

International Public Sector Accounting Standards and economic growth: An international study of IPSAS adoption and experience

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Abstract

Research Question: What impact has the implementation of International Public Sector Accounting Standards (IPSAS) had on gross domestic product (GDP) growth in countries that have fully adopted these standards?

Motivation: The results of prior research are inconclusive, and more research is needed to understand the potential impact of IPSAS on the economic growth of adopting countries. Despite the abundance of empirical studies on the determinants of economic growth, much remains to be done to achieve a conclusive understanding of this complex issue, as noted by Owusu *et al.* (2017). The existing literature is mainly concerned with standard economic factors and does not consider the critical role played by the national accounting framework, in particular the underlying accounting rules. As a result, research on economic growth has tended to focus on global and macroeconomic trade issues rather than accounting issues. These criticisms highlight the need for more rigorous studies to assess the impact of the adoption of IPSAS especially in different socio-economic and political contexts.

Idea: This study tests the impact of IPSAS adoption and experience on the economic growth rate, controlling for variables that may influence economic development, such as foreign direct investment (FDI), public investment (INV), trade openness (OPEN), capital expenditure (EXPEND) and COVID pandemic (COV19).

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Data: The data was collected from 18 countries that were engaged in the process of international adoption between the years 2009 and 2022.

Tools: Multivariate analysis on panel data was applied.

Findings: Our results show that adopting IPSAS and the country's experience with the new standards set, positively and significantly affect economic growth. Furthermore, public investment and trade openness are significant positive determinants of economic growth. On the other hand, the COVID 19 pandemic and public expenditure negatively affect GDP growth.

Contribution: The paper results could be of practical interest to governments in their decision to move to IPSAS and to standard setters and international institutions, which encourage countries to reform their public accounting systems through coercive isomorphism. Adopting IPSAS can also have macroeconomic benefits through a better reputation with international donors.

Keywords: IPSAS, IPSAS experience, Public accounting- Gross Domestic Product (GDP) growth, international study, public investment, trade openness.

JEL codes: H83- O47.

1. Introduction

A growing number of governments, international organizations and other public sector entities worldwide have adopted the international accounting standards for public sector entities, known as International Public Sector Accounting Standards (IPSAS) (IFAC, 2022). This has led to the emergence of a new global architecture for public sector accounting (Humphrey *et al.*, 2009). The rationale behind these reforms aligns with the New Public Management (NPM) approach, which is ideologically rooted in the integration of private practice into the public sector (Becker *et al.*, 2014). Governments and public sector entities utilize accrual accounting to enhance financial reporting, resource allocation, and policy-making (IPSASB, 2018). Accordingly, the enhanced productivity associated with NPM should lead to an increase in national development, productivity, and economic growth (Agburuga, 2018).

The IPSAS standards, recently recognized as the benchmark for high-quality public sector financial reporting, have been developed by the International Public Sector Accounting Standards Board (IPSASB) in response to the challenges of public governance, public financial management and corruption that plague many countries globally. The principal objective is to ensure comparability, transparency and control of corruption (Rakoto & Lande, 2008; Caba *et al.*, 2009). These reforms are directed at developing financial reporting and furnishing a more comprehensive

representation of financial soundness by incorporating accounts receivable, accounts payable and other accrued and deferred items (IFAC, 2017; Christiaens *et al.*, 2015). Therefore, the quality of public accounts is predominantly determined by the accounting standards employed for their preparation (Arnold, 2020). In accordance with the IPSAS conceptual framework, whether on a cash or accrual basis, government financial statements should provide relevant, reliable, comparable, timely and understandable information (Atuilik & Salia, 2019).

Ball (2015) posits that the Greek financial crisis was an effective catalyst for the implementation of these standards. This was because, firstly, Greece's debt would not be overestimated, and secondly, the actual budgetary situation of Greece would be more accurately assessed. It would seem that accrual accounting is now a globally accepted practice in public sector accounting systems, with only a few countries still using cash accounting (Brusca & Martínez, 2016). Some countries are in the process of transitioning to IPSAS. Others are adopting IPSAS-compliant accrual accounting standards. A considerable number of developed economies have already adopted IPSAS because they are compatible with existing systems (Pilcher, 2011; Brusca *et al.*, 2013). Notably, the leading proponents of the dissemination of these reforms, particularly in developing countries, are international organizations such as the World Bank, the United Nations Development Organization (UNDO) and the International Monetary Fund (IMF) (Hood, 1991).

Adopting IPSAS-compliant accrual accounting could be a prerequisite for financial support (Bakre *et al.*, 2017; ACCA, 2017). However, this advocacy often overlooks the significant financial and time costs associated with reform and the inherent uncertainty surrounding the achievement of desired outcomes (Carnegie & West, 2005). For example, in 2013, countries and financial institutions within the East African community signed a protocol to harmonize financial reporting across the region by adopting IPSAS (Amiri & Elleuch-Hamza, 2020). Moreover, the G20 strongly encourages its member countries and other nations to adopt IPSAS. Accordingly, DiMaggio and Powell have identified three types of pressure that countries experience to adopt isomorphic institutional change: coercive, mimetic and normative (DiMaggio & Powell 1983). The coercive form results from pressures of organizations within a field, such as international institutions. Mimetic isomorphism may occur when economic systems imitate the successful experiences of organizations with similar characteristics by adopting best practices such as IPSAS to enhance credibility (Adhikari & Mellemvik 2010). Finally, isomorphism would be normative and based on the phenomenon of professionalization.

