Research Journal of Finance and Accounting www.iiste.org
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.9, No.18, 2018

The Effect of Public Sector Accrual Accounting Reform on Fiscal Performance

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Abstract
This study investigates whether the expected outcome of better performance management, accountability and transparency in government following public sector accrual accounting reform would improve fiscal performance in terms of fiscal stability and fiscal sustainability. Measured as budget deficit and public debt as percentages of gross domestic product respectively, fiscal stability and sustainability were found to have improved after the implementation of accrual accounting reform by the sample of 41 central governments of developed countries. This study provides evidence of the benefits of and justification for the huge cost of implementing accrual accounting reform.
Keywords: Fiscal Stability, Fiscal Sustainability, Intergenerational Equity Theory, Matching Concept, Public Finance and Accounting

1. Introduction

The benefits associated with public sector accrual accounting reform by governments around the world has been well documented to include better accountability and transparency, better performance management, and usefulness of information for decision making by external users such as investors and loan providers (Gutherie, 1998; Van der Hoek, 2005; and Lye, Perera and Rahman, 2005). More than serving the information needs of external users, accrual accounting is germane to the management of the economy by the government and the assessment of fiscal performance. Accrual accounting reform is the departure from cash basis accounting that has characterized government accounting for decades and the embracing of business style accounting system by government and other public-sector enterprises. This has also meant that government budgeting would shift from cash basis to accrual basis. The cash basis of government budgets and accounting had meant that government revenues were accounted for only when they were received in cash and government expenditure were accounted for only when they are paid. This has provided opportunities for less transparency in budgeting resulting in unsustainable fiscal regime. According to Robinson (2009) the pre-eminent objectives of any government budgetary system is ensuring fiscal stability and fiscal sustainability. He defined the former as the promotion of macroeconomic stability through the control of the impact of government fiscal operations on aggregate demand. Fiscal sustainability was defined as the ability to maintain moderate debt level to ensure that future debt obligations can be fulfilled from expected tax revenue without recourse to incurring more debt.

The limitations inherent in cash accounting, the development of international standards based on accrual accounting principles such as the Government Finance and Statistics Manual (*GFSM*) and the International Public Sector Accounting Standards (*IPSAS*) are some of the factors that has accelerated accrual accounting reform around the world (Cavanagh, Flynn, and Moretti, 2016). The full adoption of accrual accounting would imply the adoption of the associated accrual budgeting which incorporates government debt obligations and guarantees in full, including pension liabilities. These were hitherto not exactly treated in the budget as part of expected government expenditure. Such a practice that hides debt obligations has the potential for suppressing current debt level and ballooning future budget deficits. Other fiscal policy objectives of accrual accounting reform pursued through the instrument of accrual budgeting are tax smoothing and intergenerational equity (Robinson, 2009). The anticipated tax revenues are accounted for under full accrual accounting when it is most probable to be received. This makes for more reliable budgeting and accounting for government resources and the claims against them.

Public sector accrual accounting is therefore expected to have effect on fiscal performance of government in terms of fiscal stability, fiscal sustainability, tax smoothing and intergenerational equity. This study investigates this relationship as it relates to fiscal stability and fiscal sustainability. This study is motivated by the previous study of the accounting and financial reporting practices of central government by PWC (2013) and PWC (2015) which established a baseline for evaluating the effects of accrual accounting practices on government finances and fiscal performance. The PWC study specifically identified the benefits of accrual accounting reform to include better accounting that leads to better decision and better use of public resources, change of corporate culture of government entities, the transformation of the public financial management "which is impacting positively on the entire gamut of government business and service delivery as well as long-term sustainability of government finances". This study provides empirical evidence of the effects of accrual accounting reform on fiscal performances of governments; it provides evidence of how accrual accounting reform has contributed to better accountability and transparency, better decisions on the use of public resources and better allocation of resources as measured by the fiscal performance of sampled countries. The PWC study also indicated that international and multilateral institutions mandate their members and fund recipients to adopt accrual accounting as a reporting requirement or as part of the package of reforms required for financial assistance or as part of capacity development assistance. Evidence justifying such mandates are provided in this study. This study is also a follow-up on Agburuga (2018) that established that economic performance and growth is a major determinant of accrual accounting reform.

