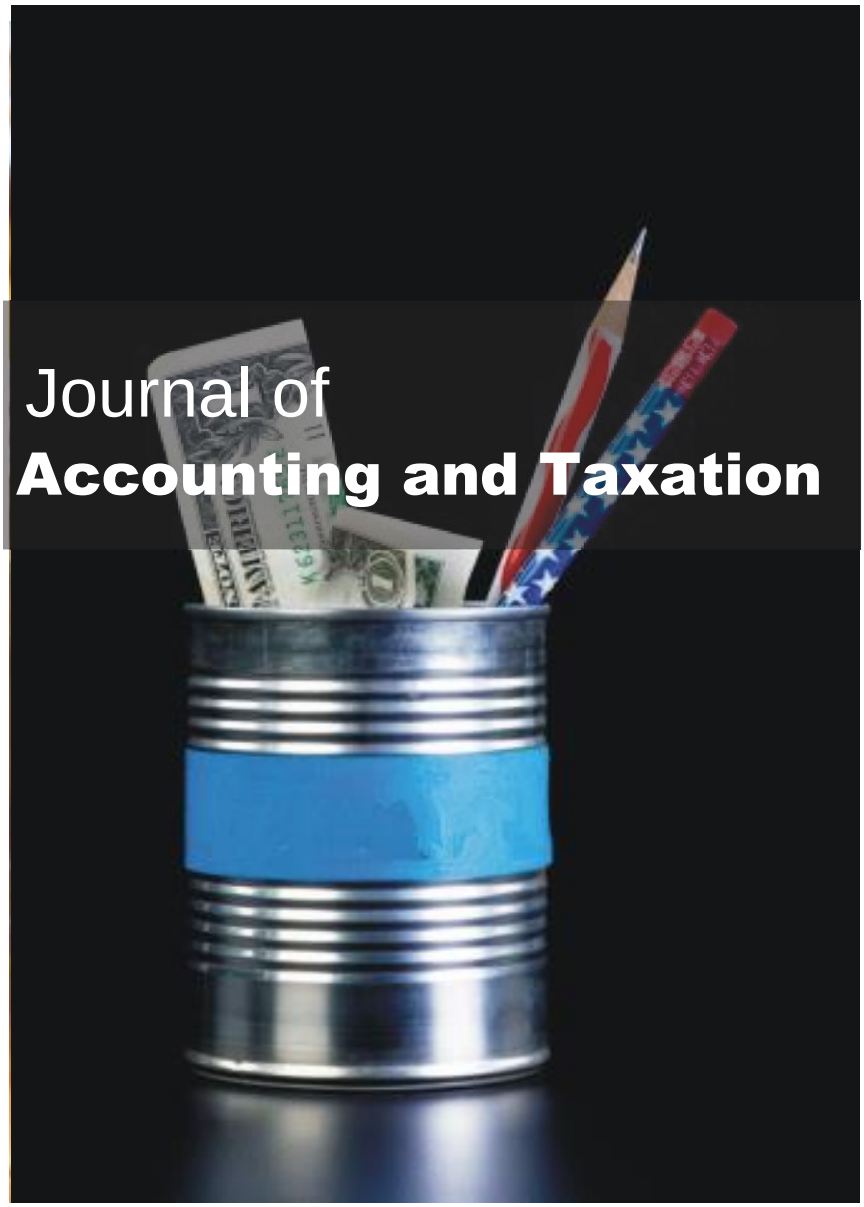
OPEN ACCESS



Journal of Accounting and Taxation

April-June 2022
ISSN: 2141-6664
DOI: 10.5897/JAT
www.academicjournals.org

ACADEMIC JOURNALS
expand your knowledge

About JAT

The Journal of Accounting and Taxation (JAT) is a peer reviewed open access journal. The journal published monthly and covers all areas of Accounting and Taxation.

Open Access Policy

Open Access is a publication model that enables the dissemination of research articles to the global community without restriction through the internet. All articles published under open access can be accessed by anyone with internet connection.

The Journal of Accounting and Taxation is an Open Access journal. Abstracts and full texts of all articles published in this journal are freely accessible to everyone immediately after publication without any form of restriction.

Article License

All articles published by Journal of Accounting and Taxation are licensed under the Creative Commons Attribution 4.0 International License. This permits anyone to copy, redistribute, remix, transmit and adapt the work provided the original work and source is appropriately cited. Citation should include the article DOI. The article license is displayed on the abstract page the following statement:

This article is published under the terms of the Creative Commons Attribution License 4.0 Please refer to https://creativecommons.org/licenses/by/4.0/legalcode for details about Creative Commons Attribution License 4.0

Article Copyright

When an article is published by in the Journal of Accounting and Taxation, the author(s) of the article retain the copyright of article. Author(s) may republish the article as part of a book or other materials. When reusing a published article, author(s) should;

Cite the original source of the publication when reusing the article. i.e. cite that the article was originally published in the Journal of Accounting and Taxation. Include the article DOI

Accept that the article remains published by the Journal of Accounting and Taxation (except in occasion of a retraction of the article)

The article is licensed under the Creative Commons Attribution 4.0 International License.

Self-Archiving Policy

The Journal of Accounting and Taxation is a RoMEO green journal. This permits authors to archive any version of their article they find most suitable, including the published version on their institutional repository and any other suitable website.
Please see http://www.sherpa.ac.uk/romeo/search.php?issn=1684-5315

Digital Archiving Policy

The Journal of Accounting and Taxation is committed to the long-term preservation of its content. All articles published by the journal are preserved by Portico. In addition, the journal encourages authors to archive the published version of their articles on their institutional repositories as well as other appropriate websites.
https://www.portico.org/publishers/ajournals/

Metadata Harvesting

The Journal of Accounting and Taxation encourages metadata harvesting of all its content. The journal fully supports and implements the OAI version 2.0, which comes in a standard XML format. See Harvesting Parameter

Memberships and Standards

Academic Journals strongly supports the Open Access initiative. Abstracts and full texts of all articles published by Academic Journals are freely accessible to everyone immediately after publication.

Crossref is an association of scholarly publishers that developed Digital Object Identification (DOI) system for the unique identification published materials. Academic Journals is a member of Crossref and uses the DOI system. All articles published by Academic Journals are issued DOI.

Similarity Check powered by iThenticate is an initiative started by CrossRef to help its members actively engage in efforts to prevent scholarly and professional plagiarism. Academic Journals is a member of Similarity Check.

CrossRef Cited-by Linking (formerly Forward Linking) is a service that allows you to discover how your publications are being cited and to incorporate that information into your online publication platform. Academic Journals is a member of CrossRef Cited-by.

Academic Journals is a member of the International Digital Publishing Forum (IDPF). The IDPF is the global trade and standards organization dedicated to the development and promotion of electronic publishing and content consumption.

COUNTER (Counting Online Usage of Networked Electronic Resources) is an international initiative serving librarians, publishers and intermediaries by setting standards that facilitate the recording and reporting of online usage statistics in a consistent, credible and compatible way. Academic Journals is a member of COUNTER

Portico is a digital preservation service provided by ITHAKA, a not-for-profit organization with a mission to help the academic community use digital technologies to preserve the scholarly record and to advance research and teaching in sustainable ways.

Academic Journals is committed to the long-term preservation of its content and uses Portico

Academic Journals provides an OAI-PMH(Open Archives Initiatives Protocol for Metadata Harvesting) interface for metadata harvesting.

Contact

Editorial Office: jat@academicjournals.org

Help Desk: helpdesk@academicjournals.org

Website: http://www.academicjournals.org/journal/JAT

Submit manuscript online http://ms.academicjournals.org

Academic Journals

73023 Victoria Island, Lagos, Nigeria

ICEA Building, 17th Floor, Kenyatta Avenue, Nairobi, Kenya

Editorial Board Members

Table of Content

Vol. 14(2), pp. 112-117, April-June 2022
DOI: 10.5897/JAT2021.0459
Article Number: D57E0AB68836
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

Impact of transfer pricing on revenue generation and debt profile in Nigeria

Ovie Ogidiaka*, Eniola Samuel Agbi and Lateef Olumide Mustapha

Department of Accounting, Faculty of Management Sciences, Nigerian Defence Academy, Kaduna, Nigeria.

Received 11 February, 2021; Accepted 23 June, 2021

Nigeria, a host to almost all the MNCs in the world, has continued to experience a significant loss in revenue through profit shifting techniques, which have increased public debt from N8.32 trillion in September 2013 to N36.3 trillion as at May 2021. The study aimed at examining the impact of transfer pricing on revenue generation and debt profile in Nigeria. Other objectives of this paper are to review the adequacy of the transfer pricing regulations regarding revenue generation, as well as the debt profile. It uses a qualitative research methodology relying on document review for analysis and interpretation to give more insight into transfer pricing regulation in Nigeria. Findings showed that the revised transfer pricing regulations pose some challenges that should be looked at, and also that debt servicing has denied Nigeria infrastructural development. The study recommended that the Federal Inland Revenue Service should issue a statement for clarity of purpose to avoid conflict that may arise from implementing transfer pricing regulations 2018, and also, for debt/revenue ratio to be analyse before loans are taken.

Key words: Transfer pricing, debt profile, debt servicing, multinational companies, Nigeria.

INTRODUCTION

Nigeria is a country blessed with both human and natural resources. It has a population of over 200 million people, ranked the ninth-largest country in the world in terms of natural gas reserves, and eleventh in crude oil production. The nation represents over 70% of the market shares in the West African countries, and one of the most sort after destination for investors (Odutola, 2019). In spite of these enormous resources, Nigeria is ranked among one of the poorest country in the world. The decline in the price of crude oil in the world's market has added more pressure on the government to seek alternative means of revenue. Due to this, the government reviewed its tax laws, among which are the Income Tax (Transfer Pricing). Regulations 2012, which was replaced by the Income Tax (Transfer Pricing) Regulations 2018. The aim among other is to increase the revenue base of the government by blocking loopholes and bringing more taxpayers into the tax net (Income Tax (Transfer Pricing) Regulations, 2018).

Transfer Pricing (TP) by all standards is a coherent business practice where inter-related companies transact under the arm's length principle (ALP). On the contrary, it is suspicious. Through TP abuse, Multinational Companies (MNCs) move their profits offshore, leaving behind a dwindling tax base in their host countries by exploiting mismatch between tax jurisdictions

*Corresponding author. E-mail: ovie.ogidiaka@yahoo.com. Tel. +2347031664347.

(Vijayakumar, 2016). For example, selling goods or services to subsidiaries in low-tax areas at a reduced price resulted in low revenues for the high-tax area companies and high revenues and profits in the low tax jurisdiction. Wong et al. (2011) posit that the tax authority of the subsidiary will not complain about this abuse because of the tax revenue accruing to them whereas the parent company will consider it unacceptable.

Nigeria, a host to some of the MNCs in the world, has continued to experience a significant loss in revenue through profit shifting techniques which have increased public debt. Debt profile is N36.3 trillion and it will continue to rise if nothing urgent is done to address these revenue losses (Babatunde, 2021). MTN in 2013 set aside N11.398 billion and paid to MTN Dubai. Similarly, MTN confirmed it made unauthorized payments of N37.6 billion to MTN Dubai between 2010 and 2013 (Maya, 2015). These transfers out of Nigeria through a sophisticated tax planning strategy have left the government with no other option rather than seeking loans from bilateral, multilateral creditors as well as domestic loans.

In 2015, the federal government of Nigeria paid the total sum of N1.06 trillion on debt servicing. And in 2016 and 2017 respectively Nigeria paid up to 96 and 98% of the debt service projection. Similarly, in 2018, the amount paid on debt servicing was 2.084 trillion, and by the end of the 3rd quarter of 2019 the government had paid the sum of N1.92 trillion which is 11.98% higher than the budgeted debt servicing amount. In 2020, the government paid N 3.26 trillion on debt servicing which is 24.85% higher than the target of N2.45 trillion, which constitutes 82.92% of revenue (Budget, 2020).

Studies have been carried out on TP and related concepts in Nigeria. For instance, Osho et al. (2020) studied the impact of taxation on TP in Nigeria economy. Olaoye and Aguguom (2017) examined tax base erosion and profit shifting through TP evidenced from Nigeria. Adum (2015) studied the impact of TP on financial reporting: a Nigerian study. Also, Obasi (2015) examined the impact of TP on economic growth in Nigeria. OlatunjiIsau (2014) studied TP: the Nigerian perspective. Similarly, Akhidime (2011) examined the international TP regulation: Nigerian experience. Aruomoaghe and Atu (2010) studied the multinational TP: issues and effects on the Nigerian economy.

However, the studies reviewed were not comprehensive in the examination of the impact of TP is a thorough literature review of transfer pricing which has been organized to cover the evolution of transfer pricing, the arm's length principle in transfer pricing, transfer pricing methods, transfer pricing in Nigeria, transfer pricing and business restructuring, and issues and challenges associated with transfer pricing.

The paper contributes to filling the gap that exists in literature by being the first to link TP to debt profile in Nigeria. It uses a qualitative research methodology relying on document review for analysis and interpretation to give insight into TP laws in Nigeria. The rest of the paper is organized to cover the concept of TP, Nigeria transfer pricing regulations (TPRs) and revenue generation, the major difference between the income tax TPRs 2012 and the income tax TPRs 2018, challenges of the income tax TPRs 2018, methodology, analysis of Nigeria's debt profile, conclusion, and recommendations.

Concept of transfer pricing

TP is the price at which entities within a group trade. MNCs are birthed when an entity moves beyond its border and acquire another company to create a competitive edge. Market advantage is attained by reducing cost of production, efficiency in management and operations (Barker and Brickman, 2017). These functional business transactions are regarded as controlled transactions as distinct from uncontrolled transactions between companies that are not related and can be assumed to operate independently in reaching terms of transactions.

TP is not restricted to taxation but when used in the perspective of international tax, it signifies the artificial manoeuvring of internal prices within a multinational group to create a tax advantage (Miller and Oats, 2012). On the other hand, Sheppard (2012) affirms that TP is not illegal, what is abusive is transfer mispricing.