As solutions designed for developing contexts, mainly Anglo-Saxon, are, in some cases, transposed to less developed, Euro-continental contexts with limited resources, the transition to accrual accounting close to IPSAS becomes controversial (Polzer *et al.*, 2021; Hopper *et al.*, 2017; Chan, 2006). The necessity for IT and

human resources to overcome the implementation complexity is further compounded by the need for appropriate strategies and the presence of planning problems.

Accounting researchers have studied IPSAS diffusion worldwide over the past few decades (Adhikari & Mellempvik, 2010). Only a handful of studies (Cuadrado-Ballesteros & Bisogno, 2020; Kartiko *et al.*, 2018) have directly addressed the relationship between IPSAS adoption and institutional characteristics such as governance quality and corruption.

The results of prior research are inconclusive, and more research is needed to understand the potential impact of these standards on the economic growth of adopting countries. Despite the abundance of empirical studies on the determinants of economic growth, much remains to be done to achieve a conclusive understanding of this complex issue, as noted by Owusu *et al.* (2017). The existing literature is mainly concerned with standard economic factors and does not consider the critical role played by the national accounting framework, in particular the underlying accounting rules. As a result, research on economic growth has tended to focus on global and macroeconomic trade issues rather than accounting issues. Given this research gap, we have drawn on two main streams of studies to directly establish the link between IPSAS adoption and macroeconomic development. The first wave of research assumes that IPSAS aim to improve transparency, equity, and efficiency through the application of rules that are tightly aligned with those of the business sector and the standardization of methods within institutions (Sarhan & Ntim, 2018; Famade, 2017). These standards make governments more accountable and transparent (Ijeoma & Oghoghomeh, 2014; Alshujairi, 2014; Bellanca & Vandernoot, 2014; Benito *et al.*, 2007) and contribute to the control of corruption (Tawiah, 2023; Hamed & Loukil, 2021; Cuadrado *et al.*, 2019). Greater transparency and accountability can lead to better resource allocation and a reduction in the risk of financial mismanagement, which is essential for the promotion of economic stability and growth (Brusca & Martínez, 2016; Christiaens *et al.*, 2015). The second school of thought emphasizes that national accounts are an invaluable tool for studying the macroeconomy. A coherent accounting framework provides a quantified representation of a country's economy, which is important for effective economic planning and policy making. Despite being an essential determinant of long-term performance, neoclassical growth theory has failed to consider the impact of public governance on economic growth (Bayar, 2016). The role of public accounting is to serve as a mechanism for safeguarding public finances, preventing fraud and reducing waste (Chan, 2003). These findings have consistently shown a positive relationship between the components of public governance and economic growth (Petreski, 2014; Emara & Jhonsa, 2014; Fayissa & Nsiah, 2013; Méndez-Picazo *et al.*, 2012; Kaufman & Kraay, 2002). IPSAS can enhance the effectiveness of fiscal policy and promote economic development by improving the reliability and comparability of financial information.

The impact of the IPSAS on the accounting of the public sector remains to be seen. The question of whether the desired results are being achieved remains a point of contention. The benefits of implementing IPSAS remain a matter of debate. For example, it has been criticized for leading to public governance and corruption problems in Africa (Hopper *et al.*, 2017). It has also led to arbitrary and unreliable results (Carnegie & West, 2005). These criticisms highlight the need for more rigorous studies to assess the impact of the adoption of IPSAS especially in different socio-economic and political contexts.

Therefore, understanding the impact of IPSAS on economic growth requires a comprehensive approach that integrates findings from both research streams. This study aims to fill the research gap by investigating the direct relationship between IPSAS adoption and macroeconomic outcomes. Through a detailed analysis of countries that have implemented IPSAS, we seek to uncover the potential benefits and challenges of these standards in promoting economic growth and stability.

On the basis of institutional theory, economic theory and the theory of economic regulation, as well as the results of previous studies, we suggest that public accounting reform can affect economic performance through the influence of variables such as good public governance, control of corruption and more efficient presentation of public accounts, leading to more efficient management of public funds.

Our objective is to examine the possible impact of the transition to IPSAS and the experience with these standards on GDP growth. For that purpose, our study has an international dimension. We focus on countries that have fully adopted IPSAS. Our results show that the adoption and experience with IPSAS are significant determinants of economic growth. Furthermore, trade openness and public investment has a positive impact on economic growth. On the other hand, the COVID19 pandemic and public expenditure have a negative and significant impact on the growth of GDP.

Our study seeks to fill a gap in the existing literature, which has focused on the benefits of IPSAS, particularly for public governance and the fight against corruption. The impact of IPSAS on the macroeconomic performance of the country, as a result of improved public governance in terms of greater accountability and transparency and better presentation of national accounts, leading to better use of public resources, is still rare. This study could be of practical interest to governments and regulators to undertake such reforms. It is relevant to the various users of the accounts including taxpayers. It is helpful for international institutions to encourage countries to reform their accounting systems through coercive isomorphism. Governments are encouraged to undertake costly and complex accounting reforms if they can contribute to better economic development.

