable items (M) for that entity during the year (t):

$$CIjt = \frac{T}{M} \frac{\sum_{i=1}^{n} d\ i,jt}{\sum_{i=1}^{m} di,jt}$$

4.3 Independent variables
The following explanatory variables are selected in this research: government openness (GOVOPEN), government financial condition (GOVFIN), quality of public administration and management (PAMQUAL) and prior experience with IAS/IFRS in the public sector (IFRSEXP). Regarding the control variables, this study uses a set of macro and microeconomic factors that have been highlighted in the prior literature on government accounting disclosure. Macroeconomic variables include government population "GOVPOP" (Lüder, 1992; Cheng, 1992; Giroux and McLelland, 2003; Bolívar *et al.*, 2013) and education level "EDUC" (Ingram, 1984; Cheng, 1992). Microeconomic variables include the

size of public sector entity "PSESIZE" (Carvalho *et al.*, 2007; Garcia and Garcia-Garcia, 2010; Bolivar *et al.*, 2013) and the following audit characteristics-related variables as used by Cheng (1992): outside audit (EXTAUDIT), state entity's audit budget (AUDBUDGET) and accounting and auditing department expertise (AAEXPERT). The study variables and measures are presented in Table 5.

Independent Variable	Measure	Source(s) and year
Main analysis		
GOVOPEN	Open Government score (factor 3 score) that ranges from 0.40 and below (weaker adherence to the rule of law) to 0.81 and above (stronger adherence to the rule of law)	World Justice Project's website (WJP, Rule of Law Index, 2015, 2016 and 2017 report)
GOVFIN	Total central government debt as a percentage of GDP	World Bank, WDI, 2015, 2016 and 2017
PAMQUAL	CPIA public sector management and institutions cluster average that ranges from 1 (weak) to 6 (strong). This cluster includes (1) quality of public administration, (2) quality of budgetary and public financial management, (3) efficiency of public revenue mobilization, (4) property rights and rule-based governance, and (5) transparency, accountability, and corruption in the public sector (World Bank, 2018)	World Bank, WDI, 2015, 2016 and 2017
IFRSEXP	Dummy variable that takes the value "1" if a government has prior experience with IAS/IFRS in the public sector and "0" otherwise	IASB's website (IASB, 2018) IFAC's website (IFAC, 2018)
Control variables		
GOVPOP	Natural logarithm of total government population (Giroux and McLelland, 2003)	The World Fact Book, 2015, 2016, and 2017
EDUC	Index of the quality of education system. This index ranges from 1 (not well at all) to 7 (extremely well)	The Global Competitiveness Report, 2015, 2016 and 2017
PSESIZE	Natural logarithm of PSE total assets converted to USD	Hand-collected, 2015, 2016 and 2017 annual reports
EXTAUDIT	Binary variable that takes the value "1" if a government entity uses an outside auditor and "0" otherwise (Cheng, 1992)	Hand-collected, 2015, 2016 and 2017 annual reports
AUDBUDGET	Log Audit fees converted to USD (Copley, 1991)	Hand-collected, 2015, 2016 and 2017 annual reports
AAEXPERT	Proportion of members on accounting/auditing department staff with accounting, financial, and industry expertise	Hand-collected, 2015, 2016 and 2017 annual reports
Robustness analyses		
POLIFREEDOM	Aggregate score of political freedom that ranges from 0 (least free) to100 (most free)	Freedom House, Report of Freedom in the World, 2015, 2016 and 2017
GOVEFFECT	Percentile rank of government effectiveness indicator which ranges from 0 (weak) to 100 (strong)	World Bank's website, Worldwide Governance Indicators (World Bank, WGI, 2015, 2016 and 2017)

Table 5.
Variables and
measures

5. Research results

5.1 Descriptive statistics and correlations

The average disclosure index for each standard by country is shown in Table 6.