TP is important to all the parties involved (the taxpayers and tax authorities) because its affect the income and expenses as well as the taxable profits in the different tax areas in which the entity operates. It is often used to boost the overall profit of the head office which is at a disadvantage to the associate companies which operate in other countries with different tax jurisdictions. For example, a head office located in Ireland with a tax rate of 12.5% and it subsidiary in Nigeria with a tax rate of 30%. When the Nigeria subsidiary sells goods to the Ireland company, the subsidiary taxable profit is reduced and the tax paid is completely eroded. This leads to a loss of revenue for the country. Whereas, the sales will increase the taxable profit of the head office, which will be taxed at 12.5%, which is low as compared to 30%.

Nigeria transfer pricing regulations and revenue generation

The Nigeria Transfer Pricing Regulations (TPRs) came into being on September 21, 2012. However, the ALP has been in existence in the companies' income tax Act (CITA) as far back as in the 1990s. Onyeukwu (2007) asserts that CITA 1990 empowers the Federal Inland Revenue Service (FIRS) (previously called "the Revenue") to make adjustments to transactions where it deems that prices do not reflect the market price.

Table 1. Comparisons between the income tax (transfer pricing) regulations 2012 and the income tax (transfer pricing) regulations 2018.

TRANSFER PRICING REGULATIONS 2012	TRANSFER PRICING REGULATIONS 2018
The TPRs apply to "connected taxable persons" or CTPs. CTPs are persons, individuals, entities, companies partnerships, joint ventures, permanent establishments, trusts that one party directly or indirectly management, control the capital of the other, or where both parties have common control, management, or shareholders.	The TPRs apply to "Connected Person". One person can be connected to another when they control or influence returns via power over the entity
Customs valuation is the arm's length price accepted for goods and services.	Custom valuation may not be the arm's length price accepted as FIRS can adjust prices to reflect the ALP.
There is not specific penalty for defaulters but relied on Companies Income Tax Act (CITA), Petroleum Profits Tax Act (PPTA) and Personal Income Tax Act (PITA).	It introduced significant penalties for non-compliance with TPRs and also expanded the scope of compliance to include Capital Gains Tax Act (CGTA) and Value Added Tax Act (VATA).
The composition of the Decision Review Panel (DRP), the panel responsible for resolving TP disputes had 3 members. The right to refer an assessment from the FIRS to the DRP was that of the taxpayer.	DRP membership was increased to 5. The right to refer a case to the DRP rest on the Head of the FIRS' TP Division.
The TPRs did not provide materiality thresholds for safe harbour.	It sets a threshold where taxpayers may be exempted from verifying the ALP.
The TPRs provide for CTPs to enter into Advance Pricing Agreements (APAs). APA is an agreement entered between FIRS and the taxpayer if there is an applicable treaty providing for Mutual Agreement Procedures (MAP) specifying the terms of transactions between CTPs for a particular period. The minimum applicable value that must be met is N250 million (approximately US$1.6 million).	The N250 million cumulative transaction value that taxpayers must meet to negotiate an APA with FIRS has been removed.

Nigeria developed its TPRs based on the Organisation for Economic Co-operation and Development (OECD) TP, and the United Nations TP Manual. It became effective from September 2012, and it was known as The Income Tax (Transfer Pricing) Regulations No. 1, 2012 (Taiwo et al. 2013).

In 2017, the OECD Guidelines and the UN Manual were revised to tackle Base Erosion and Profit Shifting (BEPS). In the same vein, the FIRS released the Income Tax (Transfer Pricing) Regulations 2018. The Regulations took effect from 12 March 2018, and revoke the Income Tax (Transfer Pricing) Regulations 2012. Comparisons between the income tax (transfer pricing) regulations 2012 and the income tax (transfer pricing) regulations 2018 is stated in Table 1.

Other key features in the income tax (transfer pricing) regulations 2018

An intangible asset right when transfer, it will be restricted to 5% of earnings before interest, tax, depreciation, and amortization (EBITDA). Service fees charged within a corporate group would now be subjected to a benefit test and a shareholder activity test. Under the benefit test, service fees would only be deemed consistent with the ALP if and only if they are charged: for service rendered; the service has economic or commercial value to the recipient; if it were an uncontrolled comparable transaction between independent parties, the recipient is willing to pay the same amount for the service rendered. On the other hand, the shareholder test is aimed at determining if a service charge is in respect of an activity that has been performed by a company solely in its capacity as a shareholder in a related group.

Entities within groups that are capitalized with high amounts of equity (capital-rich, low-function companies) but cannot necessarily control the risk associated with their funding activities. The Regulations state that those companies will be entitled to a risk-free return for their activities. In the event of a merger, a connected person is mandated to update the TP declaration form that will be submitted to FIRS. Also, when directors retire or are appointed, notification should be made to the service (PWC, 2018).

Challenges of the income tax (transfer pricing) regulations 2018

It posed the risk of economic double taxation. This is because Nigeria does not have a wide double taxation treaty agreement with other developed and developing countries, which make access to MAP difficult. There is no clarification on the anarchy and the potential double taxation that will arise if FIRS rejects a valuation

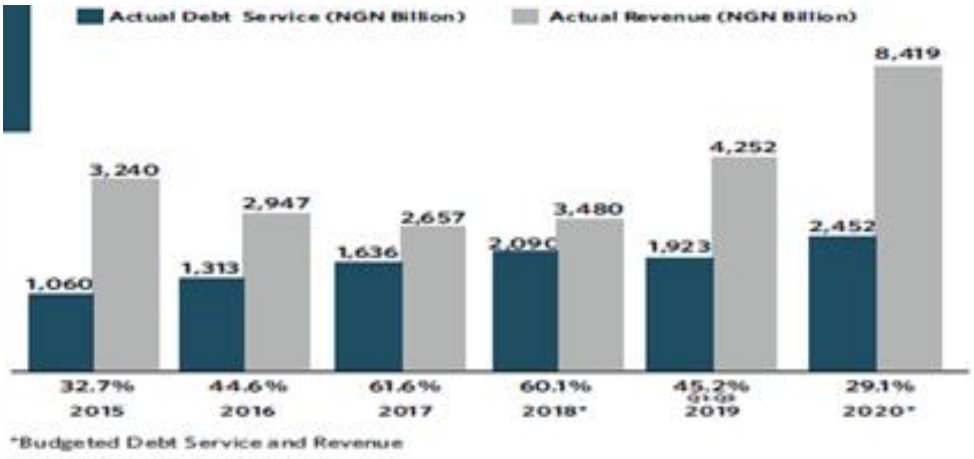


Figure 1. Debt service to revenue.
Source: Budget (2020).

accepted by the Nigerian Customs Service and on which import duties are paid to the port. The right granted to the FIRS to adjust the valuation reported and accepted by the Nigerian Customs Service may lead to the bickering of supremacy between the two government revenue-generating agencies. The right given to the Head of the FIRS TP Division to refer a case to the DRP may not go down well with some taxpayers who may be denied access to a fair hearing by the Head of the FIRS TP Division and may decide to seek an injunction from a competent court of jurisdiction (PWC, 2018).

METHODOLOGY

The study uses a qualitative research methodology relying on document review for analysis and interpretation to give insight into TP laws in Nigeria. This approach is best fit because data on TP are unavailable in Nigeria.

ANALYSIS OF NIGERIA'S DEBT PROFILE

Nigeria's total public debt profile over the space of seven years has continued to rise geometrically, from N8.32 trillion in September 2013 to N33 trillion as of March 2020 and if nothing urgent is done to curtail it, Nigeria may be in a serious debt crisis in the future. Urama et al. (2018) assert that the World Bank and the International Monetary Fund (IMF) warned the country of the economic consequences of such huge debt. Even the Debt Management Office (DMO) warned that Nigeria's high debt service to revenue ratio could trigger a debt crisis.

Debt Financing has far-reaching implications. With the advent of the novel coronavirus disease 2019 (COVID-19), economic activities around the world have been crippled and it poses a serious threat for debt servicing. This is as the Director-General, DMO, Mrs Patience Oniha, at a one-day public lecture organized by the National Institute for Legislative and Democratic Studies (NILDS), on Public Debt in Nigeria: Trend, Sustainability and Management expressed fears that the economic effects of the coronavirus pandemic might deprive Nigeria of servicing its N2.45 trillion debts timely. She further expressed, "Actual Debt Service to Revenue Ratio has been high at over 50% since 2015, although it dropped to 51% in 2018 from 57% in 2017 (Figure 1). The relatively high Debt Service to Revenue Ratio is the result of lower revenues and higher debt service figures". Federal government debt servicing expense was as high as 45.2% of its revenue, as of September 2019 (Umoru, 2020).

The consequence of these borrowings as a result of shortfalls in revenue over the years makes it almost impossible for the government to provide for basic amenities without further borrowings. By March 2020, public debt rose from N26 trillion as at September 2019 to N33 trillion. This has impacted greatly on the infrastructural deficit over the years as allocation for capital projects has continued to suffer setbacks. According to Budget (2020) in 2017, 2018 and 2019 respectively, the government allocated about 19.22, 31.36 and 23.43% of its total budget to capital spending because even when there is a shortfall in revenue, debts must be serviced and paid back at the expense of capital projects. Figure 2 shows the debt service trends from 2015-2020.

Conclusion

Nigeria is keeping pace with the rest of the world in adopting global best practices relating taxation. With the implementation of the TPRs 2018, in conformity to the OECD Guidelines and the UN Manual 2017, the country

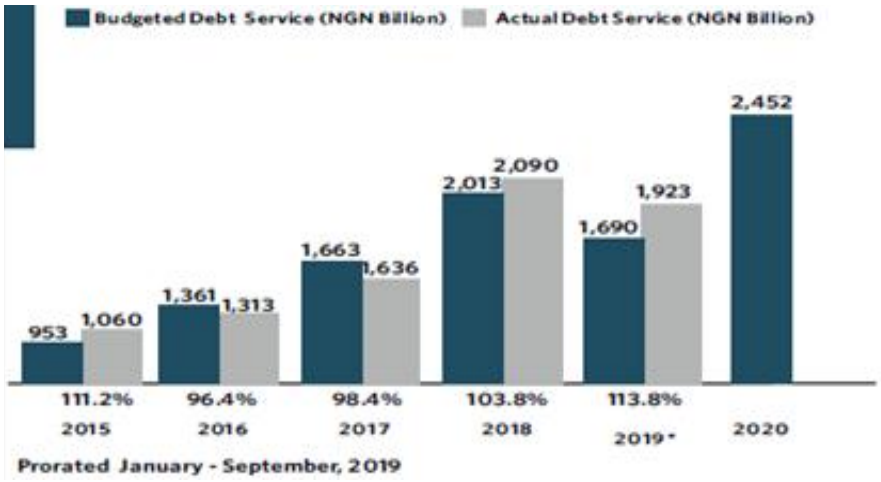


Figure 2. Debt service trends from 2015-2020.
Source: Budget, (2020).

is on the path of tackling TP issues used by MNCs to evade tax payment, which resulted in low revenue; although the new TPRs have some challenges, which may result in conflict. However, it brings more taxpayers known as connected persons into the tax net which can expand the tax base and revenue in the future.

Notwithstanding, Nigeria has continued to furnishing an increased budgets with the aim for deficit financing. This has impacted negatively on Nigerians as a result of dwindling revenue, because debts must be serviced and paid back at the expense of capital projects. With the review of TPRs, and loopholes reduced, it is believed that MNCs will pay more taxes to the government, and this will help reduce the Debt/Revenue ratio and translate into economic growth and development.

RECOMMENDATIONS

The following recommendations were drawn from the conclusion of the study: public enlightenment and clarification is necessary on the part of FIRS to simplify the complexity in the TPRs 2018 to avoid conflict with other parastatals of government; the debt/revenue ratio should be critical analysed by the DMO, to avoid excessive interest payment on loan borrowed.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interest.

REFERENCES

Adum O (2015). The impact of transfer pricing on financial reporting: A Nigerian study. Research Journal of Finance and Accounting 6(16):208-218.

Akhidime E (2011). International transfer pricing regulation: Nigerian experience. Journal of Research in National Development *9(1):350-357*

Aruomoaghe A, Atu O (2010). Multinational transfer pricing: Issues and effects on the Nigerian economy. The Nigerian Academic Forum 19(1):1-5.

Babatunde O (Leadership May 19, 2021*).* Nigeria's debt profile to hit N36.3trn as President Buhari seeks fresh N2.3trn loan. https://allafrica.com/stories/202105190081.html

Barker J, Brickman S (2017). Transfer pricing as a vehicle in corporate tax avoidance. The Journal of Applied Business Research 33(1):9-16.

Budget (2020). Budget analysis and opportunities. https://yourbudgit.com/wp-content/uploads/2020/03/2020-Budget-Analysis.pdf

Maya E (2015). Investigation: how mtn ships billions abroad, paying less tax in Nigeria. https://www.premiumtimesng.com/investigationspecial-reports/192159-investigation-how-mtn-ships-billions-abroad-paying-less-tax-in-nigeria.html

Income Tax (Transfer Pricing) Regulations (2018). Federal republic of Nigeria official gazette, 105(38):113-140. Available at: https://www.firs.gov.ng/wp-content/uploads/2021/01/Official-Gazette-of-Income-Tax-CbC-Regulations-2018.pdf

Income Tax (Transfer Pricing) Regulations, (2012). Federal republic of Nigeria official gazette pp. 815-839. Available at: https://pwcnigeria.typepad.com/files/firs-draft-tp-regulation_april-2012.pdf

Miller A, Oats L (2012). Principles of International Taxation (3rd ed.). Bloomsbury Publishing.

Obasi N (2015). The Impact of Transfer Pricing on Economic Growth in Nigeria. International Journal of Academic Research in Business and Social Sciences 5(12):127-138.

Odutola A (2019). How the Chinese are taking over Nigeria's economy. https://nairametrics.com/2019/11/28/how-the-chinese-are-taking-over-nigerias-economy/

Olaoye A, Aguguom A (2017). A tax base erosion and profit shifting through transfer pricing: Evidence from Nigeria. Journal of Business Administration and Management Sciences Research 6(1):1-12.