This article is organized as follows: The next section presents the theoretical background, literature review and hypothesis development. The methodology and results are described in the third section. Finally, conclusions and implications are drawn.

2. Theoretical background, literature review and hypothesis development

2.1 Theoretical background: Accrual accounting and public sector accounts

The globalization of economic activity has led to the internationalization of accounting practices in the public sector. To achieve this goal, cooperation between professional accounting bodies is essential (Christiaens *et al.*, 2015; Judge *et al.*, 2010; Pina *et al.*, 2009). In this context, the adoption of IPSAS becomes necessary to ensure accounting harmonization in a globalized environment where all transactions must be accounted for in accordance with the same rules. The adoption of IPSAS is beneficial to the economic network, but it also has direct benefits and allows all those who are involved in an economic network to benefit from it (Amiri & Elleuch-Hamza, 2020). Compared to local standards, the direct benefits are inherent in the net economic and political value of IPSAS. They are enhanced by economic relationships with partners who have already adopted these standards (Opanyi, 2016). On the basis of economic regulation theory (Posner, 1974), the implementation of IPSAS as a new regulation could have a positive impact on macroeconomic performance.

In addition, the implementation of IPSAS in response to pressure from development finance institutions could lead to aid that positively affects a country's economic growth, as suggested by the theory of economic networks and institutional isomorphism (Opanyi 2016; DiMaggio & Powell 1983). National accounting is the system used to record all transactions that serve to determine primary aggregates, in particular GDP. The growth of GDP is a macroeconomic aggregate that measures the effectiveness of the policies of a country. It is a measure of the level of economic activity. Specifically, countries with higher GDP growth are more likely to adopt IFRS or IPSAS.

Previous empirical evidence suggests that the institutional environment is critical in influencing the adoption of new accounting and reporting practices by organizations (Othman *et al.*, 2011). Institutional theory examines the ways in which the institutional environment influences the behavior of an organization (Scott, 2013). IPSAS is seen as a direct response to institutional pressures to make public sector finances more transparent and accountable. As such, governments may adopt IPSAS

to comply with global standards and expectations for financial reporting practices (Brusca & Martínez, 2016), which is proving challenging (Buhr, 2012).

In this context, the adoption of IPSAS promotes greater connectivity and information sharing among stakeholders such as governments, investors and citizens, by providing a standardized financial reporting framework (ACCA, 2017). This increased transparency and accessibility of financial information can lead to more efficient resource allocation and investment decisions (Ademola *et al.*, 2017), resulting in better economic development. Accounting in line with international public standards allows for better measurement of various economic indicators. Accurate information on liabilities and assets is a prerequisite for sound fiscal policy (Chan, 2003). Accrual accounting can help the public sector become more efficient. When governments have a clear understanding of their financial position, they can allocate resources more effectively, reduce waste, and implement cost-saving measures. Efficient public expenditure can be a stimulus to economic activity and a driver of GDP growth (Cavanagh *et al.*, 2016).

PWC (2013) surveyed 100 countries and found that only 26 had adopted accrual accounting by 2012. According to the study, moving to accrual accounting leads to better decisions and better use of public resources, changes the culture of public institutions, and transforms public financial management, which should have a positive impact on all government activities and service delivery, as well as on the long-term sustainability of public finances. Accrual-based financial statements are of higher quality and reliability and provide more useful information for resource allocation and investment evaluation (Agburuga, 2018).

2.2 Literature review and research gaps

2.2.1 Adoption of IPSAS for better public governance

Good public governance provides the necessary institutional framework for the efficient allocation of resources. The indicators of good public governance defined by La Porta *et al.* (1998) and Kaufman and Kray (2002) are government effectiveness, regulatory quality, rule of law and control of corruption about regulatory quality. The focus of this research is on accounting standards. Firms and households can make informed decisions when institutions and markets are transparent and accountable. This makes the economy and better able to cope with adverse events and disturbances. It also reduces rent-seeking behavior (Caballero & Hammour, 2000). Previous literature has highlighted several ways in which governance can promote economic development and growth. According to the theory of economic regulation, regulation can increase social welfare, which is a primary goal of any government (Posner, 1974). It has been argued that accounting rules are necessary to overcome market failures, ensure a better allocation of resources and respond to stakeholder expectations.

Transparency in government finances provides information about the allocation and use of public resources in an accessible, understandable, and reliable manner (IFAC, 2013). From the perspective of institutional theory, which focuses on the influence of the institutional environment on organizational behavior and practices (Scott, 2001), the adoption of IPSAS can be seen as a response to institutional pressure from the international financial reporting community for greater transparency and accountability in public financial management (Brusca & Martínez, 2016; Pina *et al.*, 2009). Financial accountability is the responsibility of public actors for the efficient management of resources and the accurate reporting of their management (Brusca & Martínez, 2016). Therefore, effective mechanisms such as IPSAS are essential for the realization of this responsibility. Chan (2003) points out that improving financial reporting through standards such as IPSAS increases transparency, reduces corruption and improves the efficiency of the public sector. Indeed, IPSAS improves financial transparency by providing more accurate and timely financial information, which is essential for holding governments accountable. In some contexts, such as Nigeria and Iraq (Alshujairi, 2014; Ijeoma, 2014), there are positive effects on the quality and transparency of financial reporting.