The section 2 part of this paper addresses conceptual framework and discusses the understandings of the links of accrual accounting reform to fiscal performance indicators. The materials and methods utilized in the study is presented in section 3 while the result of data analysis and discussion is in section 4 and finally section 5 documents the conclusions from the study.

2. Conceptual Framework

There are limited number of studies linking accrual accounting to fiscal and economic performance. However, Chan (2006) studied the effect of government accounting reform on the institutional capacity and stated that one of the motivations for the adoption of accrual accounting is to enable government to make better budget decisions and improve public financial management. Since the of adoption accrual accounting reform is a costly exercise, there must therefore be strong incentive to carry it through. Chan further state that there are differential demand for transparency and accountability by different political systems with the demand by representative democracies higher than totalitarian, undemocratic governments in both developed and developing countries. He went further to assert that because of the high opportunity cost of accrual accounting reform, given the other equally competing needs, developing countries are less likely to embark on it. He canvassed external financial assistance and technical assistance for governments that lack both funds and political will and only technical assistance to governments that only lack the political will. Therefore, developing countries that have been provided external financial assistance in the form of loans, grants and aids or technical assistance to implement accrual accounting reform are likely to develop the institutional capacity to effectively manage their finances and minimize the risk of fiscal deficits and fiscal crises which would require even further external interventions. Accrual accounting reform as part of the package of reforms known as the new public management is expected to positively impact the way that governments do business, thereby avoiding further ineffectiveness, wastage and inefficiency, and fiscal unsustainability. It is the inability to manage resources entrusted to these governments that has led many multilateral development institutions to influence the adoption of accrual accounting methods by the governments of developing countries as precondition for the granting of further development assistance. Therefore, the need to improve productivity, and efficiency of government fiscal operations, and using available resources to achieve greater socio-economic goals has been the main driver of accrual accounting reforms in government. In fact, previous researchers have seen accrual accounting reform by government as one of the instrument of high performance management (Deaconu, Nistor and Filip (2011), a tool for the enthronement of fiscal discipline at the macroeconomic level through balanced budget (McKinnon, 2003, Elwood and Newberry, 2007) and as a means of reducing the size and dominance of government while encouraging the development of the private sector (Deaconu, Nistor and Filip, 2009).

This study focuses on the efficiency of fiscal operations of government via fiscal policy deriving from accrual accounting reform. The goals of fiscal policy are geared towards fiscal stability, fiscal sustainability, tax smoothing and intergenerational equity (Robinson, 2009). Intergenerational equity theory extends the benefits theory of taxation and holds that tax payers should pay for public expenditure that would generate benefits for them without subsidizing or being subsidized by future generations (Musgrave, 1988). The intergenerational equity theory makes the case for the use of debt to finance capital expenditures that will create future benefits rather than the use of debt to be repaid in the future to finance recurrent expenditure. The intergenerational theory takes off from the matching concept in accounting. The aspect of fiscal performance addressed in this study is fiscal stability and fiscal sustainability. Fiscal stability is the management of aggregate demand through the control fiscal operations involving the raising of tax revenues and control of government expenditure and invariably involves the balance of revenue with expenditure the difference of which gives rise to budget surplus or budget deficit. Fiscal sustainability is the management of public debt at levels to avoid falling into the debt trap where debts would be required to pay for previous debts (Robinson, 2009).

2.1 Accrual Accounting, Government Budgets and budget deficits.

The full adoption of accrual accounting implies the preparation of accrual budgets which sets the limits of government expenditure on the amount incurred not the amount paid. In a paper relating accrual budgeting and fiscal policy, Robinson (2009) explained the benefits of applying accrual concepts in budgeting as the improved efficiency and effectiveness in controlling the aggregate fiscal policy limits on expenditure that are germane to the attainment of macroeconomic goals. Accrual accounting ensures that all expenditures incurred are charged against the budget and that budget deficits are not understated through incurring below the line expenditures. It ensures the elimination or reduction in unfunded liabilities that has the potential to offset fiscal stability. One of the targets of fiscal policy is to ensure fiscal stability through balancing government expenditures and tax revenues. This is facilitated by accrual accounting principles. Under cash accounting and budgeting, expenditures might be incurred and remain unaccounted for as a charge on the budget simply because cash has not been paid. Under such a practice, the reported budget deficits are most likely grossly understated.