Onyeukwu H (2007). Transfer pricing in the Nigerian context. selected works. http://works.bepress.com/humphrey_onyeukwu/s

Osho A, Efuntade A, Jemiseye-Dav R (2020). The impact of taxation on transfer pricing in Nigeria economy. International Research Journal of Finance and Economic pp. 1450-2887

PWC (2018). Nigeria publishes new transfer pricing regulations: key changes you should know about (part 1). https://www.pwc.com/ng/en/assets/pdf/new-tp-regulation-prt1.pdf

Sheppard L (2012). Transfer pricing is the leading edge of what is wrong with international tax. http://www.taxjustice.net/topics/corporate- tax/transfer-pricing/

Taiwo O, Anthony C, Elizabeth S, Robert S (2013). The impact of Nigeria's new transfer pricing rules on multinational enterprises. http://lexis.com/research/xlink?go=tax

Umoru H (2020). *N*igeria's total debt now N 33trn. https://www.vanguardngr.com/2020/03/nigerias-total-debt-now-n33trn-senate-2/

Urama N, Ekeocha Q, Iloh C (2018). Nigeria's debt burden: implications for human development. African Heritage Institution.

Vijayakumar S (2016). What's base erosion and profit sharing? https://www.thehindu.com/news/cities/mumbai/whats-base-erosion-and-profit-shifting/article8404293.ece

Wong H, Nassiripour S, Mir R, Healy W (2011). Transfer price setting in multinational corporations. International Journal of Business and Social Science 2(9):10-14.

Vol. 14(2), pp. 118-128, April-June 2022
DOI: 10.5897/JAT2022.0522
Article Number: 125C54B68866
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

Tax collection gaps and overdue tax debts: Greece, 2000-2019

Nicholas Karavitis*, Kosmas Paipetis and Maria Priniotaki

Department of Public Administration, School of Economy and Public Administration,
Panteion University of Social and Political Sciences, Athens, Greece.

Received 17 January, 2022; Accepted 2 March, 2022

This paper deals with the process of accumulating overdue tax debts in Greece and brings out its main features. It focuses on the consistently high collection gap ratios that have led to the accumulation of tax arrears and, although the role of tax administration and debt stock management are acknowledged as crucial factors in reducing the collection gap and the stock of arrears respectively, it explores the role that fiscal policy could play. While the literature usually centres on the administrative side of collection efficiency, the present paper shows that tax policy variables such as the tax burden may play a crucial role. The analysis makes use of data never employed before to the best of our knowledge, so that various aspects of the tax debt accumulation process are revealed. We employ a simple simultaneous equation model that focuses on tax policy aspects and we conclude that increasing tax assessments boosts collection gaps. This creates a vicious circle whereas collection gaps push to higher tax assessments and so forth. Given the fiscal constraints of the economy we conclude that although the stock of tax debt may be significantly reduced only through extensive write-offs of non-performing debts and penalties and improvement of the tax administration, tax policy, although a non-sufficient condition can ensure to a certain extent that tax debt increases are checked.

Key words: Tax administration, tax debt, tax collection, tax penalties, collection gap, compliance gap.

INTRODUCTION

The object of the present analysis is to examine the role of tax policy rather than tax administration in the formation of tax collection gaps and the subsequent piling up of tax debt. The tax collection gap which is a subset of the overall tax gap, whereas national tax administrations and international organizations use various approaches to measure the tax gap, mainly in the VAT and corporate tax domains. For a thorough review of definitions and methodologies regarding the tax gap see European Commission (2016). In general, the tax gap is estimated on the basis of the amounts that should have been collected in theory, given the tax base and tax policy parameters and, therefore, it includes tax evasion (at least to some extent). The collection gap is a narrower concept based on actual tax assessments (“normal” or through audits) and the respective payments made on time (gross collection gap) or later, usually through some kind of enforcement measures (net collection gap).

*Corresponding author. E-mail: n.kar@panteion.gr.

Unless otherwise stated, the concept of gross collection gap is used throughout the paper, albeit with a twist, since late payments made within the reference period are considered as timely payments.

Tax debt in Greece has traditionally belonged to and has been managed by the Ministry of Finance (MoF). In 2012, however, as the economic crisis culminated it was agreed with the lenders of the State that tax collection and the resulting arrears be transferred to the General Secretariat for Public Revenues, later (2016) turned to the Independent Authority for Public Revenues (IAPR). IAPR is in effect an autonomous body in the sense that it enjoys full operational freedom, although the Ministry of Finance may control or affect targets and strategies. IAPR lacks legal form (being part of the core Executive), while it may be more exposed to government rather than Parliamentary review (Δημητρίου, 2016; Κουνατζής, 2018). IAPR regulates and manages tax and other debts to the State, which in 2019 stood at €105 or 57% of GDP. However, IAPR is not involved with social security collections and arrears which are managed by the National Social Security Agency (EFKA), whose Social Contributions Collection Centre (KEAO) keeps track of about €35bn. (2019) of overdue debt. To put uncollected receipts of the public sector in its right perspective, one should also count in the €69 bn. of (non-performing) overdue private debt to the banks (Hellenic Parliamentary Budget Office, 2020). Collecting public revenue in Greece has always been a weak point of the country's tax administration (Khwaja and Iyer, 2014). This weakness combined with the recent economic crisis led to a rapid accumulation of arrears and Greece to the top of the OECD countries with a debt exceeding 200% of receipts against an average of 32% (OECD, 2021). Enhancing the performance of tax administrations has always been a matter of concern to policy makers (OECD, 2017, 2019), given the fact that the outstanding debt to tax administrations globally is estimated at €2.1 trillion for 2019 (OECD, 2021).

LITERATURE REVIEW

It is almost common knowledge nowadays that low tax compliance imposes unnecessary fiscal constraints, degrades the effectiveness of policies, undermines growth and competitivenes and boosts inequity. There is a huge literature on the issue starting long before Tanzi and Shome (1993) and extending beyond Murphy (2019). Tax collection is strongly related to both external and internal factors, especially during profound crisis periods. According to Brondolo (2009) the economic impact of a crisis tends to influence negatively a country's tax compliance. For this reason, the state has to take preemptive action (such as upgrading services to the taxpayers, focusing on high-risk debtors, adopting statutory and organizational changes, as well as convincing taxpayers about the necessity of reforms) in order to avoid a future inability to restore normality and tax equality caused both directly by the economic slowdown and indirectly by tax policies and administration measures taken in response. In this sense, as the pandemic is anticipated to cause a major decline in tax revenue in most countries, revenue agencies will have to be ready to restore their operations, safeguard tax collection and restore taxpayers' compliance at least to the pre-crisis levels (IMF, 2020).

Collecting taxes in Greece remains a most important facet of fiscal policy, and thereof, additional and immediate measures are required (Angerer, 2018). It is easily understood that, given the deficit constraints at any time, non-collection of assessed revenues, as part of the overall tax gap, may lead to higher tax rates which affect the whole of the economy. In the face of the economic consequences of the pandemic, various priorities and policies for the tax administration have been suggested (de Mooij et al., 2020; Betts et al., 2021). As already pointed out, the role of tax administration has been amply demonstrated in the literature, yet it is worth exploring the role of core tax policy in the formation of collection gaps and the accumulation of tax debt.

METHODS

Profiling overdue debt

For the purposes of this paper, our definition of overdue debt includes all amounts assessed by IAPR, due for payment, but not collected. The respective amount include taxes and various non-tax items, as well as guarantees extended to entities outside the general government sector and called, while they exclude Social Security Contributions. This is not the case for all countries (OECD, 2011) and, therefore, comparisons should be made with caution. Also, overdue debt includes tax penalties (which follow non-payment), but not surcharges (such as interest), which are assessed when payment is made. The main features of the overdue debt can be summarized as follows:

a) Rapid buildup during the crisis. As shown in the Appendix Table A1), the stock of debt built up rapidly since 2000, bringing the total from €9 bn. to €105 bn. in 2019 (or from 6% to around 57% of GDP). In 2008, at the outset of the economic crisis, the stock of overdue debts stood at 12% of (GDP) compared to around 2% of the Eurozone average (OECD, 2011).
b) The composition of the debt shows that non-collected tax penalties constitute a considerable part of arrears (Appendix Table A1). In particular, the share of tax penalties rose from 23% in 2000 to a peak of 44% in 2012 and marginally subsided to 38% in 2019. On the other hand, the share of loan guarantees called accounted for about ⅓ of the total in 2000. By the beginning of the crisis this share had fallen to below 4% (owing to the extensive debt write-offs of guarantees extended to the National Social Security Entity), only to gradually rise again to more than 10% (due to the assumption of the called guarantees of the Greek Railways debt). The combination of all the above has left the share of principal arrears for tax and non-tax obligations, i.e. excluding tax penalties and loans, to fluctuate rather stably around 50% over the last two decades.

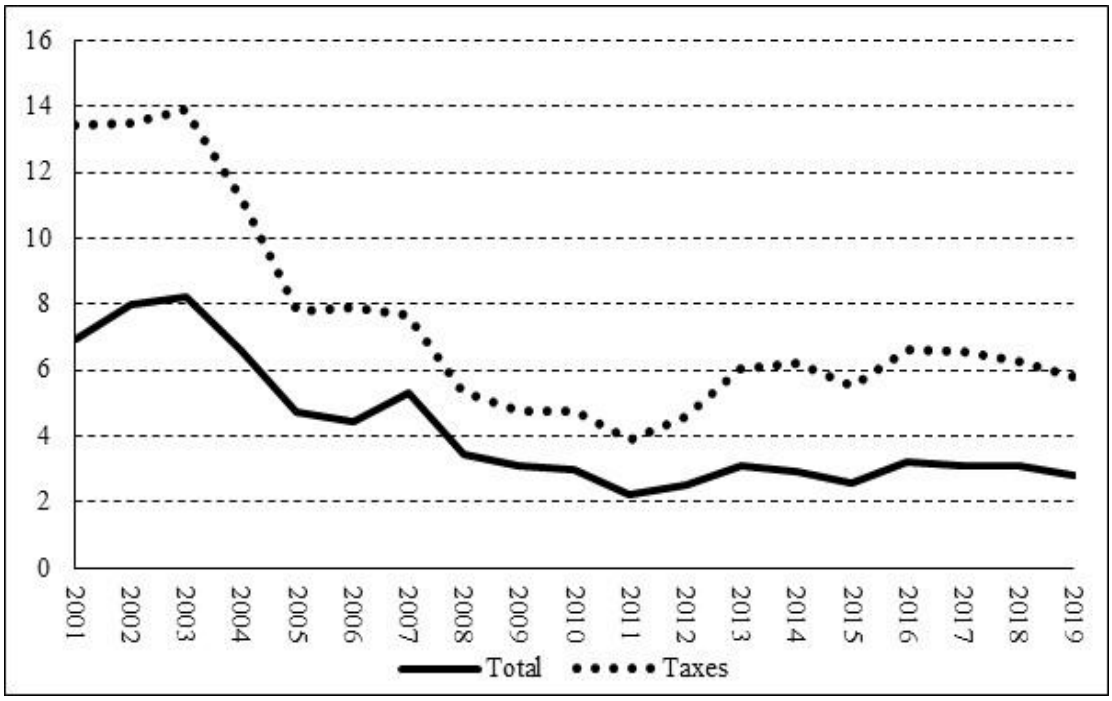


Figure 1. Recovery rate of arrears.

c) In 2019, the distribution of arrears by the size of individual debt showed that large debtors (we have arbitrarily set the threshold for large debtors at €1m.), their number not exceeding 0.2% of the total number of debtors, accounted for 81% of total arrears (Karavitis et al., 2021). A sizeable chunk of this particular amount comprises the Greek Railways debt mentioned earlier. Also, having in mind point (b) above, we should mention that almost 58% of this subtotal consists of tax penalties. In general, the problem is traced to the corporate sector that comprises 11% of the debtors but 65% of the debt (ibid.).

d) In 2019, about 47% of all collections of arrears referred to debt generated within the year, 27% to debt of one year of maturity, while collections fall sharply thereof to 6% in the second year and fade off to practically zero for higher maturities (ibid.).

Given the significant size of the debt to IAPR, the relevant question is whether and how its upward trend can be checked and eventually reversed. To explore the issue we first need to know the identity that produces the stock of arrears for a given period t:

$(Stock\ of\ arrears)_t \equiv (Stock\ of\ arrears)_{t-1} + (collection\ gap)_t - (write\text{-}offs\ of\ arrears)_t - (collection\ of\ arrears)_t + (time\ adjustment\ item)_t$,whereas the collection gap stands for the amounts due for payment within the period but not collected, consisting of assessments net of write-offs minus the respective collections (Appendix Tables A1, A2 and A3). The time adjustment item refers to a correction term since the stock sizes are recorded on 1 December, while transactions are recorded on 31 December, and at times it may be sizeable, especially regarding tax penalties (Appendix Table A4). Given the sources of creation of the stock of arrears (also presented in the Appendix), we can conclude from the above identity that the stock of arrears can be reduced only through write-offs and recovery of arrears, while the collection gap not only should it be lower than write-offs plus recoveries but it should practically approach zero so that no new tax arrears accumulate. Also, Karavitis et al. (2021) have shown that significant write-offs should be in order since removal of all non-performing items (including arrears of insolvent debtors and assumptions of debt of public enterprises by the State) would significantly reduce the stock of arrears form €105 m. to €61 m. Yet, this would still leave us with a stock of about €34m of taxes arrears, €22m of tax penalties arrears and another €5 m of other non-tax arrears (about 32% of GDP altogether; still a substantial amount). Bearing this in mind, we can now turn to some metrics in order to determine the degree of recoverability of these amounts.

Based on the primary data in the appendix, we can see that not only is the recovery of arrears (defined as the ratio of receipts over the stock of arrears of the previous period net of write-offs) very low but it has deteriorated over the years (Figure 1). The case for the subtotal of taxes in arrears is somewhat better, presenting a modest improvement in the last decade, but just as discouraging, while regarding tax penalties, their rate of recovery (not shown in Figure 1) has practically reached zero (same for loans).