Benito *et al.* (2007) suggest that adopting IPSAS significantly improves the quality, transparency and accountability of financial reporting in a global sample of 30 countries. Latin American countries such as Chile and Colombia have adopted IPSAS with the aim of modernizing their accounting systems and improving both the transparency and quality of their financial information (Brusca & Martínez, 2016). For these authors, accountability is the responsibility of public actors for the efficient management of resources and the accurate reporting of their management. Therefore, effective mechanisms such as IPSAS are essential for the realization of this responsibility (Chan, 2003). For other countries, the adoption of IPSAS is an appropriate solution in the fight against corruption. Studies such as Cuadrado *et al.* (2019) and Tawiah (2023) show that the adoption of IPSAS promotes the perception of less corruption in OECD countries by improving reliable information disclosure. This negative association is also observed in developing countries according to Hamed and Loukil (2021).

2.2.2 Public Governance and Economic Growth

Good governance promotes financial development through more stable banking sectors, more liquid equity, and a broader institutional base that includes collective investment vehicles such as pension funds and mutual funds. For example, there is a strong positive correlation between governance and economic growth, as shown in Kaufmann and Kraay's (2002) study of the impact of governance indicators in 175 countries on economic growth. Corruption has also been shown to have a negative impact on economic growth by Kaufman and Kraay (2002), Wei (2000), and Mauro (1995).

The size of the public sector is an important determinant of national income, along with the size of public expenditure. This means that countries with better public governance can spend public money more efficiently, which contributes to economic growth (Petreski, 2014). Adopting IPSAS can also promote good governance and reduce corruption, which are important determinants of economic performance, by fostering an environment of accountability and trust (IMF, 2017). Countries with robust public sector accounting standards are better positioned to achieve sustainable economic growth through the effective and efficient use of public resources (IPSASB, 2021).

2.3 Hypotheses development

In light of the results of previous studies, it has been argued that accounting rules are necessary to overcome market failure, ensure better resource distribution and respond to stakeholders' expectations. The main limitation of these studies remains the fact that it has addressed, on the one hand, the question of the impact of IPSAS on the quality of public governance. In fact, public sector with high credibility will encourage investment as it will reduce uncertainty, create an investment environment for both local and foreign companies and positively impact economic growth. Indeed, some authors argue that governance is essential for those interested in macroeconomic policy for two reasons. Firstly, higher economic and financial development levels are linked to better governance. Second, better governance is associated with higher levels of macroeconomic stability (Bayar, 2016; Emara & Jhonsa, 2014).

On the other hand, it has examined the impact of good public governance on economic performance. For example, Petreski (2014) found in a sample of 30 transition economies between 2005 and 2011 that good governance positively impacts economic growth. In the same vein, Emara and Jhonsa (2014), in their study on a sample of 197 countries in 2009, found a significant impact of governance, represented by the Global Governance Index, and economic growth. The same result was shown on a sample of 22 countries in the Middle East and North Africa. Also, in 2016, Bayar argued that all indicators of public governance, except the quality of regulation, had a statistically positive impact on economic growth in transition economies of the EU. These indicators explained 65 percent of the variation in economic growth. The most substantial impact on economic growth was found for controlling corruption and the rule of law indicators. The same positive impact of public governance on economic growth was shown in 11 developed contexts from 2002 to 2007 by Méndez-Picazo, *et al.* (2012).

Nevertheless, it has not established a direct link between the existence of a quality accounting environment and its impact on a country's economic development. In our opinion, this is a very interesting path that needs to be explored. Based on the

empirical evidence that IPSAS is a high-quality set of standards, we hypothesize that:

Hypothesis 1: IPSAS adoption has a positive impact on GDP growth.

As previously indicated, the influence of IPSAS on governance may prove to be intricate and multifaceted. This is due to the fact that transformation and change in interdependent governance systems typically occur in stages and take longer than a year (Allen, 2009; Likierman, 2000). The implementation of IPSAS is a complex process that requires a significant investment of resources. These standards are adopted by countries in stages, beginning with partial adoption and subsequently progressing to full adoption (Tawiah, 2021). Additionally, IPSAS standards have many options, preventing preparers from making discretionary judgments over time (Tawiah, 2023). Consistent with Houque and Monem (2016), who focus on studying IFRS, we hypothesize that the effect of IPSASs on the quality of governance and economic development could be related to the user experience (IPSASEXP), estimated as the number of years between a country adopting IPSAS and 2022. Previous IPSAS studies, except Tawiah (2023), have not considered the effect of experience. In light of these suggestions, we hypothesize that:

Hypothesis 2: IPSAS experience has a positive impact on GDP growth

3. Research methodology

3.1 Sample selection and data

The sample includes all countries that have fully adopted IPSAS, as listed on the World Bank website (World Bank, 2023). The sample consists of 31 countries. The need to include information on the World Bank website resulted in the exclusion of 13 countries. The final sample consists of 18 countries that have adopted IPSAS over a 14 year period, from 2009 to 2022: Ghana, Mauritius, Barbados, Cayman Islands, Chile, Uruguay, Peru, Kazakhstan, Lithuania, Spain, Switzerland, Dominican Republic, Iceland, New Zealand, Nigeria, Saudi Arabia, Tanzania and United Arab Emirates. The data used were obtained from the World Bank (World Bank, 2023), the International Monetary Fund (IMF, 2022) and the International Public Sector Accounting Standards Board (IPSASB, 2023).