2.2 Accrual Accounting Reform and Public Debt.

Deaconu, Nistor and Filip (2011) looked at the impact of accrual accounting reform on public sector management. The effect of accrual accounting reform on the governance of public sector enterprises can be examined in three dimensions of 1) accountability and more efficient direction and control of the organization, 2) Reporting efficiency leading to better decisions by users and better allocation of resources and 3) better performance comparability and managerial and financial efficiency (Deaconu, Nistor and Filip, 2009). Accrual accounting has also enabled better financial planning and management of the assets and liabilities of public sector department and agencies. It enables better financing decision to be made in terms of planning for the acquisition of future assets or disposal of assets, planning for the settlement of liabilities, planning for the investment of funds and planning for the working capital requirements. All this help to stave off fiscal crisis in government operations as situations leading to this can easily be anticipated through proper use of accrual accounting methods.

Through the whole of government system of accounts (Day and Guthrie, 2008) embedded in the implementation of the accrual accounting reforms, the intervention of the government in the economy of a country through the raising and disbursement of public finance can better be managed. Surplus fund in one government agency can be utilized to meet the funding requirement of another government entity through government cash budgeting. Similarly, accrual accounting reform supports better management of public debt. Under accrual accounting all debts of government are reported in the financial statements and therefore the debt obligations of the government are more accurately planned and accounted for. Budget deficits are determinable in advance enabling government to make adequate arrangement for the issuing of bonds or the raising of taxes. Proper management of budget deficits supports the stability and the attainment of socio-economic goals. Public debt as a percentage of gross domestic product is used in this study as a proxy of fiscal sustainability.

2.3 Accrual Accounting Reform and Tax Revenue

It is trite that accrual accounting reform in the public sector is geared towards improvement in public budget, funded through tax revenues, debt-finance and foreign aids. Public budget in turn supports capital formation through pension and other social security contributions of government departments and agencies as well as through public investments in infrastructure and other social services. Accrual accounting provides a framework for accounting for the capital accumulation through ensuring that assets and commitments of government are fully captured. The higher stock of capital, fully accounted for through accrual accounting, lead to economic growth and this in turn supports future growth in capital accumulation by feeding back into government revenues through improved household income and tax revenues. The improved tax revenue further improves fiscal performance of government. Tax revenue as a percentage of gross domestic product is a control measure of fiscal performance in this study.

2.4 Accrual Accounting Reform and Government Expenditure

Following Wagner's law of increasing state activities and supported by historical facts, government activities tend to increase over time both in terms of amount of public expenditure, public expenditure in relation to the gross national product and public expenditure as ratio of the total economy (Bhatia, 2008). The increase in government activities according to Bhatia is driven primarily by increases in the traditional functions of government as it grapples with the security and defense challenges, and the maintenance of law and order as well as the increasing awareness of the need to provide social services in health and education and social security. Other factors include increase in population, increasing urbanization and the need to provide increased municipal services, inflation, increasing salaries and wages, increasing debt servicing costs and costs of interventions to prevent market failures etc In Nigeria and other developing countries in Africa, Asia and Latin America, the rise in public expenditure has also been attributed to rising incidence of corruption despite the spirited anti-corruption efforts.

Accrual accounting reform is usually an aspect of the wider public sector reform flowing from the new public management (*NPM*) principles that emphasizes small government and the procurement of services rather that the provision of services. The *NPM* seeks to make the private sector the driving force of the economy and reduce the incidence of government competition with private enterprises and thereby reduce public sector involvement in the productive sectors of the economy. Accrual accounting reform is one of the mechanisms to drive a more transparent and accountable public financial management system, and with the expected improvement in the efficiency in the use of government resources, improved performance shall invariably lead to reduction in public expenditure, increase in productivity and ultimately national development. However, while the total amount of public expenditure driven by the factors already enumerated may increase, the relative increase is expected to decline over time in relation to gross domestic product, as accrual accounting reform helps government to derive more value from the marginal government expenditure. The ratio of government expenditure as a percentage of gross domestic product is used as a control variable for fiscal performance.