The result of the low recovery rate is that currently receipts and write-offs of arrears are far from compensating for the collection gap. In particular, although this replenishment rate of tax non-collections has improved significantly since 2015 (Figure 2) (due to tax arrears collections rather than write-offs, as the data in the Annex reveal), it still is below 100%, leaving amounts of non-collections that are not covered (shown by the shaded area).

As mentioned earlier, it is important that the collection gap be curbed so that no new arrears pile up. The collection gap has two components, (net) assessments and collections. Figure 3 presents the collection gaps and the respective collection gap ratios, the latter defined as *(1-collections/net assessments)*, for the main sources of arrears (loans are excluded as irrelevant to taxation). Here we can notice that the collection gap for taxes expanded significantly until 2015 when it reached almost ¼ of net assessments. Despite its reduction in the years that followed, more than 10% of assessments (more than 2% of GDP) are still not being collected. However, there is not adequate information about the

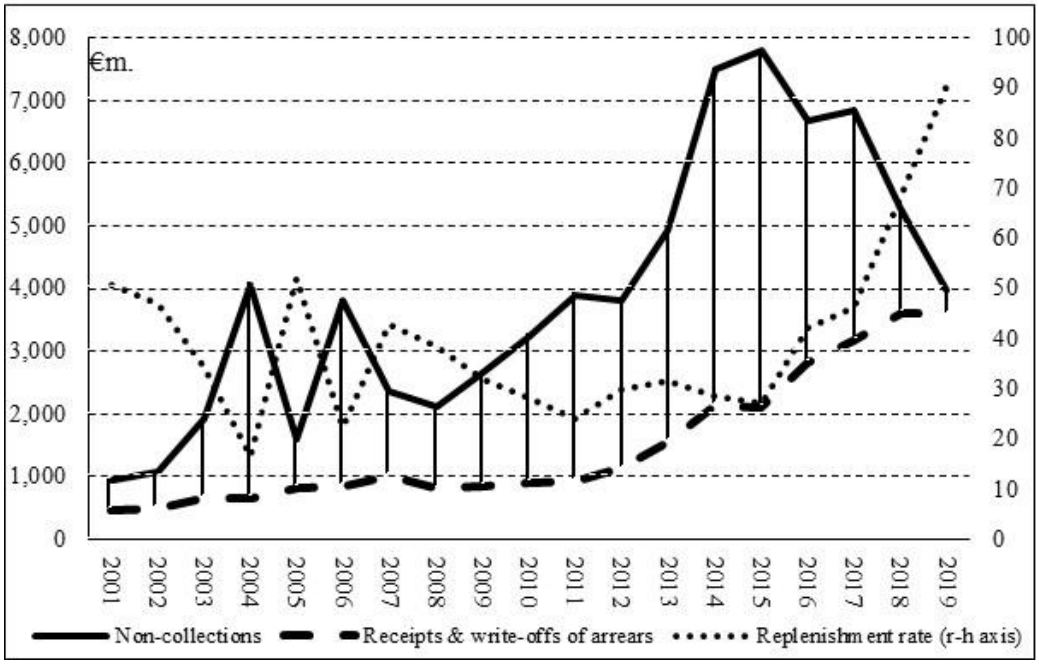


Figure 2. Replenishment of tax non-collections by collection of arrears.

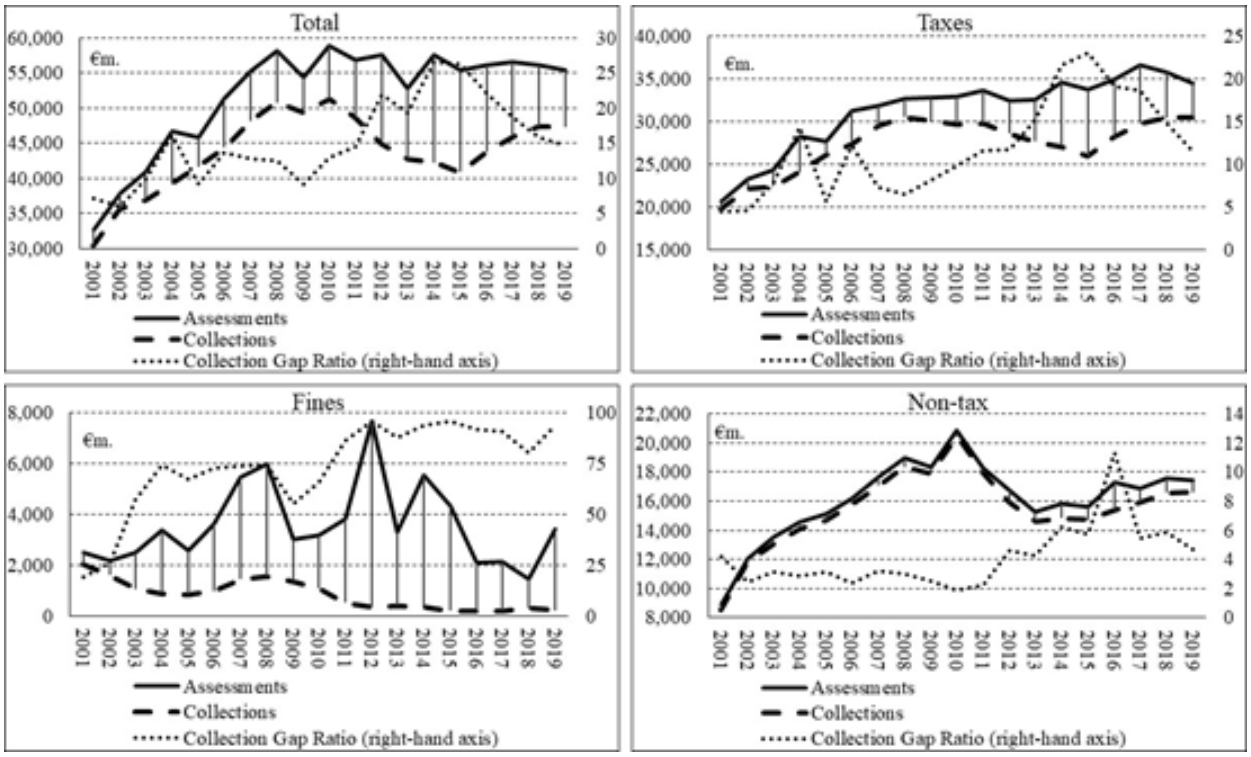


Figure 3. Collection gaps and the collection gap ratios.

part of these amounts that are produced through audits and/or are in legal dispute. The analysis above makes it clear that debt write-offs are essential to reducing the overall stock of arrears, yet this operation will not be sustainable unless non-collections are

minimized.

Modeling the collection gap

In what follows we try to connect the collection gaps of currently (i.e. within the reference year) assessed taxes and fines to the tax burden. On the one hand, we model the taxpayers' behaviour through two functions showing the non-collection rates of taxes (***ntr***) and tax penalties (***npr***), respectively. On the other hand, we assume that the behaviour of the tax authorities is expressed through a notional average tax rate (***atr***) and the implicit average penalty rate (***apr***). More specifically, the basic economic model stands as follows (all variables refer to time period *t* unless otherwise stated):

$$(ntr) = \alpha_0 (atr)^{\alpha_1} (tnplr)^{\alpha_2} \quad (1)$$

where **(ntr)** is the tax non-collection rate, which is calculated as the ratio of non-collected revenue (NT) over net assessments (ASST), or (ntr)=(NT/ASST). On the right hand side, we have $\boldsymbol{\alpha_0}$ (a constant) and **(atr)** as a proxy for the tax burden, equal to the ratio of net tax assessments over GDP, or (atr)=(ASST/GDP), whereas it is expected that $\alpha_1>0$. Also, **(tnplr)** is a proxy for the pressure that net tax assessments as a ratio of non-performing bank loans (NPL) may or may not exert on non-collections, or (tnplr)=(ASST/NPL_{t-1}). The rationale of "may not" is that the explosive increase of NPLs during the crisis and the subsequent non-payment of debt servicing may have facilitated tax collections (in this sense, it might be more appropriate to have unpaid debt servicing in the denominator of (tnplr), but data for such a variable are not available). Nevertheless, (tnplr) serves to indicate the current tax burden relative to total non-served debt to the banking sector (of period *t-1*, roughly reflecting notional debt servicing in period *t*). In general, the literature provides extensive work carried out on the issue of the macroeconomic (and other) determinants of NPLs (indicatively Charalambakis et al., 2017) and NPLs' dynamics in times of crisis (Ari et al., 2020). These growth-led finance approaches, however, are counterbalanced by supply-leading and bi-directional approaches (SenGupta, 2020), which lead us to believe that to the extent that NPLs have an impact on financing costs and liquidity (and subsequently investment, growth, employment etc), then servicing bank debt may "compete" with tax obligations (the rationale of "may"). In practice, this is verified by Directive (EU) 2019/1023 of the European Parliament and of the Council as applied in Greece by Law 4738/2020 (which provides for across-the-board private debt arrangements) which also extends its scope beyond the corporate sector. Hence, the intuition is that to the extent that NPLs reflect sluggish generation of incomes and inadequate liquidity of the economy, then tax collection is affected accordingly. In this sense we expect that α_2 will be also positive rather than negative.

The tax burden, however, expressed by (atr) is not exogenous to the system, as it is specified as:

$$(atr) = \beta_0 (ntr_{t-1})^{\beta_1} GDP^{\beta_2} \quad (2)$$

where, according to (2), the implicit tax rate ***(atr)*** is assumed to depend on the non-collection rate of the previous period ***(ntr_{t-1})*** and income (approximated by GDP), while β_0 is the constant term. The rationale is that the inability to collect assessed taxes drives the tax authorities to increased assessments in the next period (by increasing tax rates, intensifying tax audits etc). If this is true, it is expected that $\beta_1>0$, which intuitively seems more plausible than the opposite case (the policy maker reducing the tax burden in response of a rising non-collection rate, despite any fiscal constraints). Moreover, normally one would anticipate the overall progressivity of the tax system to lead to higher (lower) (atr) as incomes rise (fall), or $\beta_2>0$ (where, in fact, $(1+\beta_2)$ is the buoyancy of (assessed) taxes). On the other hand, rising incomes may lead to relaxing tax policies or, conversely, falling incomes may drive to higher tax rates in order to replenish tax revenues ($\beta_2<0$). Therefore, the sign of β_2 may go either way.

Turning to penalties, (3) shows the non-collection rate of penalties ***(npr)*** which is the ratio of the difference of (net) assessments less collections (NP) over penalties assessed (ASSP), or (npr)=(NP/ASSP). The specification below shows (npr) as a function of the tax non-collection rate ***(ntr)*** and the implicit penalty rate ***(apr)***, whereas (apr)=(ASSP/NT) and γ_0 is a constant.

$$(npr) = \gamma_0 (ntr)^{\gamma_1} (apr)^{\gamma_2} \quad (3)$$

It is expected that as non-collections of taxes rise so do non-collections of penalties since this is the logical order of things (a penalty is imposed after a tax obligation is not met), therefore $\gamma_1>0$, while it is tested whether tax payers react to rising penalty rates by not paying them ($\gamma_2>0$).

Finally, (4) shows how the tax authorities respond to the non-collection rate of taxes (ntr) by adjusting the penalty rate ***(apr)*** which is the ratio of assessed penalties imposed (ASSP) over their bas of non-collections of taxes, or (apr)=(ASSP/NT).

$$(apr) = \delta_0 (ntr)^{\delta_1} \quad (4)$$

One may expect that as the non-collection rate rises, the implicit penalty rate would either be raised in an effort of the tax authorities to enforce compliance ($\delta_1>0$) or be reduced in order to facilitate payment of penalties ($\delta_1<0$) (δ_0 is the constant term).

EMPIRICAL TESTING AND RESULTS

Taking logarithms of functions (1) to (4) we arrive at a system of loglinear regressions. Since all dependent variables are ratios, their logs will be differences of the logs of nominators from the logs of the denominators with the latter being rearranged to the left-hand side of the relations. A further transformation is introduced at this stage by bringing in a dummy variable ***(ADM)*** to catch a possible effect of the establishment of IAPR in 2016 (1 from 2016 onwards, 0 otherwise). This is an attempt to test whether IAPR has played a significant role in shaping the non-collection rate for taxes and penalties (in functions (1) and (3)) and in exercising whatever discreet powers it has in imposing and collecting penalties (function (4)). Moreover, since most assessments are the direct result of tax policy dictated by the Ministry of Finance rather than IAPR and given that the deep fiscal crisis of the previous decade was addressed mainly through taxation (Karavitis, 2018) another dummy variable, ***(SUR)***, has been introduced in function (2) to test for the effect of the surveillance regimes from 2010 onwards (when SUR takes the value of 1, 0 otherwise). Thus, a system of semilog regressions can be written as follows (*ln* denotes natural log):

Table 1. Model estimates and statistics.