3.2 Variables measurement

3.2.1. The Dependent Variable

The dependent variable is the gross domestic product growth rate (GDP_gr). There are three ways of measuring GDP growth: sliding growth, average growth (INSEE, 2016) and potential growth (Banque de France, 2015). The average growth method was chosen for this study (Alon & Dwyer, 2014; Stainbank, 2014; Shima & Yang, 2012).

GDP is the “*sum of the gross value added by all resident producers in a national economy, plus any taxes on goods and minus subsidies not taken into account in the value of goods. It is calculated without deductions for depreciation of manufactured goods or loss or degradation of natural resources*” (World Bank 2023). The GDP growth rate is the annual percentage rate of GDP growth at market prices based on constant local currencies.

3.2.2 Independent variables

The independent variable in this study is IPSAS adoption, which indicates the country’s adoption of international IPSAS standards. The IPSAS variable is operationalized according to IFAC (2023). As in the empirical studies, IPSAS adoption is represented by a binary variable. It takes the value of 1 from the year of transition to IPSAS and subsequent years, and '0' for years prior to transition (Sellami & Gafsi, 2019). We also test, the impact of the variable IPSAS experience, which takes the value of 1 every year after the year of adoption, as in Tawiah (2023). Indeed, the benefits of IPSAS adoption take time to materialize because government structures and systems take time to transform due to the complex nature of the reform (Allen, 2009; Likierman, 2000).

3.2.3 Control Variables

Consistent with previous research, we consider that variables such as, foreign direct investment (FDI), public investment (INV), capital expenditure (EXPEND), trade openness (OPEN) and COVID pandemic (COV 19) could affect economic growth. In fact, reform implementation, trade openness, exports and imports and physical capital economic growth have a positive and significant relationship with economic growth (Themba & Odhiambo, 2016). According to previous research, FDI is more important for investment and GDP growth than other capital flows.

Solow's (1956) neoclassical theory of economic growth, also known as exogenous growth, argues that physical capital accumulation is a key driver of short-run economic growth. The proxy for public investment (INV) is gross fixed capital formation (known as gross fixed domestic investment). It includes “*land improvements, factories, purchases of machinery and equipment, construction of roads, railways, including schools, offices, hospitals, private dwellings, and commercial and industrial buildings*”; net acquisitions of high value assets are also part of gross fixed capital formation (World Bank, 2023).

Sellami and Gafsi (2019) show that countries with very large public sector organizations are more likely to adopt IPSAS. Government expenditure (EXPEND) refers to the cash outlays made by the government to finance its operating activities and to provide goods and services. It includes “*compensation paid to employees, such as wages and salaries, as well as interest, subsidies, social benefits, rents and dividends*” (World Bank 2023). Excessive public spending can negatively affect GDP growth by leading to higher interest rates inefficient allocation of resources and

higher taxes which are detrimental to economic development (Alesina & Ardagna, 2010). In addition, the study covers the period of the COVID19 pandemic, which affected the economic activity around the world. This variable takes the value of one during 2019 and 2020 and 0 otherwise.

3.2.4 Model specification

To empirically test the relation between IPSAS adoption and economic development as specified in our first hypothesis, we use the following regression model:

$$\text{GDP_grit} = \alpha_0 + \alpha_1 \text{IPSASit} + \alpha_2 \text{FDIit} + \alpha_3 \text{EXPENDit} + \alpha_4 \text{INVit} + \alpha_5 \text{OPEN} + \alpha_6 \text{COV19it} + \varepsilon_{it} \quad (\text{Model. 1})$$

The main coefficient of interest in the model 1. is denoted α_1 , representing the impact of IPSAS adoption, regardless of the number of years of experience of the country, on GDP growth.

In order to explore the country's experience effect regarding the IPSAS implementation, we introduce the variable IPSAS experience (IPSAS-exp) in the model. The model 2 can be expressed in the following way:

$$\text{GDP_grit} = \alpha_0 + \alpha_1 \text{IPSAS-expit} + \alpha_2 \text{FDIit} + \alpha_3 \text{EXPENDit} + \alpha_4 \text{INVit} + \alpha_5 \text{OPEN} + \alpha_6 \text{COV19it} + \varepsilon_{it} \quad (\text{Model. 2})$$

With:

i: Country index ;

t: Year;

ε_{it}: Error term.

4. Empirical results

4.1 Descriptive statistics

The descriptive statistics analysis presented in Table 1 shows that the variable GDP_gr, which represents the GDP growth rate, has an analysis mean of 3.01 with a minimum of -11.16, a maximum of 14.04 and a variability of 3.69. The FDI variable, has a mean of 4.24 and a variability of 5.73, with a minimum of -5.12 and a maximum of 54.67. The IPSAS variable has a frequency of 57.93%. The variable IPSAS-exp has a mean of 3.12 years of experience and a standard deviation of 3.65. This variable has a minimum of zero for years prior to IPSAS adoption and a maximum of 13 years of experience. Our sample includes only countries that have fully adopted IPSAS.