2.5 Hypothesis

The link between accrual accounting reform and fiscal performance which is an evaluative measure of the fiscal policy of government is well established. The dimensions of fiscal policy being evaluated in this study are fiscal stability and fiscal sustainability measured by budget deficit as a percentage of gross domestic product (*BDGDP*) and public debt as a percentage of gross domestic product (*DGDP*) respectively. Consequently, the relationship between accrual accounting reform and fiscal performance is hypothesized as follows:

Ho_1: There is no significant relationship between Accrual accounting reform and budget deficit as a percentage of gross domestic product.

Ho_2: There is no significant relationship between Accrual accounting reform and public debt as a percentage of gross domestic product.

3. Materials and Methods

This study leveraged existing data generated in the *PWC* (2012 and 2015) report on "Global Survey on Accounting and Reporting by Central Governments". The first study in 2012 reported the accounting and financial reporting practices of 100 countries and the 2015 survey covered developments in the initial countries and others. Drawing from this pool of data, and data on the measures of fiscal performance obtained from sources such as the *CIA Fact Books*, *Wikipeadia*, World Bank and Organization for Economic Cooperation and Development (OECD) databases for a sample of 41 developed (*OECD*) countries, (see summary of data sources in Table 1 below), the Ordinary Least Squares Multiple Linear Regression Model was used for analysis of two-period cross sectional data, namely 2012-2014 and 2015-2016 periods. The reason for these two periods are two-fold. First, the phenomenon of public sector accrual accounting reform under study is a process that takes at least three years to complete. Accounting system reforms is usually a process in which many countries move from cash accounting to modified cash accounting and then to modified accrual accounting before finally implementing the full accrual accounting. Secondly, it takes time for the outcome of any reform to have an impact on the economy and get reported as changes in economic magnitudes. These two blocks of time therefore provide the window for capturing the effect of the reform in economic numbers. In the case of the data for budget deficits, the average for the number of years of each of the two periods under reference was used while the data for the other variables were represented by the available data for any year within the two periods due to missing or incomplete data. The *OLS* regression was carried out with the *Eviews* data analysis application version 10.

Model Specification

BDGDP	= *f(FAA, DGDP, TGDP, GEGDP)*	Model 1
BDGDP	= *f(MFA, DGDP, TGDP, GEGDP)*	Model 2
DGDP	= *f(FAA, BDGDP,TGDP, GEGDP)*	Model 3
DGDP	= *f(MFA, BDGDP,TGDP, GEGDP)*	Model 4

Mathematical Form of the Models

$BDGDP$	$= a_0+a_1FAA+a_2DGDP+a_3TGDP+a_4GEGDP + \mu$	*Equation 1*
$BDGDP$	$= a_0+a_1MFA+a_2DGDP+a_3TGDP+a_4GEGDP + \mu$	*Equation 2*
$DGDP$	$= \beta_0+ \beta_1FAA+\beta_2BDGDP+\beta_3TGDP+\beta_4GEGDP + \mu$	*Equation 3*
$DGDP$	$= \beta_0+ \beta_1 MFA +\beta_2BDGDP+\beta_3TGDP+\beta_4GEGDP + \mu$	*Equation 4*

The expected positive and negative coefficients are as specified below:

$a_{0,}\ a_{1,}\ a_{3,}\ a_{3,} < 0 > a_{2,}\ a_{4,,}$

$\beta_{0,}\ \beta_{1,}\ \beta_{3,} < 0 > \beta_{2,}\ \beta_{4,,}$ Where,

BDGDP	= Fiscal Stability proxied by Budget Deficit as a percentage of *GDP*
DGDP	= Fiscal Sustainability proxied by Public Debt as a percentage of *GDP*
FAA	= Full Accrual Accounting is 1 otherwise 0
MFA	= Modified and Full Accrual Accounting is 1 otherwise 0
TGDP	= Tax Revenue as % of *GDP*
GEGDP	= Government Expenditure a % of *GDP*