Parameter	Estimate	S.E.	t-st.	P-value
α_0'	**6.798**	1.461	4.653	[.000]
α_{01}	**-0.461**	0.116	-3.991	[.000]
α_1	**4.883**	0.802	6.086	[.000]
α_2	**0.334**	0.111	3.010	[.003]
β_0'	**2.426**	1.364	1.778	[.075]
β_{01}	**0.152**	0.028	5.436	[.000]
β_1	**0.129**	0.029	4.413	[.000]
β_2	**-0.332**	0.113	-2.941	[.003]
γ_0'	**1.176**	0.137	8.581	[.000]
γ_{01}	**0.300**	0.056	5.338	[.000]
γ_1	**0.683**	0.063	10.822	[.000]
γ_2	**0.317**	0.041	7.667	[.000]
δ_0'	**-1.846**	0.420	-4.395	[.000]
δ_{01}	**-0.756**	0.181	-4.168	[.000]
δ_1	**-0.897**	0.186	-4.820	[.000]

$$lnNT = \alpha_0' + \alpha_{01}\text{ADM} + (1+\alpha_1+\alpha_2)\, ln\text{ASST} - \alpha_1 ln\text{GDP} - \alpha_2 \text{NPL}_{t-1} \quad (5)$$

$$ln\text{ASST} = \beta_0' + \beta_{01}\text{SUR} + \beta_1 (ln\text{NT}_{t-1} - ln\text{ASST}_{t-1}) + (1+\beta_2) ln\text{GDP} \quad (6)$$

$$ln\text{NP} = \gamma_0' + \gamma_{01}\text{ADM} + (\gamma_1-\gamma_2) ln\text{NT} - \gamma_1 ln\text{ASST} + (1+\gamma_2) ln\text{ASSP} \quad (7)$$

$$ln\text{ASSP} = \delta_0' + \delta_{01}\text{ADM} + (1+\delta_1)\, ln\text{NT} - \delta_1 ln\text{ASST} \quad (8)$$

Regressions (5) to (8) were simultaneously estimated, covering the 2001-2019 period (Appendix; no earlier data were available) and applying the LSQ procedure of TSP 5.0. The results are shown in Table 1 and as can be seen, although the small number of observations remains a concern the relevant statistics are quite satisfactory. R^2s are high with the lowest (48.8%) being registered in (8), possibly reflecting the *ad hoc* procedures followed in the assessment of fines. All parameters are significant at least at the 1% level, except for β_0' which is significant at 7.5%. The signs and sizes of the parameters confirm the main proposal, i.e. that tax policy has indeed contributed to piling up tax debt.

In particular, we notice that α_1, the elasticity of the non-collection rate relative to the implicit tax rate, is strikingly high at 4.9. On the other hand, β_1 is low at 0.13 but not zero and the combination of the two shows that the overall feedback process is far from negligible. In practice, every reduction of one percentage unit of (ntr) (which corresponds to a reduction of 8.3%) could lead to a decrease of near 0.2 percentage units for (atr) which in turn would lead to a further reduction of (ntr) by 0.6 percentage units (assuming that on average (ntr)=12% and (atr)=16.5%). This may not seem much at first sight but, nevertheless, for collection inefficiencies alone, it is a considerable impact on revenues (Table 2).

Furthermore, it is worth noticing the effect of NPLs on non-collections with α_2=0.334 being significantly different from zero and negative. This finding indicates that a subsidence of NPLs would also contribute to reducing the non-collection rate of taxes. Finally, we can discern the positive effect of establishing IAPR since α_{01} is negative and quite large. However, due attention must be paid to the true size of the estimates of the parameters of the dummy variables ADM and SUR (Halvorsen and Palmquist, 1980). In this case, following Kennedy (1981), the true size of α_{01} is -0.374. Also, the true size of β_{01} is 0.164 which confirms that during the surveillance period there was an extra pressure in raising tax assessments. In (6) we can also see that β_2 is negative which leads us to accept that tax policy has been procyclical.

Turning to tax penalties, the parameter estimates of (7) and (8) indicate that the collection gap for penalties follows that of taxes (γ_1=0.683), which is quite natural, while taxpayers react to higher penalty rates by not paying (γ_2=0.317). On the other hand, the tax authorities tend to respond to a rising (falling) penalties collection gap by reducing (increasing) the implicit penalty rate (δ_1=-0.897). Also, the coefficients of ADM in (7) and (8)

Table 2. Model estimates and statistics continue.

Dependent variable: *ln*NT		**Dependent variable: *ln*ASST**	
Mean of dep. var.	8.253	Mean of dep. var.	10.381
Std. dev. of dep. var.	0.485	Std. dev. of dep. var.	0.102
Sum of squared residuals	0.462	Sum of squared residuals	0.039
Variance of residuals	0.027	Variance of residuals	0.002
S.E. of regression	0.165	S.E. of regression	0.048
R-squared	0.880	R-squared	0.773
LM het. test	1.246 [.264]	LM het. test	0.010 [.921]
Durbin-Watson	2.506	Durbin-Watson	2.603
Dependent variable: *ln*NP		**Dependent variable: *ln*ASSP**	
Mean of dep. var.	7.895	Mean of dep. var.	8.138
Std. dev. of dep. var.	0.494	Std. dev. of dep. var.	0.423
Sum of squared residuals	0.141	Sum of squared residuals	1.470
Variance of residuals	0.008	Variance of residuals	0.086
S.E. of regression	0.091	S.E. of regression	0.294
R-squared	0.964	R-squared	0.488
LM het. test	1.747 [.186]	LM het. test	0.205 [.650]
Durbin-Watson	2.323	Durbin-Watson	2.211

Std. dev, Standard deviation, dep. Var., Dependent variable; LM het. test Lagrange multiplier hettest test.

show although IAPR has been more “lenient” in imposing penalties (δ_{01}=-0.756, true size -0.538), it has not been able to collect these amounts (γ_{01}=0.3, true size 0.347). All the above indicate that although the tax authorities respond correctly by reducing the relative size of penalties, this reduction is not adequate to allow for significant progress in collecting them, rendering the whole process of penalties rather ineffective. However, more information is required regarding disputes, individual cases (outliers) etc, in order to have a more complete picture.

Conclusion

As argued earlier, the stock of IAPR-related arrears can and should be significantly reduced through a thorough clear-out of non-performing debts. This should not be seen as a one-off but rather as a continuous screening process that will prevent the accumulation of “bad” debts in the future. This would involve, of course, improvements in the administrative arm of tax collection, as indicated by the values of the ADM parameters. Yet, it becomes clear that possible reductions of the average tax and penalty rates would also improve their respective collection rates. Our results make apparent that increasing the tax burden relative either to income or NPLs deteriorates the collection rate of taxes.

As confirmed by the findings of the empirical analysis, the establishment of IAPR has had a positive impact so far, although there certainly is ample room for improvements, especially in the area of penalties. A more efficient tax administration brings about fewer non-collections. The results show that such an improvement will feed back to lower tax assessments and non-collection of penalties. Lower tax non-collections will certainly alleviate the pressure on tax payers and soften the strains on the stock of debt, while there may be spillover effects to the extent that higher collection rates signify a potential for lower tax rates. This could also help tax policy regain its anticyclical character. Having in mind that non-collection rates are higher for large debtors (mainly found in the corporate sector) further appropriately targeted research, maybe in the vein of Canada Revenue Agency (2016), may prove quite useful. In addition, the deepening of the holistic approach to private debt (i.e. including social security and bank NPLs), recently activated under Act 4738/2020, could assist to rationalize the collection procedures and make the system more equitable and efficient along the lines suggested by Bird (2015).

ACKNOWLEDGEMENTS

This research was co-financed by Greece and the European Union (European Social Fund-ESF) through the Operational Programme «Human Resources Development, Education and Lifelong Learning 2014-2020» in the context of the project “Best practices in tax arrears management in post-MOU Greece: economic and institutional risks and opportunities” (MIS 5049109). The

authors would like to thank Panteion University for supporting this paper and the Independent Authority for Public Revenues (IAPR) for sharing the necessary data for the production of this paper.

CONFLICT OF INTEREST

The authors have not declared any conflict of interest.

REFERENCES

Angerer J (2018). Tax collection in Greece: State of play—June 2018. Depth Analysis, Economic Governance Support Unit, European Parliament.

Ari A, Chen S, Ratnovski L (2020). The dynamics of non-performing loans during banking crises: a new database. Working Paper No. 2395.

Betts S, De Mets P, Ossa R, Rojas E (2021). Postcrisis Revenue Generation for Tax Administrations. Fiscal Affairs: Special Series on COVID-19.

Bird RM (2015). Improving Tax Administration in Developing Countries. Journal of Tax Administration 1(1):23-45.

Brondolo J (2009). Collecting taxes during an economic crisis: challenges and policy options. IMF Staff Position Notes, 2009(017).

Canada Revenue Agency (2016). Payment Tax Gap and Collection Efforts. Available at: https://www.canada.ca/content/dam/cra-arc/corp-info/payment-tax-gap-en.pdf

Charalambakis E, Dendramis Y, Tzavalis E (2017). On the determinants of NPLs: lessons from Greece. Working Paper 220, Bank of Greece.

de Mooij R, Fenochietto R, Hebous S, Leduc S, Osorio-Buitron C (2020). Tax Policy for Inclusive Growth after the Pandemic. Fiscal Affairs: Special Series on COVID-19. IMF.

European Commission (2016). The Concept of Tax Gaps: Report on VAT Gap Estimations by FISCALIS Tax Gap Project Group (FPG/041). Brussels. Available at: https://ec.europa.eu/taxation_customs/system/files/2016-08/tgpg_report_en.pdf

Halvorsen R, Palmquist R (1980). The Interpretation of Dummy Variables in Semilogarithmic Equations. The American Economic Review 70(3):474-475.

Hellenic Parliamentary Budget Office (2020). First Quarterly Report 2020. Athens. Available at: http://www.pbo.gr/en-gb/reports/quarterly_reports/first-quarterly-report-2020

IM (2020). Revenue Administration: Reinvigorating Operations to Safeguard Collection and Compliance. Fiscal Affairs, IMF: Special Series on Fiscal Policies to Respond to COVID-19. Available at: https://www.imf.org/-/media/Files/Publications/covid19-special-notes/enspecial-series-on-covid19revenue-administrationreinvigorating-operations-to-safeguard-collection-a.ashx

Karavitis N (2018). Fiscal adjustment and debt sustainability: Greece 2010-2016 and beyond. Working Paper No. 245, Bank of Greece.

Karavitis N, Paipetis K, Priniotaki M (2021). Overdue tax debts in Greece. International Conference on Business and Economics of the Hellenic Open University 2021.

Kennedy PE (1981). Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations. The American Economic Review 71(4):801.

Khwaja M, Iyer I (2014). Revenue Potential, Tax Space, and Tax Gap A Comparative Analysis. World Bank Policy Research Working Paper (No 6868). Available at: http://hdl.handle.net/10986/18806

Murphy R (2019). The European Tax Gap: A report for the Socialists and Democrats Group in the European Parliament. Available at: https://www.socialistsanddemocrats.eu/sites/default/files/2019-01/the_european_tax_gap_en_190123.pdf

OECD (2011). Tax Administration in OECD and Selected Non-OECD Countries. Center for Tax Policy and Administration, Forum on Tax Administration: Comparative Information Series (2010). OECD. Available at: https://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/comparative/CIS-2010.pdf

OECD (2017). Measuring Tax Gaps. In Tax Administration 2017: Comparative Information on OECD and other Advanced and Emerging Economies. Paris, France: OECD Publishing.

OECD (2019). Tax Administration 2019: Comparative Information on OECD and other Advanced and Emerging Economies. Paris, France: OECD Publishing. doi:10.1787/74d162b6-en

OECD (2021). Tax Administration 2021: Comparative Information on OECD and other Advanced and Emerging Economies. Paris: OECD Publishing. doi:10.1787/cef472b9-en

SenGupta S (2020). An empirical analysis on the impact of non-performing loans on investment and economic growth and the role of political governance. Indian Journal of Economics and Development, 8 (IJED-2020-27).

Tanzi V, Shome P (1993). A Primer on Tax Evasion. IMF, Working Papers No.21.

Δημητρίου Σ (2016). Η αναζήτηση ενός πρότυπου διοικητικής μεταρρύθμισης και όρια του: Το παράδειγμα της Ανεξάρτητης Αρχής Δημοσίων Εσόδων. Όμιλος «Αριστόβουλος Μάνεσης». Available at: https://www.constitutionalism.gr/wp-content/uploads/2016/11/2016

Κουντατζής ΣΙΓ (2018). Η ανεξαρτησία της φορολογικής διοίκησης: Δοκιμάζοντας τα όρια της κοινοβουλευτικής αρχής. Όμιλος «Αριστόβουλος Μάνεσης». Available at: https://www.constitutionalism.gr/wp-content/uploads/2018/08/%CE%91%CE%91%CE%94%

APPENDIX

Data on debt from arrears

Source: IAPR. All data are in €m.
Notes:

(a) The stock of arrears for a given year (t) should be given by: *stock(t)= [stock(t-1)-write-offs(t)+assessments(t)-receipts(t)]*. However, the transition requires an adjustment item, given the fact that it measures stock on 1 December and transactions on 31 December. To the extents that during the last month of the year non-collections exceed write-offs the stock may be underestimated accordingly.
(b) "Non-tax" includes several non-tax items, such as several duties, administrative surcharges and, notably, customs receipts.
(c) "Fines" refers to penalties for tax and non-tax offenses. However, the latter constitute a much lesser part of the total.
(d) "Loans" include both non-servicing of loans and guarantees called for which there exists a claim of IAPR against third parties.
(e) "Assessments for current year" are net of "Write-offs for current year's assessments".
(f) "Write-offs for current year's assessments" refer both to non-overdue obligations and overdue payments which fall within the reference period.

Table A1. Stock of arrears and Net Assessments.

Year	Stock of arrears by source					Net Assessments for current year				
	Taxes	**Non-tax**	**Fines**	**Loans**	**Total**	**Taxes**	**Non-tax**	**Fines**	**Loans**	**Total**
2000	2,757	871	2,072	3,384	**9,084**					
2001	3,153	962	2,372	2,835	**9,323**	20,693	8,910	2,490	539	**32,632**
2002	3,672	1,061	2,724	997	**8,454**	23,258	12,078	2,152	340	**37,829**
2003	4,902	1,239	3,767	954	**10,863**	24,372	13,517	2,498	504	**40,891**
2004	8,346	1,388	6,052	1,277	**17,063**	28,244	14,539	3,380	562	**46,725**
2005	8,912	1,614	7,578	1,269	**19,373**	27,723	15,123	2,550	418	**45,814**
2006	11,915	1,708	10,065	1,247	**24,935**	31,225	16,200	3,612	350	**51,386**
2007	13,208	1,818	11,010	1,028	**27,063**	31,883	17,648	5,441	299	**55,271**
2008	14,559	1,895	11,455	1,078	**28,988**	32,675	18,949	5,948	550	**58,123**
2009	16,285	2,088	12,877	1,205	**32,455**	32,779	18,360	3,026	221	**54,387**
2010	18,497	2,296	14,407	3,129	**38,329**	32,941	20,836	3,150	1,990	**58,918**
2011	21,611	2,474	17,127	3,049	**44,260**	33,656	18,306	3,795	1,122	**56,879**
2012	24,051	2,974	24,379	3,730	**55,135**	32,426	16,712	7,654	726	**57,519**
2013	27,457	3,272	26,913	5,355	**62,997**	32,594	15,234	3,284	1,752	**52,864**
2014	32,028	3,829	31,654	6,703	**74,214**	34,562	15,822	5,516	1,690	**57,589**
2015	37,175	4,272	35,440	8,612	**85,500**	33,740	15,618	4,335	1,721	**55,414**
2016	41,207	5,450	37,193	9,030	**92,880**	34,913	17,324	2,093	1,816	**56,146**
2017	44,729	5,732	38,722	10,606	**99,790**	36,658	16,844	2,138	880	**56,519**
2018	46,470	5,999	39,736	11,844	**104,049**	35,737	17,597	1,460	1,390	**56,184**
2019	47,662	6,174	40,164	11,428	**105,427**	34,455	17,449	3,395	130	**55,429**

Table A2. Receipts.