Table 1. Descriptive Statistics

Variables	N	Mean	S-Dev	Min	Max	Freq	Normality tests	
							Shapiro-Wilk	Chi-square
GDP_gr	252	3.010	3.690	-	14.040		Z=6.454***	
				11.16				
IPSAS	252					57.930		0.118
IPSASexp	252	3.120	3.650	0	13.000			26.968**
FDI	252	4.240	5.730	-5.12	54.670			
								'=11.632***
INV	252	3.310	11.040	-	39.000		Z=	
				26.41				6.358***
EXPEND	252	24.020	9.270	3.79	41.800			Z=5.727***
OPEN	252	3.440	8.230	-	53.840			Z=8.614***
				20.050				
COV19	252					0.140		5.404***

Note: *indicates statistical significance at the 10% level.

**indicates statistical significance at the 5% level.

***indicates statistical significance at the 1% level.

In light of the normality test results (Shapiro-Wilk test), the normality is not checked for all the variables, except the IPSAS variable. Thus, the Wilcoxon test is applied for these variables. Regarding the dichotomous nominal variables IPSAS and COV19, the Chi-square test (χ^2) is used. The variable INV, which represents the rate of investment as a percentage of GDP in a country, has a mean of 3.31 with a standard variation of 11.04. The variable OPEN, which measures economic exchange with the rest of the world, has a mean of 3.44 and a variability of 8.23.

4.2 Bivariate analysis

According to the results of the Pearson correlation matrix (Table 2), we observe correlations between the GDP variable and the control variables. According to the Spearman correlation results, there is a significant correlation between GDP growth, FDI, public investment and openness, and a significant negative correlation between GDP growth, government expenditure and COVID 19 pandemic. The correlation with IPSAS and IPSAS exp is positive but insignificant. None of the correlations is greater than the threshold of 0.8, except for the variables IPSAS and IPSAS exp, which we could not include in the same model. We estimate the variance inflation factor (VIF) to check the problem of multicollinearity (column 1- Table 2). The values range between 1.14 and 2.46. We also note that according to this test, there is no multicollinearity. Most authors have used thresholds that vary between the values

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of 3 and 10. Kennedy (1998) suggests that the mean VIF should not be greater than 10 to ensure the absence of multicollinearity.

Table 2. Correlation matrix and the VIF test

Variable	VIF	FDI	INV	EXPENSE	OPEN	IPSAS	IPSAS EXP	COV19
FDI	1.140	1.000	0.052	-0.143	0.037	-0.012	-0.046	-0.065
INV	1.160	0.0825	1.000	0.010	0.253	0.064	0.014	-0.229
EXPEND	2.160	-	-	-	-	0.201	0.295	0.085
		268***	-0.013	1.000	0.055			
OPEN	1.290	0.1197	0.158**	-0.060	1.000	-0.090	-0.041	-0.049
IPSAS	2.460	346***	0.077	0.281***	-0.092	1.000	0.730	0.233
IPSASEXP	2.260	353***	0.059	0.342***	-0.073	0.889***	1.000	0.296
COV19	1.290	-	-0.206***	-	-	0.233***	0.297	1.000
		0.150**		0.137*	0.009		***	

Note: *** significant at 1% level, ** significant at 5% level, * significant at 10% level. Spearman correlation coefficients are shown below the diagonal and Pearson correlation coefficients are shown above the diagonal. GDP-gr: is the annual percentage rate of growth of GDP at market prices. INV: is gross fixed capital formation (known as gross fixed domestic investment) and includes "land improvements, factories, purchases of machinery and equipment, construction of roads, railways, including schools, offices, hospitals, private dwellings and commercial and industrial buildings. OPEN: measures economic exchanges between the country and the rest of the world. EXPEND: cash outlays made by government to finance its operating activities and to provide goods and services. COV19: is a binary variable which takes the value of 1 during 2019 and 2020 and 0 otherwise.

Based on the results of Wilcoxon test, we find that the adoption of IPSAS has no significant impact on economic growth (GDP_gr) ($z = 0.324$; $p = 0.745$). Also, the Kruskal-Wallis test (chi-square = 12.129, probability = 0.5171) shows insignificant impact of IPSAS experience on GDP growth.

4.3 Models estimation

Table 3. Robustness Checks

Heteroskedasticity test	Breuch Pagan test chibar2= 300.667 Prob = 0.000	Breuch Pagan test chibar2= 297.292 Prob = 0.000
Autocorrelation test	Pesaran CD= 2.901 Prob 0.003	Pesaran CD= 2.989 Prob 0.002
Normality test	Jarque-Bera J-B= 33.005 Prob = 0.000	Jarque-Bera J-B= 33.518 Prob = 0.000
Endogeneity test	Rain = 3.331 p-value = 0.037	Rain = 3.325 p-value = 0.037

This study examines the impact of IPSAS adoption and IPSAS experience on the economic growth of adopting countries. We use normality, homogeneity, heteroscedasticity, endogeneity and Hausman tests to check the reliability and

robustness of the adopted model. The Jarque-Bera test statistic ($J-B = 33.005$), with a p-value of 0.000 for Model 1, ($J-B = 33.518$), with a p-value of 0.000 for Model 2) indicates that the data deviate significantly from a normal distribution, indicating non-normality for the two models. The homogeneity test examines whether there are individual specific effects in the sample under study.