Table 6 shows significant differences in IPSAS disclosure levels by central government entities across the globe. The highest average disclosure index belongs to PSEs from the Cayman Islands and Switzerland with mean compliance scores of 74.6% and 74.2%, respectively. This finding is consistent with the Global Competitiveness Report (GCR, 2016–2017) that ranks Swiss public sector institutions as among the most transparent and efficient organizations in the World (WEF, 2017). Likewise, based on Transparency International (TI) Corruption Perceptions Index (2017) which ranks 180 countries according to their perceived public sector corruption levels on a scale of 0 (highly corrupt) and 100 is (very clean), Switzerland is among the top five least corrupt countries with an average score of 86 during the 2015–2017 period (TI, 2017). Indeed, Swiss Government transparency is strengthened and maintained thanks to the highly decentralized and federalist public administration structure allowing for greater competition between different government levels (federal, cantonal, and local) and also to the high-quality and sound public management accounting framework (Ladner *et al.*, 2019). In the Cayman Islands, a number of effective actions have been taken since 2007 to promote government transparency and accountability by developing a national framework for countering fraud and corruption in the public sector (OAG, 2018). As stated in the report of the Office of the Auditor General in the Cayman Islands (OAG, 2018), this framework includes the enactment of several laws (e.g. the "Anti-Corruption Law 2008"), the establishment of anti-corruption bodies such as the "Anti-Corruption Commission (in 2010), the implementation of fraud prevention and control measures and the strengthening of government anti-corruption policies and procedures. Furthermore, the introduction of the Freedom of Information (FOI) legislation allowing citizens' access to government information, which came into force in Switzerland and Cayman Islands in 2006 and 2009, respectively (Ladner *et al.*, 2019), might be another driver behind the high levels of government accounting disclosures in these two countries. This is in addition to the commitments of both the Cayman Islands and Switzerland to the global standard of automatic exchange of financial information (AEOI) through the OECD's Common Reporting Standard (CRS) to overcome financial secrecy and tax evasion (OECD, 2019).

The results of Table 6 reveal that the lowest average disclosure indices belong to Uganda (48.3%) and Burundian PSEs (55.4%). Indeed, the implementation of IPSAS in several sub-Saharan African countries is still challenging because of the lack of political support, inconsistency of legal framework, lack of skills and adequate training programs and the proliferation of corruption in the public sector administration (Tanjeh, 2016; ACCA, 2017). According to TI (2017), sub-Saharan Africa is among the worst-performing regions. For example, the average corruption perceptions indices in Uganda and Burundi are 25 and 21, respectively, during the period 2015–2017 (TI, 2017). Descriptive statistics of the dependent and independent variables are described in Table 7.

The results of Table 7 reveal that IPSAS disclosure levels (DISCLOSURE) range from 32% to 89.1%. The overall mean disclosure level is 65.7% (median: 67.6%) with a standard deviation of 0.126 over the 2015–2017 period. Regarding the independent variables, the mean score of GOVOPEN is 0.54 with a median of 0.49 and a standard deviation of 0.196. The average relative value of GOVFIN is 46.7% with a median of 36.5% and a standard deviation of 0.333. PAMQUAL values range from 1.5 to 6 with a mean/median of 4.6/4.5 and a standard deviation of 0.961. For the dichotomous variable IFRSEXP, the proportion of PSEs with prior experience with IAS/IFRS represents 61.7% of the total number of the sampled entities. The results of the correlation matrix and the Variance Inflation Factor