Year	Receipts from current year's assessments					Receipts from arrears				
	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total
2000										
2001	19,758	8,538	2,009	21	**30,326**	354	51	83	53	**542**
2002	22,175	11,783	1,593	22	**35,573**	412	49	76	18	**556**
2003	22,452	13,092	1,068	232	**36,845**	485	50	78	37	**651**
2004	24,174	14,125	880	19	**39,199**	533	52	71	29	**685**
2005	26,130	14,652	841	20	**41,643**	632	61	59	16	**769**
2006	27,420	15,818	986	135	**44,358**	694	52	66	19	**831**
2007	29,519	17,084	1,435	168	**48,206**	906	111	75	145	**1,237**
2008	30,556	18,379	1,533	363	**50,831**	703	63	86	25	**876**
2009	30,114	17,904	1,360	43	**49,422**	681	88	86	28	**884**
2010	29,694	20,448	1,087	39	**51,269**	769	47	114	21	**952**
2011	29,755	17,904	529	424	**48,612**	709	40	70	14	**832**
2012	28,619	15,940	352	24	**44,935**	980	47	58	8	**1,093**
2013	27,649	14,580	403	8	**42,640**	1,443	87	62	119	**1,711**
2014	27,068	14,840	361	2	**42,271**	1,685	68	67	12	**1,832**
2015	25,947	14,725	199	11	**40,882**	1,748	69	64	8	**1,889**
2016	28,229	15,366	181	1	**43,777**	2,442	155	75	52	**2,724**
2017	29,803	15,930	205	2	**45,940**	2,671	90	89	9	**2,859**
2018	30,444	16,564	292	10	**47,310**	2,765	150	75	84	**3,073**
2019	30,483	16,627	220	1	**47,330**	2,632	98	100	19	**2,849**

Table A3. Write-offs.

Year	Write-offs for current year's assessments					Write-offs of past arrears				
	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total
2000										
2001	275	13	54	131	**473**	122	36	97	1,022	**1,277**
2002	456	11	63	118	**649**	95	34	69	2,140	**2,339**
2003	804	24	131	155	**1,114**	173	32	66	270	**541**
2004	1,073	38	46	90	**1,248**	138	55	131	193	**518**
2005	285	17	42	73	**417**	196	56	161	398	**811**
2006	1,340	63	41	54	**1,497**	152	67	124	217	**560**
2007	224	14	446	29	**713**	105	30	1,358	217	**1,710**
2008	197	34	1,305	22	**1,558**	109	257	1,048	94	**1,508**
2009	267	23	36	19	**345**	170	29	102	20	**321**
2010	260	26	45	14	**345**	143	43	355	2	**543**
2011	261	25	78	208	**572**	227	52	350	757	**1,386**
2012	203	26	101	308	**638**	165	30	141	42	**377**
2013	329	24	128	7	**489**	124	34	114	2	**275**
2014	565	28	104	2	**699**	450	74	290	103	**916**
2015	1,071	34	102	2	**1,208**	358	54	159	6	**577**
2016	330	25	109	6	**470**	382	137	284	505	**1,308**
2017	491	22	51	470	**1,035**	496	86	352	131	**1,064**
2018	1,445	161	160	1	**1,767**	842	55	199	50	**1,146**
2019	480	97	10,188	1	**10,765**	963	136	212	551	**1,862**

Table A4. The time adjustment Item.

Year	Change of stock of arrears					Non-collections					Receipts and write-offs of arrears					Time Adjustment item				
	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total	Taxes	Non-tax	Fines	Loans	Total
2001	396	91	300	-549	**239**	935	372	481	518	**2,306**	476	87	180	1,076	**1,818**	-63	-194	0	8	**-249**
2002	519	99	352	-1,839	**-869**	1,084	295	559	318	**2,256**	507	83	146	2,159	**2,895**	-57	-113	-61	2	**-230**
2003	1,230	178	1,043	-42	**2,409**	1,920	425	1,429	272	**4,046**	659	82	144	308	**1,192**	-31	-165	-243	-6	**-445**
2004	3,444	148	2,285	322	**6,200**	4,070	414	2,500	542	**7,526**	671	106	202	223	**1,203**	45	-159	-13	3	**-124**
2005	566	226	1,526	-8	**2,310**	1,592	471	1,710	397	**4,171**	829	116	220	415	**1,580**	-197	-129	36	10	**-280**
2006	3,003	94	2,487	-22	**5,562**	3,805	382	2,626	215	**7,028**	846	119	190	236	**1,391**	43	-169	51	-1	**-75**
2007	1,293	110	945	-219	**2,128**	2,363	564	4,006	131	**7,065**	1,011	141	1,433	363	**2,947**	-59	-314	-1,629	12	**-1,989**
2008	1,352	78	445	50	**1,925**	2,120	570	4,415	186	**7,292**	812	320	1,133	119	**2,384**	44	-173	-2,836	-18	**-2,983**
2009	1,725	193	1,421	127	**3,467**	2,665	456	1,666	178	**4,965**	851	116	188	49	**1,205**	-88	-146	-56	-3	**-293**
2010	2,212	208	1,530	1,924	**5,874**	3,247	388	2,063	1,951	**7,649**	912	91	469	23	**1,494**	-123	-89	-64	-5	**-281**
2011	3,114	178	2,720	-80	**5,932**	3,902	402	3,265	698	**8,267**	936	91	420	771	**2,218**	148	-134	-125	-7	**-118**
2012	2,441	500	7,253	681	**10,875**	3,807	772	7,302	702	**12,584**	1,144	77	198	50	**1,470**	-222	-196	149	30	**-239**
2013	3,405	298	2,534	1,625	**7,862**	4,944	654	2,880	1,745	**10,223**	1,567	121	177	121	**1,986**	28	-236	-170	1	**-376**
2014	4,571	557	4,741	1,348	**11,217**	7,493	982	5,155	1,688	**15,318**	2,134	142	357	115	**2,748**	-788	-283	-57	-225	**-1,353**
2015	5,147	443	3,786	1,910	**11,286**	7,793	893	4,136	1,710	**14,531**	2,105	123	223	14	**2,466**	-541	-326	-126	213	**-780**
2016	4,032	1,177	1,753	418	**7,380**	6,684	1,958	1,912	1,815	**12,369**	2,824	292	359	557	**4,032**	172	-489	200	-840	**-957**
2017	3,522	283	1,529	1,576	**6,909**	6,855	914	1,933	877	**10,580**	3,166	176	441	140	**3,924**	-167	-455	36	839	**254**
2018	1,741	266	1,014	1,238	**4,259**	5,293	1,034	1,168	1,379	**8,874**	3,606	205	274	134	**4,220**	55	-562	120	-7	**-395**
2019	1,192	175	428	-416	**1,379**	3,973	822	3,175	129	**8,099**	3,595	234	312	570	**4,711**	814	-413	-2,435	25	**-2,010**

Vol. 14(2), pp. 129-135, April-June 2022
DOI: 10.5897/JAT2021.0516
Article Number: B64ED3F69014
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

The value relevance of the quality of IFRS-based published financial information of non-financial companies in Nigeria

Liafisu Sina Yekini[1*], Sunny Oteteya Temile[2] and Dubem Victor Enaruna[3]

[1]Accounting Group, Derby Business School, University of Derby, Kedleston Road, Derby, England, United Kingdom.
[2]Dennis Osadebey University, Faculty of Management and Social Sciences, Department of Accounting, Asaba, Delta State, Nigeria.
[3]Department of Maritime Economics and Finance, Nigerian Maritime University, Okerenkoko, Warii, Delta State, Nigeria.

Received 14 December, 2021; Accepted 3 March, 2022

The study examines whether the quality of international Financial Reporting Standards (IFRS) based published financial information in Nigeria increased in the post-IFRS era. The study examines the quality of IFRS-based financial reports in improving the information required from financial statements. In other words, it evaluates the quality of published financial reports after IFRS adoption in Nigeria using annual reports of 87 non-financial companies for 10 years (2007-2016). We find that information provided in post-IFRS published financial statements is of higher value to investors/shareholders. The result was confirmed using trend analysis of and pre-and post-IFRS adjusted R^2, which confirm that public financial statements in the post-IFRS era have increased value relevance. These findings imply that adopting IFRS in Nigeria is justifiably undertaken as the objective of possible channelling funds, for investment purposes, to the right channel is achieved. The finding indicates positive changes after IFRS adoption. Based on these findings, we recommend that the Nigerian Financial Reporting Council, Stock Exchange, Securities and Exchange Commission and other relevant authorities in the country should ensure compliance with the ethos of IFRS adoption to ensure that the improved quality of financial reporting achieved is consistently maintained.

Key words: IFRS, accounting information, value relevance, accounting data, N-GAAP.

INTRODUCTION

The major objective of accounting records collected and analysed is to provide valuable information to users. The information provided will enable users of financial statement, such as investors and auditors to have access to firms in order to evaluate their true financial position and performance. Isa (2014) enumerated the objectives of Nigerian's adoption of the IFRS to include reliability, relevance, and comparability to aid investors' (users)

*Corresponding author. E-mail: L.yekini@derby.ac.uk. Tel: 01332622272

decisions. These objectives include increased value relevance, improved transparency and reduced earnings manipulations. Besides, improved financial reporting quality leads to presentation of reliable financial information comparable with other capital markets in a globalized and competitive marketplace where scarce resources are directed towards area of best possible returns (Wurgler, 2000). On this note, Umoren and Enang (2015) explained that the extent a financial statement would be able to competently influence the decision of investors depend on the value of information contained in that financial statement. Vishnani and Shah (2008) explained that value relevance is concerned with the financial information ability to explain the stock market.

Holthausen and watts (2001) grouped the study of value relevance studies into: comparative relationship investigations, incremental relationship investigations and marginal information investigations. The comparative relationship investigations compare accounting numbers that are prepared with different sets of accounting standard and the relationship existing between stock market returns or value. With these categories of studies, research on value relevance usually focuses on net income and equity book-value because they represent the main drivers of a company's valuation. Incremental relationship investigation help to ascertain if accounting figures deemed useful in elucidating stock market returns and this numbers are deem to be value relevant if its statistical regression coefficients are considerably different from zero. While, The marginal information investigation studies is used to examine if accounting numbers disclosed are correlated with market returns variations. Market price reactions are presumed to be proof of value relevance (Li, 2010). The study examines whether the quality of international Financial Reporting Standards (IFRS)-based published financial information in Nigeria increased in the post-IFRS era. This study applies the comparative relationship investigation and the marginal information investigation approach. Consequently, the study examines the relationship between figures prepared using adopted IFRS and the value relevance of financial information.

This study contributes to the literature by empirically examining the effect of the adoption of IFRS in Nigeria on the quality of published financial statements through transparent and qualitative value relevance financial information. In reviewing related literatures, no researcher specifically addressed the measurement of improved value relevance of published financial data except the study of Umoren and Enang (2015) who examined IFRS Adoption and Value Relevance of Financial statements of Nigerian listed banks. However, the study of Umoren and Enang (2015) was directed at the banking industry excluding sectors of the economy. Other researchers either did an exploratory study with questionnaires administered or a conceptual study such as Edogbanya and Kamardin (2014). It can be argued that administration of questionnaires does not capture the real state of activities of firms which are only available in published annual reports. Furthermore, questionnaires are targeted at individuals whose responses are guided by their subjective norms and cannot reflect behaviour of firms in real market.

Thus, the impact of value relevance is not effectively examined in emerging markets regarding the adaptation of IFRS. Therefore, this study will examine the effect of the adoption of IFRS in Nigeria on the quality of published financial statements through transparent and qualitative value relevance financial information. The study examines the quality of IFRS-based financial reports in improving the information required from the financial statements. The rest of the paper is structured thus: Section two provides a literature review of related studies and the hypotheses of the research. Section three presents the methodology of the study. Section four discusses the empirical findings and policy implications while section five is conclusions and recommendations.

RELEVANCE OF PUBLISHED FINANCIAL STATEMENTS

The relevance value of financial accounting information is determined mostly by its quality which makes accounting information of great interest to its users such as managers, shareholders, investors and customers (Barth et al*.,* 2008). For example, for a reporting company, better-quality accounting information can translate into lower cost of capital (Sengupta, 1998) whilst to an investor, it can translate into a more profitable allocation of capital (Barth et al., 2008). Accounting quality has been defined as the quality of accounting information as the capability of accounting measures to reflect a company's true economic position and the level of its performance (Verleun et al*.,* 2011; Barth et al*.,* 2008; Penman and Zhang, 2002; Watts, 2003). Their definition focuses on relevance of accounting information reported by entities only when the information they provide ensures reliability; such that it protects users of the information from any form of management opportunistic behaviour. Other definitions focus on relevance of information which is equally important (Li, 2010; Irvine and Lucas, 2006). Balance must be stricken between these two for accounting information to be of quality hence, its usefulness to stakeholders. The friction generated in balancing these two (accounting information and accounting quality) has existed for many years as they appear contradictory rather than complementary (Barth et al., 2008). Barth et al. (2008) resolve this conflict when they view accounting quality as relating to both a company's true economic position as well as its performance which means that the quality of accounting information does affect both the statement of financial position as well as the income-statements of a company. Consequently, they argue that it is possible that an increase in value relevance of information in the

statement of financial position may as well come along with an increase in reliability in the financial income statement information reported. Due to the possibility of increase in both relevance and reliability, we provide multiple measures in this study to capture this.