The results of the Breusch-Pagan test (Table 3) indicate the existence of heteroscedasticity for both models. These results are significant at the 1% level for both models. The results indicate heterogeneity and heteroskedasticity problems for our individual-specific effects regressions. We need to apply the Hausman test to select the most appropriate model, i.e. fixed or random effect. According to Table 3, the random effect model is the most appropriate for Model 1 and for Model 2. In addition, there is a significant degree of autocorrelation (Pesaran CD statistic) within the data set, suggesting a persistent relationship between successive observations. The endogeneity test resulted in a coefficient of 3.3319 for the "rain statistic" with a p-value of 0.03754, indicating that there is a statistically significant correlation with the error term. This suggests potential endogeneity problems. Therefore, the model suffers from robustness problems that need to be corrected using Generalized Least Squares (GLS).

Our study focuses on a sample of 18 countries that have fully adopted IPSAS standards from 2009 (one year before our first sample countries first adoption of IPSAS) to 2022, to examine the impact of the adoption of these standards on economic growth. We control for variables that affect economic growth (GDP-gr) such as FDI, public investment, government expenditures, trade openness and the COVID 19 pandemic.

The model 1 results in Table 4 on panel data (STATA), show that adopting IPSAS positively and significantly affects economic growth (GDP_gr), with a coefficient of 0.198980 significant at the 10% level. This result confirms our first hypothesis suggesting a positive and significant impact of IPSAS adoption on the country's macroeconomic performance. Other factors such as public investment (INV) through the rate of investment as a percentage of GDP in a country, which is gross fixed capital formation, formerly known as gross fixed domestic investment, positively and significantly (a coefficient of 0.09277 significant at the 1% level) affects economic growth. This finding is in line with the results of model 2. Like Wang *et al.* (2004) and Nowbutsing (2014), we confirm the positive and significant impact of trade openness (OPEN) on economic growth at the 1% level (with a coefficient of 0.17479) in model 1. The results of model 2 confirm these findings.

Additionally, the COVID 19 variable has negatively and significantly affected economic growth at the 1% level (with a coefficient of -2.2050), as evidenced in many previous studies (e.g., IMF, 2020).

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When we introduce the IPSAS country's experience, results become significant at the 5% level with a positive coefficient of 0.06674. In the same line with the results of model 2, public investment (INV) and trade openness (OPEN) positively and significantly affect economic growth (with coefficients of respectively 0.09211 and 0.17042 significant at the 1% level). Also, the insignificant impact of FDI and the significant negative effect of COVID 19 variable (with a coefficient of -2.3669 significant at the 1% level) on GDP growth are persistent.

Table 4. Multivariate Analysis Results

$GDP_gr_{it} = \alpha_0 + \alpha_1 IPSAS_{it} + \alpha_2 FDI_{it} + \alpha_3 INV_{it} + \alpha_4 EXPEND_{it} + \alpha_5 OPEN_{it} + \alpha_6 COV19_{it} + \varepsilon_{it}$ (Model. 1)				
$GDP_gr_{it} = \alpha_0 + \alpha_1 IPSAS_exp_{it} + \alpha_2 FDI_{it} + \alpha_3 INV_{it} + \alpha_4 EXPEND_{it} + \alpha_5 OPEN_{it} + \alpha_6 COV19_{it} + \varepsilon_{it}$ (Model. 2)				
	Model 1		Model 2	
	Coefficient	Significance	Coefficient	Significance
IPSAS	0.198*	0.059	-	-
IPSASEXP			0.066**	0.021
FDI	-0.002	0.174	-0.002	0.192
INV	0.092***	0.000	0.092***	0.000
EXPEND	-0.084***	0.009	-0.088***	0.007
OPEN	0.174***	0.000	0.170***	0.000
COV19	-2.205***	0.000	-2.366***	0.000
Constant	4.526	0.000	4.564	0.000
Adj-R2	44.58%		44.83%	
Observations	250		250	
	F test= 34.38274 P=0.000		F test= 34.72580 P=0.000	
	Hausman test Chi2= 3.684533 Prob = 0.5957		Hausman test Chi2= 9.732095 Prob>chi2 = 0.0832	

Note:*** significant at 1% level, ** significant at 5% level, * significant at 10% level. GDP-gr: is the annual percentage rate of growth of GDP at market prices. INV: is gross fixed capital formation (known as gross fixed domestic investment) and includes "land improvements, factories, purchases of machinery and equipment, construction of roads, railways, including schools, offices, hospitals, private dwellings and commercial and industrial buildings. OPEN: measures economic exchanges between the country and the rest of the world. EXPEND: cash outlays made by government to finance its operating activities and to provide goods and services. COV19: is a binary variable which takes the value of 1 during 2019 and 2020 and 0 otherwise.

5. Discussion

Our results confirm the study's first hypothesis, suggesting a positive impact of IPSAS on countries' macroeconomic development. This fits with economic growth theory, which emphasizes the efficient use of resources to promote growth (Kaufman

& Kraay, 2002). This theory stresses the importance of good governance and the efficiency of institutions as one of the main drivers of growth (Romer, 1986). It argues that improving institutional quality (through better public sector accounting standards) enhances human capital and innovation, resulting in sustained economic growth. Adopting standards such as IPSAS can enhance public governance, which is essential for economic growth. IPSAS can enhance transparency and responsibility (Cuadrado *et al.*, 2019; Alshujairi, 2014; Vandernoot & Bellanca, 2014; Benito *et al.*, 2007) and limits corruption (Tawiah, 2023; Hamed & Loukil, 2021; Cuadrado *et al.*, 2019).