Country	IPSAS 1	IPSAS 2	IPSAS 3	IPSAS 14	IPSAS 24	Overall disclosure level
Barbados						
Obs	30	30	30	30	30	30
Mean	0.694	0.667	0.689	0.675	0.577	0.660
Minimum	0.420	0.280	0.200	0.500	0.330	0.346
Maximum	0.816	0.900	1.000	1.000	0.778	0.781
Median	0.707	0.765	0.743	0.500	0.611	0.738
SD	0.11361	0.20208	0.23460	0.22884	0.738	0.14815
Burundi						
Obs	18	18	18	18	18	18
Mean	0.693	0.472	0.514	0.629	0.463	0.554
Minimum	0.590	0.220	0.214	0.500	0.111	0.351
Maximum	0.810	0.583	0.727	1.000	0.667	0.735
Median	0.690	0.558	0.667	0.500	0.556	0.531
SD	0.07963	0.14708	0.19653	0.21048	0.22328	0.13226
Cayman Islands						
Obs	33	33	33	33	33	33
Mean	0.761	0.659	0.781	0.863	0.662	0.746
Minimum	0.620	0.500	0.500	0.500	0.440	0.562
Maximum	0.860	0.830	1.000	1.000	1.000	0.891
Median	0.760	0.667	0.750	1.000	0.667	0.770
SD	0.05769	0.12542	0.14649	0.19853	0.18130	0.10324
Chile						
Obs	15	15	15	15	15	15
Mean	0.744	0.615	0.642	0.900	0.533	0.687
Minimum	0.680	0.500	0.500	0.500	0.444	0.635
Maximum	0.780	0.692	0.750	1.000	0.667	0.740
Median	0.760	0.615	0.714	1.000	0.556	0.679
SD	0.04014	0.07464	0.12145	0.20701	0.08642	0.03590
Ghana						
Obs	21	21	21	21	21	21
Mean	0.697	0.571	0.618	0.761	0.573	0.636
Minimum	0.580	0.450	0.333	0.330	0.111	0.427
Maximum	0.760	0.667	0.830	1.000	0.890	0.768
Median	0.740	0.550	0.640	1.000	0.670	0.650
SD	0.07451	0.07678	0.14556	0.28735	0.28259	0.12096
Kazakhstan						
Obs	24	24	24	24	24	24
Mean	0.730	0.515	0.569	0.768	0.512	0.619
Minimum	0.600	0.290	0.500	0.170	0.220	0.356
Maximum	0.800	0.600	0.700	1.000	0.780	0.736
Median	0.742	0.545	0.500	0.778	0.556	0.660
SD	0.05978	0.10188	0.08761	0.27080	0.18165	0.11283
Mauritius						
Obs	21	21	21	21	21	21
Mean	0.727	0.598	0.609	0.761	0.713	0.681
Minimum	0.700	0.500	0.467	0.500	0.444	0.580
Maximum	0.780	0.786	0.750	1.000	0.889	0.767
Median	0.720	0.583	0.615	0.833	0.714	0.670
SD	0.02952	0.09636	0.09636	0.23903	0.14679	0.06469

(*continued*)

Table 6.
IPSAS disclosure
level by standard
and by country

Country	IPSAS 1	IPSAS 2	IPSAS 3	IPSAS 14	IPSAS 24	Overall disclosure level
Mongolia						
Obs	15	15	15	15	15	15
Mean	0.741	0.467	0.606	1.000	0.556	0.674
Minimum	0.600	0.290	0.500	1.000	0.440	0.613
Maximum	0.840	0.640	0.690	1.000	0.670	0.760
Median	0.800	0.455	0.670	1.000	0.560	0.656
SD	0.09500	0.11598	0.08990	0.000	0.10556	0.05178
Peru						
Obs	27	27	27	27	27	27
Mean	0.766	0.640	0.740	0.741	0.609	0.699
Minimum	0.655	0.310	0.500	0.170	0.330	0.545
Maximum	0.850	0.900	0.910	1.000	0.780	0.855
Median	0.760	0.670	0.750	0.750	0.560	0.686
SD	0.05950	0.20104	0.12144	0.28636	0.13559	0.08869
Switzerland						
Obs	36	36	36	36	36	36
Mean	0.778	0.700	0.806	0.868	0.558	0.742
Minimum	0.620	0.500	0.687	0.170	0.110	0.562
Maximum	0.830	0.820	1.000	1.000	0.890	0.860
Median	0.806	0.700	0.750	1.000	0.528	0.775
SD	0.05998	0.10904	0.10332	0.26077	0.23492	0.09075
Tanzania						
Obs	27	27	27	27	27	27
Mean	0.730	0.614	0.744	0.694	0.618	0.680
Minimum	0.660	0.454	0.615	0.500	0.111	0.580
Maximum	0.820	0.750	0.890	1.000	0.780	0.770
Median	0.759	0.600	0.750	0.500	0.670	0.677
SD	0.05908	0.09370	0.09633	0.23342	0.21465	0.05975
Uganda						
Obs	33	33	33	33	33	33
Mean	0.653	0.39890	0.420	0.518	0.428	0.483
Minimum	0.410	0.230	0.200	0.200	0.111	0.320
Maximum	0.780	0.560	0.750	1.000	0.778	0.653
Median	0.620	0.420	0.333	0.500	0.444	0.522
SD	0.12218	0.12089	0.17779	0.17757	0.17376	0.10274
All countries						
Obs	300	300	300	300	300	300
Mean	0.727	0.585	0.656	0.753	0.568	0.657
Minimum	0.410	0.220	0.200	0.170	0.110	0.320
Maximum	0.860	0.900	1.000	1.000	1.000	0.891
Median	0.759	0.583	0.687	0.778	0.560	0.676
SD	0.08513	0.16065	0.18559	0.25898	0.20070	0.12620

Table 6.