Table 1
Summary of Data Sources

Variable	Sources of Data
Full Accrual Accounting (*FAA*) and Modified Accrual Accounting, *(MFA)*	Distilled from PWC (2013, 2015)
Budget Deficit to GDP (*BDGDP*)	https://www.cia.gov/library/publications/the-world-factbook/fields/2222.html https://www.worldatlas.com/articles/the-largest-deficits-in-the-world.html
Central Government Debt to GDP (*DGDP*)	https://data.worldbank.org/indicator/GC.DOD.TOTL.GD.ZS
Tax revenue to GDP (*TGDP*)	https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS
Government Expenditure to GDP (*GEGDP*)	https://data.oecd.org/gga/general-government-spending.htm https://data.worldbank.org/indicator/NE.CON.GOVT.ZS

4. Result

4.1 Accrual Accounting Reform and Fiscal Stability

Accrual accounting reform is represented as a categorical variable of countries in which central governments have implemented either full accrual accounting or modified and full accrual accounting. Fiscal stability is proxied by the Budget Deficit as a percentage of Gross Domestic Product.

The test result above shows that the model of the relationship between budget deficit as percentage of *GDP* and full accrual accounting (*FAA*) (Model 1) is significant as the computed F-statistic of 11.690 shows the probability that there no such relationship is 0.00 (Prob, *F*-Statistic). It also shows that there is 35 percentage point reduction in budget deficit % of *GDP* with additional increase in countries implementing full accrual accounting although this is not significant. The control variables of *DGDP, GEGDP* were both negative while *TGDP* was positive indicating that they performed as expected function of moderating the interaction between the dependent and the independent variables. However, their signs were not as expected as it tends to suggest that there is a negative relationship between budget deficit and public debt and government expenditure, and a positive relationship between budget deficit and tax revenue.

This means that increases in public debt and government expenditure leads to a reduction in budget deficit. It also suggests that increases in tax revenue increases the budget deficit. This result may be due to the structure of economy of countries in the sample which comprise developing countries. This sign of these variables may be otherwise for a sample comprising mostly developing countries. This may be tested in future studies.

The result in Table 2 below also shows that model 2 is highly significant in explaining the relationship between budget deficit as a percentage of *GDP* and accrual accounting reform with the probability of no relationship being 0.00. Consequently, the null hypothesis that there is no relationship between them is therefore rejected. Furthermore, the model explained at least 40% of the variation in the dependent variable which is reasonable as there are lots of other factors that could affect the level budget deficit. The result also shows that accrual accounting reform by central governments contributes to the reduction of budget deficit as a percentage of *GDP* as shown by the negative coefficient of -1.622657 for *MFA*. The signs of the coefficients of *DGDP* and *GEGDP* are both negative as expected

Table 2:
Result of Ordinary Least Square Regression Estimate of the Relationship between Accrual Accounting Reform and Fiscal Performance

Accrual Accounting and Fiscal Stability			Accrual Accounting and Fiscal Sustainability	
Dependent/ Independent Variable	*Model 1* *BDGDP*	*Model 2* *BDGDP*	*Model 3* *DGDP*	*Model 4* *DGDP*
C	0.084 (0.0979)	0.619 (0.709)	39.1505 (3.623)	40.807 (3.622)*
FAA	-0.351 (-0.609)		-12.1414 (-1.567)	
MFA		-1.161 (-1.890)		-13.032 (-1.512)
DGDP	-0.037 (-5.247)*	-0.037 (-5.445)*		
BDGDP			-6.990 (-5.247)*	-7.336 (-5.445)*
TGDP	0.143 (3.510)*	0.137 (3.412)*	0.8564 (1.444)	0.838 (1.410)
GEGDP	-0.115 (-3.450)*	-0.106 (-3.207)*	-0.2529 (-0.518)	-0.219 (-0.447)
R-squared	0.377	0.402	0.312	0.311
Adjusted R-squared	0.345	0.371	0.276	0.275
F-statistic	11.690	12.972	8.756	8.697
Prob(F-statistic)	0.000	0.000	0.000	0.000

Figures in parenthesis are the t-statistics. * indicates that the t-statistics is significant at 1% level of significance