In principle, the quality of accounting information is not something that can be detected easily in the financial statements, appropriate proxies have to be formulated or developed (Kargin, 2013). Consequently, prior empirical studies have identified a number of accounting quality measures like forecast made by securities analysts, value-relevance, conservatism and earning management (Barth et al., 2008; Lang et al., 2003). More-also, Muhibudeen (2015) rates value relevance as measures with better ability to measure accounting quality as it enables financial information disclosed to explain how a firm value is measured. Therefore, we adopt value relevance measures using the financial information reported and the stock market value (Kargin, 2013). Iatridis (2010) has studied the impact of IFRS adoption in the United Kingdom and established that the application of IFRS does strengthen the quality of accounting statements and it improves the value relevance of accounting information reported. The value relevance measures we are using in this study, is in line with the accounting quality explanation provided by Barth et al. (2008). The empirical study of Abubakar et al. (2017) study examines the relationship between accounting disclosure and market value under new accounting reporting. The study finds that disaggregated assets and liabilities strongly correlate with the stock price. Similarly, it concludes that adjusted R^2 has a more significant association with a stock price after adopting IFRS.

The study of Aderin and Otakefe (2015) evaluates the impact of the adaptation of IFRS on Nigerian firms' quality of financial reporting. The study uses 23 listed companies for four (4) years, using regression analysis to evaluate R^2 statistics.

The results show that financial reporting quality increased after the adaptation of IFRS. In addition, Iatridis (2010) focuses on the value relevance in adopting IFRS from GAAP in the United Kingdom. The study suggests less information asymmetry and earning manipulation would lead to more relevant accounting measures. Similarly, Kargin (2013) concludes that value relevance has improved in the post-IFRS period in Turkish firms. In the same vein, Müller (2014) investigated the impact of mandatory adaptation of IFRS on the listed firms on the European stock markets of London, Paris, and Frankfurt stock exchanges. The results show increased value relevance after adopting IFRS, leading to better compliance with corporate governance principles, disclosure quality, and transparency.

Hypothesis of the study

As a result of the above, the study will consider these two hypotheses (in their null forms):

H_{o1}: Financial statements prepared using IFRS are not more value relevant than financial statements prepared under the Nigerian GAAP.
H_{o2}: Financial statements prepared over the period of the study did not show increasing trend in value relevance.

Signalling theory

This paper uses signalling theory to underpin the research. The golden idea behind signalling theory describes a situation when company management decides to send information about their performance to stakeholders or other financial statements users to attract their attention (Watts and Zimmerman, 1978). Signalling theory is mainly focused on problems involving information asymmetry in the market, at the same time, how this information asymmetry can be abridged by the party that has the most information signalling to the other party (Morris, 1987). Consistently, we would argue that the eventual value of the shares of these companies will be closer to their intrinsic value arising from possibly bridging information gaps between the companies and their shareholders from pre- to post- IFRS era.

METHODOLOGY

This study adopts a longitudinal research design in seeking to describe the pattern of variation that exists in the quality of financial statements in lieu of the adoption of IFRS in Nigeria. To achieve meaningful results, the time periods used in this study were divided into two: (a) Before IFRS adoption in Nigeria (also known as N-GAAP years), and (b) After IFRS adoption. The population of the study consist of 172 companies listed on the Nigeria Stock Exchange (NSE). The sample, therefore, consisted of 87 companies. The study used archival data from secondary source. Financial and insurance companies were exempted due to the peculiarity of their financial reports and additional regulations. Accounting variables were hand-sourced from the annual reports of the sampled firms for the period 2007 to 2016. The share prices were sourced from NSE fact book, Data Stream, and publications of the Nigerian Securities and Exchange Commission (SEC).

The Ohlson (1995) model is classified as the most popular valuation model use for measuring value relevance (Verleun et al., 2011). The model is usually applicable when value relevance is investigated over several periods of time because it is very compatible with inter-periods comparison. The study adopted Ohlson (1995) value relevance model as modified by Müller (2014) to see the improvements on value relevance of quality of accounting information in the pre- and post-IFRS periods. The model consists of two key indicators from financial statements report (that is, Statement of financial position and Income statement) on stock price. The model is defined as follows:

$$\text{(Pre-IFRS)}\ SP_{it} = \beta_0 + \beta_1 BV_{it} + \beta_2 EPS_{it} + \beta_3 CF_{it} + \beta_4 NA_{it} + \beta_5 NI_{it} + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

$$\text{(Post-IFRS)}\ SP_{it} = \beta_0 + \beta_1 BV_{it} + \beta_2 EPS_{it} + \beta_3 CF_{it} + \beta_4 NA_{it} + \beta_5 NI_{it} + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

where:

Table 1. Descriptive statistics (2007-2016).

Statistic	Share price	Book value	Net assets	Net income	EPS	Cash flow
Mean	28.1	22,719,398.2	22,493,022.6	48,911,883.5	83.4	24,406,486.1
Std. Dev.	84.5	165382974	163676721.5	828664282.3	263.5	184712196.2
Minimum	1	-19,217,754	-19,025,576	-2,900,609,000	-2076	-25,060,091
Maximum	1200	4,580,000,000	4,532,359,473	21,735,465,000	4011.9	1,726,506,461
Obs	870	870	870	870	870	870

Source: Authors' computation (2021).

SP_{IT}= share price at the fiscal year (proxy for quality of published financial information)
BV_{it} = book value of company in year t
NI_{it} = net income/share of company *i* in year t
NA_{it} = net assets of company in year t
CF_{it} = cash flow of parent company/share of company *i* in year t
EPS_{it} = earnings per share of company *i* in year t

The combined value relevance metrics is measured by the adjusted-R^2 and the regression coefficients of the Ohlson (1995) model. Thus, after the accounting numbers are obtained for both pre- and post-IFRS adoption a comparison can then be made between these periods. In this manner, it can then be thoroughly investigated whether there has been a change in the quality of published financial information after the mandatory adoption of IFRS in Nigeria. Given the fact that IFRS is a more principle-based regulation, we expect an increase in value relevance after the mandatory adoption of IFRS.

Since the study seeks to ascertain the effect of accounting information on share price, and more than one accounting information variable is employed, the study used the ordinary least square (OLS) multiple regression method. However, the data gathered has both cross-sectional and time series properties; essentially a panel data.

RESULTS AND DISCUSSION

Descriptive statistics

Descriptive statistics is used to show trend behaviour of the variables. The descriptive statistics for the preliminary statistical properties of the variables considers the full sample size (2007-2016) and the results are shown in Table 1. During the period under study, the highest mean value was recorded by net income with a value of 48.9 million. This is mainly attributed to the magnitude of the earnings by the firms during the period. Companies' activities tended to boost quality control thereby making their stocks perform well in the capital market and hence, the earnings were significantly larger during the period. Next in the series is the cash flow of companies with a mean value of 24.4 million. The book value of the company's equity, net assets of companies all maintained positive averages within the period of study. It is also worth noticing that the share price during this period maintained a relatively healthy mean value. On the fluctuation pattern, the net income was the most fluctuating during the period which is understandable because the period combines both pre- and post-IFRS years and also, considering the volatility of the capital market during these years, it is no surprise that the net income, net assets, cash flow and book values exhibited such volatility. The net income in this period had staggering minimum and maximum values at -2.9 billion and 21.7 billion respectively.

Empirical analysis of estimation results

Having looked at the descriptive statistics which explained trend behaviour in the last paragraph, an empirical analysis and estimation of the models earlier specified will be done in this section. Due to the nature of the data, for the first two models, the natural logarithm (LN) of all the data were computed and used for the panel regression. This was done to contain the degree of extremes noticed in the data. The interpretation of the panel regression results is done based on statistical and econometric criteria. The model included the basic factors affecting share price namely book value, Net assets, net income, cash flow and earnings-per-share in the pre-IFRS era. All the variables in the model conform to the expected signs because of the positive influence they have on share price. We cannot at this point observe the effect of the adoption of IFRS on share price and value relevance until we make an analysis of the post-IFRS but before then, we take a look at the regression coefficients, that is, the effects of the independent variables on share price during this period (Table 2). From the result, it can be seen that all the independent variables impact share price positively. The t-ratios and their respective p-values reveal that all the coefficients of net income, book value, earnings-per-share and the intercept are statistically significant at 1% significance level that of cash flow is significant at 5%, while the coefficient of net asset is not statistically significant. The model has relatively decent explanatory and predictive powers as suggested by the R^2 and the adjusted R^2 values respectively considering the fact that the regression is cross-sectional in nature. The R^2 value of 0.3347 suggests that about 33.47% of the systematic variations in share prices can be explained jointly by book value, net income, net assets, cash flow and earnings-

Table 2. Panel regression – model 1: Pre-IFRS (2007 – 2011).

Variable	Dependent variable (Share price)		p-value
	Co-efficient	t-statistic	
Intercept	1.500998*** (0.296022)	5.07	0.0000
Book Value	0.213399*** (0.030450)	7.01	0.0000
Net Assets	0.008150 (0.018355)	0.44	0.6570
Net Income	0.040929*** (0.015138)	2.70	0.0070
Cash Flow	0.025357** (0.012353)	2.05	0.0410
Earnings per Share	0.221020*** (0.028226)	7.83	0.0000
F-stat. (5, 429) = 43.17		R^2= 0.3347	
Prob (F-stat.) = 0.0000		Adj. R^2 = 0.3270	
Total Panel Observations = 435		Root MSE = 1.3227	

Standard errors in parenthesis. Significance levels: *<0.10, **<0.05, ***<0.01.

per-share. The adjusted R^2 value of 32.70% shows that the model has a relatively good predictive power. The goodness-of-fit of the model is further emphasized by the statistical significance of the F-statistics which is 43.17 with a p-value of 0.0000 this means that all the explanatory variables taken together are significant. In summary, in the pre-IFRS era, the model is good and the explanatory variables are good instruments for attaining a high and positive share price. Next, we consider the post-IFRS panel regression in Table 3.

First, looking at the regression coefficients, the result here is quite like the earlier one in that all the independent variables have a positive impact on share price. However, upon further observation, it is found that book value increases its influence on share prices under IFRS with a positive and significant impact as a percentage increase in book value leads to 34.41% increase in share price. This is consistent with Paglietti (2009) findings in a study that examined the effects of mandatory adoption of IFRS on Italian listed companies. Likewise, net income, cash flow, net assets, and earnings per share impacts share price. There is a general observation that share price always moves up with an increase in earnings per share and since this holds in both the pre and post adoption periods, a major deciding factor on the importance of IFRS adoption will depend on whether value relevance is increased post-adoption or not. However, the higher association between accounting numbers and share prices in the post-adoption period indicates that investors consider accounting information useful for their economic decisions. Asymmetric information on the quality of financial information is effectively bridged in both pre- and post- IFRS with the gap closer in the pre- era to justify the adoption of IFRS. The intercept value of 1.6113 implies that without all the independent variables used in this regression or if they are held constant, then share price will be 1.6113. It can be noticed that this value is higher than it was in the pre-IFRS era. Using the coefficients t-statistic and their respective p-values, the test of individual significance reveals that the coefficients of book value, net income, earnings per share and the intercept are statistically significant at 1% level of significance, while the coefficient of net assets and cash flow are not significant. The magnitude of adjusted R^2 in the post-IFRS period is larger than that of the pre-IFRS era. This suggests that our variable of interest provide information of higher value to investors/shareholders for their investment decision in post-IFRS era than in pre-IFRS era. It is, however, interesting to note that in the pre and post adoption periods, book value, net income and earnings per share have significant effects on the share price thereby solving the problem of information asymmetry. We document greater use of information in the financial statements produced by the companies by their shareholders which brings the market value of the shares to its intrinsic state. Aderin and Otakefe (2015) also had such findings and their rationale for it was because these variables are very

Table 3. Panel Regression – Model 2: Post-IFRS (2011 – 2016).

Variables	Dependent Variable – Share Price		p-value
	Co-efficient	t-statistic	
Intercept	1.611340*** (0.386147)	4.17	0.0000
Book Value	0.344129*** (0.038876)	8.85	0.0000
Net Assets	0.027796 (0.021647)	1.28	0.2000
Net Income	0.073986*** (0.014299)	5.17	0.0070
Cash Flow	0.007063 (0.025761)	0.46	0.6470
Earnings per Share	0.168539*** (0.386147)	6.54	0.0000
F-stat. (5, 429) = 73.16		R^2 = 0.4602	
Prob (F-stat.) = 0.0000		Adj. R^2 = 0.4539	
Total Panel Observations = 435		Root MSE = 1.3211	

Standard errors in parenthesis. Significance levels: *<0.10, **<0.05, ***<0.01.

Table 4. Incremental changes in the adjusted R^2 from 2007-2016.

	PRE-IFRS (base year = 2007)					POST-IFRS (base year = 2012)				
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Adj R^2	0.4192	0.3243	0.2771	0.3984	0.4180	0.3413	0.4373	0.5254	0.5020	0.4012
%Δ		(22.64%)	(33.90%)	(4.96%)	(0.29%)	-	28.13%	53.94%	47.08%	17.55%

Source: Author's computation (2019).

important indicators to investors of a firm's performance. If this is the case, then the value relevance provided by such information cannot be overemphasised because this is what will guide investors in making decisions in the capital market.