(VIF) test are presented in Table 8 showing that "DISCLOSURE" is positively and significantly correlated with all the explanatory variables.

5.2 Multivariate regression
5.2.1 Main analysis. The use of multivariate regression analysis based on panel data requires the verification of some assumptions (e.g. absence of multicollinearity between explanatory variables,

Variables	Nbr. Obs	Mean	Minimum	Maximum	Median	SD	Freq
Dependent variable							
DISCLOSURE	300	0.657	0.320	0.891	0.676	0.12620	
Explanatory variables							
GOVOPEN	300	0.54	0.15	0.88	0.49	0.19620	
GOVFIN	300	0.467	0.110	1.450	0.365	0.33388	
PAMQUAL	300	4.6	1.5	6	4.5	0.96185	
IFRSEXP	300						61.74
GOVPOP	300	15.463	10.995	17.831	16.287	2.12205	
EDUC	300	4.3	3.3	6.2	4.2	0.72572	
PSESIZE	300	15.986	8.919	23.763	16.077	2.94732	
EXTAUDIT	300						57.97
AUDBUDGET	300	6.163	5.010	8.567	5.973	0.35189	
AAEXPERT	300	0.626	0.400	0.833	0.667	0.18712	

Table 7.
Descriptive statistics

Skewness and Kurtosis tests for residual normality, the presence of individual effects, Hausman test for model suitability, heteroskedasticity, autocorrelation, etc.) to better validate the multivariate regression results. Econometric tests are reported in Tables 8 and 9.

The results of Table 8 reveal that there is no multicollinearity among the study variables because all their correlation coefficients are below 0.8. Moreover, the highest VIF value is equal to 2.31 that is below 5, the threshold at which a serious problem of multicollinearity between explanatory variables could arise. Given that IPSAS disclosure index might not be normally distributed, the study dependent variable DISCLOSURE is transformed into percentile ranks to control the inherent problems of the data structure (Tsalavoutas, 2011; Glaum *et al.*, 2013; Mazzi *et al.*, 2018). PSEs are ranked in ascending order according to their disclosure level. Percentile ranks range from "0" for the lowest ranking PSEs (with the lowest disclosure levels) to "1" for the highest-ranking PSEs (with the highest disclosure levels) (Botosan and Plumlee, 2002). The percentile rank method is relevant to correcting for kurtosis and skewness. Indeed, the results of Table 9 indicate that the residuals of the study model are normally distributed as the null hypothesis of residual normality can be accepted at the 5% significance level (Prob $> \chi^2 =$ 0.0796). Regarding the checking of the existence of individual effects, the results in Table 9 reveal that the Fisher test is significant at the 1% level and the null hypothesis that the observed and unobserved fixed effects are equal to zero is not confirmed. Thus, a panel data analysis is appropriate for this study. Then, the Hausman test is applied to decide between fixed and random effects regression. The results of Table 9 show that the test is significant at the 1% level ($\chi^2 = 27.45$, Prob $> \chi^2 = 0.0003$) and thereby, the fixed effects regression is more suitable than the random effects one. In line with Mazzi *et al.* (2018), this study clustered standards errors in two dimensions between PSEs and years to avoid autocorrelation and the heteroskedasticity problems. To investigate the impact of environmental factors on IPSAS disclosure level, the following panel model is used:

$$TRDISCRANKjt = \beta 0 + \beta 1\, GOVOPENjt + \beta 2\, GOVFINjt + \beta 3\, PAMQUALjt + \beta 4$$
$$IFRSEXPjt + \delta\, CVjt + \varepsilon; \forall j \in [1,\ 100]\,, \forall t \in [2015,\ 2017].$$

where TRDISCRANK is the transformed IPSAS disclosure index into percentile ranks, GOVOPEN is the Open Government score, GOVFIN is the total central government debt (per cent of GDP) and PAMQUAL is the CPIA public sector management and institutions cluster including:

Table 8.
Correlation matrix
and VIF

Variable	VIF	TRDISCRANK	GOVOPEN	GOVFIN	PAMQUAL	IFRSEXP	GOVPOP	EDUC	PSESIZE	EXTAUDIT	AUDBUDGET	AAEXPERT
TRDISCRANK		1										
GOVOPEN	2.20	0.482***	1									
GOVFIN	1.72	0.126**	0.328***	1								
PAMQUAL	1.63	0.588***	0.398***	−0.076	1							
IFRSEXP	1.31	0.370***	0.263***	−0.117**	0.395***	1						
GOVPOP	1.43	0.307***	−0.489***	0.285***	−0.195***	−0.039	1					
EDUC	2.31	0.208***	0.392***	−0.077	0.237***	−0.071	−0.312***	1				
PSESIZE	1.23	0.263***	0.152***	−0.074	0.207***	0.073	0.013	0.199***	1			
EXTAUDIT	1.34	0.107***	0.142**	−0.228***	−0.031	0.058	0.106**	0.073	0.048	1		
AUDBUDGET	1.79	0.285***	0.279***	−0.399***	0.292***	0.028	−0.218***	0.689***	0.178***	0.219***	1	
AAEXPERT	1.29	0.479***	0.155***	0.060	0.465***	0.230***	−0.048	0.076	0.267***	0.096	0.144**	1

Notes: *** the correlation is significant at the 1% level; ** the correlation is significant at the 5% level

- quality of public administration;
- quality of budgetary and public financial management;
- efficiency of public revenue mobilization;
- property rights and rule-based governance; and
- transparency, accountability and corruption in the public sector, IFRSEXP: is a binary variable that takes the value "1" if a government has prior experience with IAS/IFRS in the public sector and "0" otherwise, CV: are control variables and ε: is the margin of error.

The results of multivariate regression are summarized in Table 10.

In Table 10, the results of Model 1 reveal that the effect of GOVOPEN on IPSAS disclosure level (TRDISCRANK) is positive and statistically significant at the 1% level. In jurisdictions with a high degree of political openness, the government has more incentive to disclose and share more transparent and reliable financial information to discharge its accountability obligations and to respond to various stakeholders' information needs. In such countries, the proper application and the faithful compliance with IPSAS are fostered by the aim to produce more complete, transparent, and comprehensive government financial reporting to better assist in decision-making and to permit a greater control on government actions. This result supports the Lüder (1992)'s contingency model perspective. Unlike prior research (Lüder, 1992, 1994), this research is the first to use a statistical method to empirically demonstrate the significant impact of government openness (political culture) on public sector accounting innovations, more especially on IPSAS disclosure level by different PSEs around the globe.

The results of Model 1 in Table 10 show a positive and significant association, at the 1% level, between PAMQUAL and TRDISCRANK. Faithful compliance with accrual-based IPSAS requires an effective public administration and management structure to guarantee the proper application of such high-quality standards in a rigorous and consistent manner. Indeed, strong and ethical public management systems allow for greater financial transparency and accountability by implementing relevant policies and anti-corruption measures and by efficiently monitoring compliance with laws and regulations at all organizational levels. As an integral part of public administrative structure, accounting and auditing departments with a sound atmosphere of leadership and work motivation foster ethical behavior, ensure better use of skills and maintain the proper application of accounting standards. This finding is consistent with the propositions of the Ouda (2004)'s Basic Requirements Model for successful implementation of accrual accounting in the public sector which is developed as an extended framework of the Lüder (1992, 1994)'s contingency model. This study is the first to empirically analyze the effect of the quality of public administration and management on the extent of information disclosed under IPSAS by central government entities at a cross-country level.