Enhanced public governance leads to improved economic growth, supporting neoclassical growth theories which consider public governance as a critical determinant of long-term economic growth (Bayar, 2016). Moreover, public accounting helps to protect public finances and to limit fraud and waste (Chan 2003). This result may be in line with those that consider that public governance has a positive impact on economic growth (Petreski; 2014; Emará & Jhonsa; 2014 ; Fayissa & Nsiah, 2013; Méndez-Picazo *et al.*, 2012; Kaufman & Kraay, 2002). The negative correlation between public expenditure in the two models (significant at the 1% level) and GDP growth can be explained by the crowding out effect meaning that increased public spending leads to higher interest rates and reduced private sector investment. This situation ultimately slowed economic growth. In addition, by diverting resources away from productive sectors, inefficient allocation of resources within public spending programs can further hamper economic growth (Barro, 1989; Alesina & Ardagna, 2010).

Endogenous growth theory can explain the positive impact of adopting IPSAS on economic growth. IPSAS and GDP growth are related to the potential impact of transparent and accurate financial reporting practices on economic development, which aligns endogenous growth theory principles. When governments implement IPSAS, their financial statements become more transparent, comparable and reliable (OECD, 2019). This transparency can help to increase investor confidence, attract foreign investment, and facilitate accessing capital markets (KPMG, 2018). In addition, accurate financial reporting allows for improved fiscal management, efficient resource allocation and effective fiscal policy, thus contributing to economic stability and growth, as endogenous growth theory stresses (Romer, 1986). Other factors such as public investment (INV) through the rate of investment as a percentage of GDP in a country, which is gross fixed capital formation, formerly known as gross fixed domestic investment, positively and significantly (at the 1% level) affects economic growth in the two models. This is in line with the classical theories of growth, which argue that investment is a key driver of economic growth (Solow, 1956). There is a general belief, supported by international trade theory, that openness to international trade has a positive impact on economic development, especially for developing countries (Keho & Wang, 2017). It should be noted that a large proportion of the countries in our sample are developing ones. Our results also

indicate that the IPSAS experience positively impacts economic growth, suggesting that institutional improvements in public sector accounting can facilitate better resource allocation and financial management.

6. Conclusion

As economic exchanges become more international and companies and financial markets increasingly global, financial information based on a national accounting system may no longer meet the needs of users who are more and more making decisions on an international scale. IPSAS adoption aims to improve the visibility and transparency of government accounts so that necessary improvements can be made.

This article examines the impact of IPSAS adoption and experience on economic development through GDP growth. The sample consists of 18 countries that fully adopted IPSAS between 2009 and 2022. The results of the multivariate analysis of the panel data confirm our two hypotheses. First, there is a positive effect of adopting IPSAS on economic growth (at the 10% threshold). Second, the findings show a positive and significant effect of IPSAS experience on GDP growth at the 5% threshold. These results suggest that the coercive pressure exerted by International Financial Institutions on countries to adopt IPSAS could lead to an improvement in their economic situation. However, consistent with the findings of previous studies on the determinants of economic growth (Themba & Odhiambo, 2016; Bhaskara-Rao & Hassan, 2011), our results indicate that public investment and economic openness of the country (economic network theory) are significant determinants of economic growth. COVID 19 pandemic (COV19) and public expenditure negatively affect economic development.

The study attempts to contribute to the literature on international financial reporting that focuses on the public sector. First, it examines the impact of IPSAS implementation and IPSAS experience on the economic growth of adopting countries. Previous works focused mainly on analyzing the determinants of IPSAS adoption (Sellami & Gafsi, 2019) and the diffusion of IPSAS worldwide (Amiri & Elleuch-Hamza, 2020; Adhikari & Mellemvik, 2010). Also, they examined the impact of IPSAS adoption on public governance (Ijeoma, 2014; Alshujairi, 2014; Vandernoot & Bellanca, 2014; Benito *et al.*, 2007) and control of corruption (Tawiah, 2023; Hamed & Loukil, 2021; Cuadrado *et al.*, 2019). Our study identifies the role of variables that contribute or hamper the country's economic growth, such as public investment, openness, and public expenditure.

This research may be helpful in countries that still use cash accounting. It may provide them with insights into the potential benefits of adopting IPSAS at the macro-economic level. It may also encourage non-adopting countries to adopt

IPSAS to improve public governance, attract foreign investors and reduce corruption. By providing insights into the role of IPSAS implementation, it may also be helpful to standard setters who aim to promote IPSAS adoption worldwide. In addition, this research study paves the way for new studies. Future research could investigate the mechanisms contributing to improved economic growth after IPSAS adoption, such as public governance and corruption, to examine their moderating role on the relationship between IPSAS adoption (experience) and economic growth. Finally, the main limitation of our research is the non-inclusion of some countries adopting IPSAS standards due to the non-disclosure of information on their macroeconomic aggregates.

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