Based on the result in Table 2 above, there is evidence that accounting reform leads to a reduction in budget deficit as a percentage of *GDP* thereby confirming that it leads to fiscal stability. Countries that implemented full and or modified accrual accounting have shown improvement in fiscal performance. This evidence justifies the huge cost of implementing accrual accounting reform by the countries in the sample and empirically provides justification of the actions of international and multilateral development institutions support for the adoption of accrual accounting by developing countries. This result also supports the finding in Agburuga (2018) that the level of economic development is a determinant of countries that implement accrual accounting reform. The caveat to this result is the sample comprises developed countries most of which are members of the Organization for Economic Co-operation and Development (*OECD*).

4.2 Accrual Accounting Reform and Fiscal Sustainability

In Table 2 also are the result of the test of the relationship between accrual accounting reform and fiscal sustainability as modelled by public debt as percentage of gross domestic product.

The result above confirms the overall significance of model 3 given that the *F*-Statistic of 8.756 returned a probability value of 0.000. Based on this result the null hypothesis that there is no significant relationship between accrual accounting reform and public debts as a percentage of gross domestic product is rejected. It also shows that there is a negative relationship between full accrual accounting reform and public debt as a percentage of *GDP*. Specifically, it shows that an increase in the number of countries implementing accrual accounting reform will reduce public debt as percentage of *GDP* thus confirming that the former leads to improvement in fiscal performance. There is also a curious result of a positive relationship between public debt and tax revenue on the one hand, and a negative relationship between public debt and budget deficit, and government expenditure on the hand. As stated above, this unexpected result may be due to the composition of the sample comprising mostly developed countries.

Furthermore, the result in Table 2 above shows that the model 4 is a good representation of the relationship between modified and full accrual accounting and public debt as a percentage of *GDP* with *F*-statistic of 8.697 returning a probability value of 0.000. Consequently, the null hypothesis that there is no significant relationship between accrual accounting reform and public debt as a percentage of *GDP* is rejected. There is also a negative relationship between accrual accounting reform and public debt % of *GDP* indicating that an increase in the former leads to a reduction in the latter. The result also shows that the negative coefficient of the control variables of budget deficit and government expenditure is contrary to expectation by returning. The same also applies to tax revenue % of *GDP* that returned a positive coefficient with instead the expected negative sign. As stated earlier, the composition of the sample of the study which comprised mostly developed countries may explain the unexpected result.

The result in Table 2 above also provides evidence that accrual accounting reform lead to fiscal sustainability as proxied by public debt as a percentage of gross domestic product thereby helping countries to stave of debt overhang or debt trap. Accrual accounting reform therefore complements fiscal operations and support the key objectives of fiscal policy.

5. Conclusion

This study models the relationship between accrual accounting reform of central governments of developed countries and fiscal performance measured in terms of fiscal stability and fiscal sustainability proxied respectively by budget deficit as % of *GDP* and public debt as % of *GDP* and found to be significant. It further reveals that countries that implemented full and or modified accrual accounting have shown improvement in fiscal performance. This evidence justifies the huge cost of implementing accrual accounting reform by the countries in the sample and empirically provides justification of the actions of international and multilateral development institutions' support for the adoption of accrual accounting by developing countries. It provides empirical evidence of the economic benefits of accrual accounting reform as its shown to support the attainment of fiscal policy goals and objectives. This result also supports the finding in Agburuga (2018) that the level of economic development is a determinant of countries that implement accrual accounting reform. The caveat to this result is that the study sample comprises only developed countries most of which are members of the Organization for Economic Co-operation and Development (*OECD*). There is a need to further test the validity of these findings in future studies that might comprise developing countries, and separately developing countries combined with developed countries. It is also interesting to note that relationship between fiscal performance measures of budget deficit and public debt percentages of *GDP* which were found to be positively and negatively related with tax revenue and government expenditure percentages of *GDP* respectively has implications for intergenerational equity. This relationship suggests that tax revenue rises with budget deficit and public debt while government expenditure falls with marginal increase in budget deficit and public debt. This however is not the focus of the current study hence future studies along these lines are also recommended.

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