Residual normality		Existence of individual effects		Model suitability		
Nbr. obs	300	Nbr. obs	300	Nbr. obs	300	
Pr (Skewness)	0.0398					
Pr (Kurtosis)	0.3655					
Adj χ^2	5.06	F (99, 193)	39.55***	χ^2	27.45***	**Table 9.**
Prob > χ^2	0.0796	Prob > F	0.0000	Prob > χ^2	0.0003	Econometric tests

Table 10. Multivariate analyses

Variables	Predicted sign	Main analysis Model 1 Coef β	t	Model 2 Coef β	t	Robustness analyses Model 3 Coef β	t	Model 4 Coef β	t
GOVOPEN	+	0.51201	3.00***	0.66897	1.61	0.43665	2.74***		
GOVFIN	+	0.18586	0.48	0.10295	5.11***	0.34195	0.77	-0.16808	-0.46
PAMQUAL	+	0.10359	4.11***	0.17075	3.75***	0.20057	4.39***	0.26114	6.28***
IFRSEXP	+/-	0.12731	2.77***	0.04312	2.88***	0.02249	2.11**	0.05470	5.19***
GOVPOP	+/-	0.01875	1.81*	-0.01904	-0.11			-0.02134	-0.05
EDUC	+/-	-0.05278	-1.25	0.01788	2.40**	-0.02415	-1.18	0.01879	2.50**
PSESIZE	+/-	0.01805	2.46**	0.10926	1.47	0.01704	2.23**	0.10514	1.52
EXTAUDIT	+/-	0.09081	0.54	0.16011	2.20**	-0.10953	-0.15	0.10429	2.42**
AUDBUDGET	+/-	0.10922	3.04***	0.84968	6.91***	0.10709	2.72***	0.94088	8.31***
AAEXPERT	+/-	0.89934	7.48***	0.02286	2.21**	0.91868	8.51***	0.02831	1.99**
POLIFREEDOM	+							0.15061	3.87***
GOVEFFECT	+					0.12338	1.76*		
constant		-0.73489	-2.63***	-0.41447	-1.48	-0.59111	-2.11**	-0.32245	-1.09
Nbr. of observations		300		300		300		300	
Nbr. of groups		100		100		100		100	
Time periods		3		3		3		3	
F		$F(99, 193) = 39.55$***		$F(99, 193) = 40.78$***		$F(99, 194) = 26.76$***		$F(99, 194) = 28.72$***	
Prob > F		0.0000		0.0000		0.0000		0.0000	
R^2		0.3365		0.3138		0.2300		0.2495	
Log likelihood		-97.675		-99.670		-104.828		-109.151	
Wald χ^2 (Prob> χ^2)		271.49 (0.0000)***		363.94 (0.0000)***		244.87 (0.0000)***		229.39 (0.0000)***	
Entity/year cluster		Yes		Yes		Yes		Yes	

Notes: ***Statistical significance at the 1% level; **Statistical significance at the 5% level; *Statistical significance at the 10% level.

From Table 10, the results of Model 1 indicate that the coefficient of IFRSEXP is positive and statistically significant at the 1% level. Inspired from the private sector-oriented conceptual framework (IAS/IFRSs' principles), accrual-based IPSAS are high-quality and complicated standards that require deep knowledge and extensive expertise in this area to ensure their proper application and increase the compliance level with these standards. Therefore, government accounting staff with prior private sector accounting experience and IFRS-focused skills is more familiar with the application of IPSAS and are better able to comply with these standards. This result is consistent with the prior literature (Lüder, 1992; Kober *et al.*, 2010; Laswad and Redmayne, 2015). However, unlike previous studies (Carpenter, 1991; Laswad *et al.*, 2005; Carvalho *et al.*, 2007; Bolívar *et al.*, 2013), the results of Model 1 (Table 10) show that government financial condition (GOVFIN) is a nonsignificant factor.

5.2.2 Robustness checks. In this section, the measures of the two explanatory variables GOVOPEN and PAMQUAL are replaced by ther proxies to better support the study results. The variable GOVOPEN (as measured by the Open Government score) is replaced by the alternative proxy "political freedom" (POLIFREEDOM) measured by the aggregate score of political freedom ranging from 0 (least free) to100 (most free). Data are obtained from the Freedom House's website (Report of Freedom in the World, 2015, 2016 and 2017). To measure the quality of public administration and management, this paper uses the proxy "government effectiveness" (GOVEFFECT) as measured by the percentile rank of government effectiveness indicator (World Bank, WGI, 2015, 2016 and 2017). The findings are reported in Table 10 (Models 2, 3 and 4).

Model 2 in Table 10 shows that IPSAS disclosure level (TRDISCRANK) is positively and significantly associated, at the 5% level, with POLIFREEDOM and positively and significantly influenced, at the 1% level by PAMQUAL and IFRSEXP. The results of Model 3 reveal a positive and significant association at the 10% level between TRDISCRANK and GOVEFFECT. They indicate that GOVOPEN and IFRSEXP have a positive and significant influence, at the 1% level, on IPSAS disclosure level. The findings of Model 4 show that the coefficients of the three variables POLIFREEDOM, GOVEFFECT, and IFRSEXP are positive and statistically significant, whereas GOVFIN remains nonsignificant in all robustness analysis models (2, 3 and 4). Therefore, the basic model's results are confirmed.

In summary, the findings of all the study analyses support *H1*, *H3* and *H4* which are: government openness (political culture), quality of public administration and management, and prior experience with IAS/IFRS in the public sector. However, the results do not support the effect of government financial condition (*H2*) on IPSAS disclosure level. The research results are consistent with those of the prior literature (Benito *et al.*, 2007; Ernst and Young, 2012a) showing significant diversities in compliance level with IPSAS disclosure requirements across countries. Furthermore, a self-constructed disclosure index was developed in the current study, including a higher number of disclosure items (116 items) from a more extensive set of the IPSASB's standards (IPSAS 1, 2, 3, 14 and 24) compared to the prior research instruments based only on 76 items from only IPSAS 1 and 2 used by Abushamsieh *et al.* (2014) and Pérez and López-Hernández (2009). In line with previous studies (Lüder, 1992; Cheng, 1992; Bolívar *et al.*, 2013; Tejedo-Romero and Araujo, 2018), this paper demonstrates the significant influence of country-specific factors on government accounting disclosure, supporting thereby the contingency theory foundations. To the best of the authors' knowledge, this study is the first to use a statistical method for the analysis of the association between government accounting practice and environmental factors which have been simply identified theoretically by previous studies under the contingency model (Lüder, 1992; 1994; Ouda, 2004). As regard to compliance with IPSAS, and unlike the

previous research (Benito *et al.*, 2007; Pérez and López-Hernández, 2009; Abushamsieh *et al.*, 2014; Sukmadilaga *et al.*, 2015), the current research is the first to empirically investigate the factors associated with the extent of IPSAS disclosure in different countries across the globe, using the contingency theory framework.

6. Conclusions and research implications

This paper examines the extent of government financial information disclosed in accordance with accrual-based IPSAS, and most importantly the environmental factors affecting this level for central government entities (PSEs) from different countries across the globe during the period from 2015 to 2017. Using a self-constructed checklist of 116 disclosure items for a sample of 100 central government entities from 12 jurisdictions around the world, the study results show significant differences in IPSAS disclosure levels across nations. Based on a theoretical contingency framework, this paper empirically demonstrates the significant impact of country-specific factors on government accounting disclosure. The study findings show a positive influence of the degree of government openness, quality of public administration and management, and prior experience with IAS/IFRS in the public sector on the level of accrual-based IPSAS disclosure, whereas government financial condition is a nonsignificant factor. These results are consistent with those of previous studies (Benito *et al.*, 2007; Ernst and Young, 2012a) revealing that compliance levels with IPSAS disclosure requirements significantly vary across countries. The study findings support the contributions of previous research suggesting that public sector accounting innovations are associated with government openness (Lüder, 1992), effectiveness of public management systems (Ouda, 2004) and prior private sector accounting experience (Lüder, 1992; Kober *et al.*, 2010; Laswad and Redmayne, 2015). Unlike prior literature (Carpenter, 1991; Laswad *et al.*, 2005; Carvalho *et al.*, 2007; Bolívar *et al.*, 2013), the study findings reveal that government financial condition has no influence on government accounting disclosure.

Given that the study's basic instrument used to measure the extent of compliance with IPSAS (disclosure checklist) is constructed from the standards' requirements as published by the IPSASB without any national adaptation, the research results relate specifically to countries that have formally and directly adopted IPSAS as the primary set of accounting standards applicable for their PSEs without national modifications. Indeed, these jurisdictions are more called upon to respect and comply with these standards' all requirements than other groups of countries where IPSAS are applied voluntarily or indirectly via national standards or where there is a simple convergence to these standards because this is likely to give rise to an amendment or abandonment of some IPSAS disclosure items of the study checklist. Therefore, compliance with these standards cannot be appropriately and faithfully assessed in such jurisdictions. Moreover, countries that have indirectly and/or voluntarily applied IPSAS are generally not bound to comply with these standards' disclosures. As a result, the assessment of government transparency, as defined in this research, becomes problematic in such jurisdictions if the existing national legislative system actually requires less than a full set of IPSAS disclosures or if it is inconsistent with some IPSAS requirement items. In that case, the level of transparency will be judged by the extent of compliance with local standards adapted or converged to IPSAS rather than by compliance with IPSAS disclosures defined by the IPSASB as the case in this research. Therefore, it would be more appropriate to exclude these groups of countries from the study sample to avoid unfairly judging a government entity as being "non-transparent" because of its non-compliance with IPSAS (or some IPSAS disclosure items) while this entity is rather

required to follow its country's accounting regulation which may not necessarily be consistent with IPSAS all requirements.

The contributions of this paper are several. First, this research complements prior literature on accounting practice in the public sector by assessing the transparency and completeness of central government financial statements prepared under accrual-based IPSAS in different jurisdictions that have formally and directly adopted IPSAS and most importantly the impact of country-specific factors on the extent of IPSAS disclosure in these countries. In fact, most previous studies focused on the environmental determinants of compliance level with IFRS/ local GAAP requirements in the private sector (Mazzi *et al.*, 2018; Glaum *et al.*, 2013; Akman, 2011; Archambault and Archambault, 2003) or with national accounting standards disclosures in the public sector (Bolívar *et al.*, 2013; Garcia and Garcia-Garcia, 2010; Cheng, 1992). As regards to IPSAS, very little research investigated the level of public financial information disclosed in accordance with IPSAS 1 and 2 in specific contexts (Pérez and López-Hernández, 2009, in MERCOSUR member countries; Abushamsieh *et al.*, 2014, in the Middle East Arab governments; Sukmadilaga *et al.*, 2015, in ASEAN countries). However, none of these studies empirically analyzed the factors associated with the IPSAS disclosure level. Based on the contingency theory, this paper is the first to examine the factors influencing the extent of information disclosed under IPSAS by central government entities in a cross-country analysis. Second, unlike prior literature focusing only on IPSAS 1 and 2 disclosures, this research uses a more extensive set of accrual-basis standards relating to the presentation of financial statements (IPSAS 1 and 2) and general disclosure requirements including adjustments to financial statements (IPSAS 3 and 14). Moreover, because budget information is needed to enhance the transparency of PSEs' financial reporting and ensure that these entities discharge their accountability obligations, IPSAS 24 is included in this study. These standards are selected as they contain the general and basic disclosures required to be provided in all accrual based-financial statements prepared by all PSEs other than GBEs. The study's self-constructed checklist contains a higher number of disclosure items (116 items) than those (76 items) used in previous studies (Pérez and López-Hernández, 2009; Abushamsieh *et al.*, 2014). Third, using a statistical method, this research attempts to empirically demonstrate and explain the association between government accounting practice and environmental factors which have been simply identified theoretically by previous studies under the contingency framework (Lüder, 1992, 1994; Ouda, 2004). The research findings are potentially relevant to various actors in the field of government financial reporting. They provide academics, researchers and practitioners with new insights into understanding the differences in the level of IPSAS disclosure by central government entities across countries. Furthermore, professional bodies and standard-setters such as IPSASB and IFAC might consider this document in their work of assessing and revising accounting standards to promote the development of international harmonization of public sector accounting with more emphasis on the public sector's specificities. By examining the extent of information disclosed under IPSAS, this study might also assist governments and policymakers in their accounting strategies to better support the implementation of accrual-based IPSAS, improve financial transparency and accountability and fight against corruption in the public sector. Moreover, this paper might be a stimulus for jurisdictions with low IPSAS disclosure to intensify their ongoing efforts to increase compliance with these standards by implementing and monitoring relevant policies and programs to strengthen their public sector management systems. By analyzing the influential factors of IPSAS disclosure level, this paper paves the way for further investigation of this topic with a more extensive set of macro and microeconomic variables whether at the central or local government level.

Note

1. The disclosure checklist is available on request from the authors.

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