The model has good explanatory and predictive powers as suggested by the R^2 and the adjusted R^2 values. The adjusted R^2 in this era is higher than the one in pre-IFRS era. This indicates that in this era, there is an increase in value relevance of firms and hence higher quality of information and this suggests that IFRS adoption has a significant positive effect on the quality of published financial information. This agrees with the findings of Iatridis, 2010; Kargin, 2013; Müller, 2014; Aderin and Otakefe, 2015; Abubakar et al., 2017. Similarly, the adjusted R^2 value being higher in the post-IFRS era suggests that the adoption of IFRS has a significant and positive effect on the quality of published financial information. Müller (2014) and Aderin and Otakefe (2015) also made such discovery.

Robustness checks: value relevance test using trend analysis

In this section, we look at the adjusted R^2 from the pre-adoption period (2007-2011) to the post-adoption period (2012 – 2016). Using 2007 as base year for pre-IFRS and 2012 for post-IFRS, the percentage changes in adjusted R^2 was consistently negative for pre-IFRS period and consistently positive for post-IFRS period. The result is presented in Table 4. The essence of this analysis is to be able to answer the second research question which asks if there have been incremental changes in value relevance over the years due to the adoption of IFRS. For the pre-adoption period, the percentage change all through this era is negative, while in the post-IFRS period, in 2013 precisely, a 28.13% (positive) increase

was noticed immediately after adoption and the percentage increase in this entire period remained positive. However, in 2016, there was a significant decrease in the percentage change in the adjusted R^2 and just like we explained in the previous section, this decrease can be linked to the fact that Nigeria officially entered into recession in 2015, this incidentally had some impact on the financial performance of firms listed on the Nigerian Stock Exchange. Essentially, given how the percentage change in value relevance remained positive all through the post-adoption period, we can infer from the result that financial statements prepared over the period of the study showed increasing trend in value relevance in the post-adoption years, so the null hypothesis is rejected, however, due to economic factors such as the recession, there was a decline in this trend and as a result, we cannot ascertain if the increase in value relevance have continued if there was no recession.

CONCLUSION AND RECOMMENDATIONS

The need for high quality financial reports cannot be overemphasised. This research focuses on the effect of adoption of IFRS on the quality of financial reporting. Consistent with the finding adaptation, IFRS is beneficial to listed companies and enhance financial reporting quality; high-quality financial reports will motivate investors to invest more in companies in anticipation of more important and qualitative disclosure. Adequate financial disclosure will mitigate information asymmetry between managers and shareholders, thereby increasing the intrinsic value of listed firms. Furthermore, it should be noted that the ultimate purpose of improving financial reporting quality is to ensure that investors channel funds into best use for the purpose of growth and development of the economy. Thus, improving the quality of financial reporting is not an end, but a means to an end. To achieve this end, government must be totally committed to providing enabling environment for investors, both local and foreign, to use high quality financial statements for investment decision. In sum, high quality reports are not enough to guarantee economic development. The government must ensure political and religious peace, provision of infrastructure and security of lives of properties.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interest.

REFERENCES

Abubakar MY, Abdulsallam N, Alkali MY (2017). The Impact of the New Accounting Reporting Among Listed Firms in Nigerian Stock Market. Asian Journal of Social Sciences and Management Studies 4(1):1-9.

Aderin A, Otakefe JP (2015). International financial reporting standards and financial reporting quality in Nigeria. Journal of Science and Technology (Ghana) 35(3):73-83.

Barth ME, Landsman WR, Lang MH (2008). International accounting standards and accounting quality. Journal of Accounting Research 46(3):467-498.

Edogbanya A, Kamardin H (2014). Adoption of international financial reporting standards in Nigeria: Concepts and Issues. Journal of Advanced Management Science 2(1):72-75.

Holthausen RW, Watts RL (2001). The relevance of the value-relevance literature for financial accounting standard setting. Journal of Accounting and Economics 31(1):3-75.

Iatridis G (2010). International Financial Reporting Standards and the quality of financial statement information. International Review of Financial Analysis 19(3):193-204.

Irvine HJ, Lucas N (2006). The rationale and impact of the adoption of International Financial Reporting Standards: the case of the United Arab Emirates. In: Proceedings of the 18th Asian-Pacific Conference on International Accounting Issues. California State University, The Sid Craig School of Business pp. 1-22.

Isa MA (2014). Dimensions of IFRS Transition Roadmap's Information Content in LDCs: A Case of Nigeria. Procedia - Social and Behavioral Sciences 164:621-626.

Kargın S (2013). The impact of IFRS on the value relevance of accounting information: Evidence from Turkish firms. International Journal of Economics and Finance 5(4):71-80.

Lang M, Raedy JS, Yetman MH (2003). How representative are firms that are cross-listed in the United States? An analysis of accounting quality. Journal of Accounting Research 41(2):363-386.

Li S (2010). Does mandatory adoption of International Financial Reporting Standards in the European Union reduce the cost of equity capital?. The Accounting Review 85(2):607-636.

Morris RD (1987). Signalling, agency theory and accounting policy choice. Accounting and business Research 18(69):47-56.

Muhibudeen L (2015). International financial reporting standard and value relevance of accounting information in quoted cement firms in Nigeria. International Journal of Sciences: Basic and Applied Research 22(1):81-95.

Müller VO (2014). The impact of IFRS adoption on the quality of consolidated financial reporting. Procedia-Social and Behavioral Sciences 109:976-982.

Ohlson JA (1995). Earnings, book values, and dividends in equity valuation. Contemporary Accounting Research 11:661-687.

Paglietti P (2009). Investigating the effects of the EU mandatory adoption of IFRS on accounting quality: Evidence from Italy. International Journal of Business and Management 4(12):3.

Penman SH, Zhang XJ (2002). Accounting conservatism, the quality of earnings, and stock returns. The Accounting Review 77(2):237-264.

Sengupta P (1998). Corporate disclosure quality and the cost of debt. Accounting Review 73(4):459-474.

Umoren AO, Enang ER (2015). IFRS adoption and value relevance of financial statements of Nigerian listed banks. International Journal of Finance and Accounting 4(1):1-7.

Verleun M, Georgakopoulos G, Sotiropoulos I, Vasileiou KZ (2011). The Sarbanes-Oxley Act and accounting quality: a comprehensive examination. International Journal of Economics and Finance 3(5):49-64.

Vishnani S, Shah BK (2008). Value relevance of published financial statements–with special emphasis on impact of cash flow reporting. International Research Journal of Finance and Economics 17(1):84-90.

Watts RL, Zimmerman JL (1978). Towards a positive theory of the determination of accounting standards. Accounting Review 53(1):112-134.

Watts RL (2003). Conservatism in accounting part I: Explanations and implications. Accounting Horizons 17(3):207-221.

Wurgler J (2000). Financial markets and the allocation of capital. Journal of Financial Economics 58(1):187-214.

Vol. 14(2), pp. 136-142, April-June 2022
DOI: 10.5897/JAT2021.0493
Article Number: 6664ED869040
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

Effects of shifting non tax revenue from Local government authorities to Tanzania Revenue Authority: The case of Morogoro Municipality

Mohamedi Hussein[1*] and John B. Tlegray[2]

[1]Department of Business Studies, Faculty of Commerce, Jordan University College, P. O. Box 1878 Morogoro, Tanzania.
[2]Department of Accounting and Finance, Jordan University College, P. O. Box 1878 Morogoro, Tanzania.

Received 9 August, 2021; Accepted 4 October, 2021

The transfer of property tax and billboard fees collection from Local Government Authorities (LGAs) to Tanzania Revenue Authority (TRA) has had drastic consequences for LGAs budgets. This study seeks to examine the effects of shifting the collection of non-tax revenue from LGAs to TRA with reference to Morogoro Municipal Council (MMC). A questionnaire was administered to a sample size of 88 respondents, purposefully selected from Morogoro municipality and TRA. Key staffs were interviewed to complement the survey data. A descriptive analysis of survey data coupled with content analysis of interview data, showed that, non-tax revenue shift from MMC to TRA had various effects that include its inability to fulfil its obligations, loss of jobs to workers who dealt with revenue collection and introduction of other alternative taxes (for instance, waste disposal tax) that added burdens to tax payers. Moreover, MMC level of average annual revenue collection decreased by TZS 239 million from billboard fees and TZS 567 million on property tax respectively, for the three years of 2017 to 2019. Consequently, MMC was not able to fulfill its obligations effectively. It was also found that lack of competent personnel, resulted in poor administrative capacity to broaden the revenue base, tax evasion among municipal dwellers, poor tax enforcement capacity. Other challenges are: corruption from revenue collectors, political interference causing relaxation on revenue collection and overdependence on central government which reduced MMC's autonomy. It is recommended that MMC needs to enhance its internal revenue collection system in order to be able to fulfil its obligations while encouraging voluntary compliance in payment of revenue. MMC could also adopt the techniques used by TRA in broadening its tax base.

Key words: Non tax revenue, local government authorities, Tanzania revenue authority

INTRODUCTION

The development and sustainability of any country depends on revenue collection from taxies and levies (Fjeldstad and Moore, 2009). It enables the state to attain assets that are free of indebtedness (Ngotho and Kerongo, 2016). Local government authorities (LGA) in Tanzania had the mandate to raise certain revenues from taxes, levies and fees where the local governments set their own revenue policy within the limits set by central

*Corresponding author. E-mail: mudfamousi93@gmail.com. Tel: +255 713 164 817.

government (Mosha, 2010). LGAs retain all their revenue and use it as part of their own budgets and these revenues do not form part of central government revenue. Local government finance Act cap.290 requires local government to have the right to formulate, approve and execute their budget and plans; exacts bylaws for required rates to be charged on sources of revenue. In 2008, a new decentralized system for property tax (PT) collection was introduced in Dar es Salaam, the country's largest city (Mosha, 2010). The reform entailed shifting the responsibility for administration and collection of property tax from the municipal councils (MCs) to the national tax administration, the Tanzania Revenue Authority (TRA). The Government expected this measure to increase the revenue collection, but it did not. The reasons for its failure included poor revenue performance and corruption and political interference by local councillors (URT, 2008). According to Fjeldstad et al. (2010) in 2008 to February 2014, the Government announced the return of PT collection to the municipalities with immediate effect with a centralized collection by TRA. This did not last long. The reasons for its failure include poor revenue collection and problems of coordination and cooperation between MCs and TRA. However, in July 2016, property taxation was again centralised and TRA was assigned full responsibility for administrating the tax in the country (Fjeldstad et al., 2014). Also, in July 2016, the government of Tanzania shifted the responsibility for property tax and billboard/ advertisement fees collection from Local Government Authorities (LGAs) to Tanzania Revenue Authority (TRA) (URT, 2017). Thus, TRA was officially mandated to assess and collect that non-tax revenue mentioned in order to expand its tax base (Fjeldstad et al., 2014).

Non tax revenue refers to government revenue not generated from taxes (Wikipedia Encyclopedia). Examples include: billboard/advertising fees, property tax fees, bond issues and profits from state owned companies (Yan, 2010). Moreover, non-tax revenue are all revenues other than tax revenue accruing to Government through the delivery of services by ministries, local governments and other government institution; from their operations, either through the use of Government assets/ facilities and or through the enforcement of regulation. All other funds stipulated by law or regulation to be paid annually or periodically to Government are also non-tax revenue Local Government Act 1982). The transfer of the collection of non-tax revenue from the LGAs to TRA has had drastic consequences for LGAs budgets. It is estimated that non-tax revenues such as billboard fees and property tax earned LGAs approximately 60% of their total revenue while other revenue sources/user charges such as hotel, service, market levies etc. accounted for 40%. Thus, the LGAs revenue base declined by 60% something that made them to incur difficulties in rendering services to people they serve. This effect of transfer of non-tax revenue from LGAs to TRA has not been well investigated.

Prior studies such as Besley and Person (2013) studied the impact of intergovernmental transfers on local revenue generation in Sub-Saharan Africa; evidence from Tanzania and found that most subnational governments in Africa, lack institutional capacity to collect local taxes and instead rely heavily on grants from the central government to keep themselves afloat while leaving the effects of transfer of non-tax revenue unattended. Similarly, study done by Fjeldstad et al. (2017) on local government taxation in Sub-Saharan Africa (Tanzania being among them) found that in most African countries, the administrative and institutional capacity of local governments to collect taxes and provide public goods is very limited, particularly in rural areas where geographical vastness, poverty and low population density make it extremely difficult for LGAs to collect taxes. Yet, the effects of transfer of non-tax revenue were left unattended. Moreover, a study by Manwaring (2017) that focused on enhancing revenues for local authorities in Tanzania found that in most LGAs there are continuing problems including poorly managed revenue databases, varied experiences with outsourcing revenue collection and limited voluntary taxpayer compliance something that result into difficulties in increasing their tax base. Other studies include UN-HABITAT (2015) who found decentralising revenue collection created high potential for mismanagement and corruption. Masaki (2018), Tanzi (2000) and Fjeldstad and Semboja (2011) also, reported that, the capacity to collect revenue at local level is extremely limited in Tanzania. The study further stated that there are practical consequences in terms of revenue that are dramatic, including frequent cases of tax evasion, corruption, and even embezzlement of revenues, and constant political tension between local and central governments.

While all prior studies are of paramount importance, none of the studies have examined the effects of non-tax revenue transfer from LGAs to TRA in Tanzania. Most of the studies (Masaki, 2018; Tanzi, 2000) focused on revenue generation, administration and enhancement rather than focusing on the effects incurred after non-tax revenue transfer from LGAs to TRA. Yet, no study has examined the effects of these non-tax revenues shifting from LGAs to TRA with reference to Morogoro municipality. This is the gap to be filled. Therefore, current research study attempts to examine the effects of shifting the collection of non-tax revenue from Local Government Authorities to Tanzania Revenue Authority with reference to Morogoro municipality.

MATERIALS AND METHODS

Description of the study area

The study was carried out in Morogoro Municipality. Morogoro municipality has over 531 km^2 and it is divided into 29 wards. The

municipality is located on the eastern side of Tanzania Mainland. The municipality lies between latitudes 5°58' and 10°00' South of the Equator, and between longitudes 35°25' and 38°30' East of Greenwich. It is bordered by seven regions. In the north are Tanga and Manyara while in the eastern side are the Coast Region and Lindi regions. On the western side, there are Dodoma and Iringa regions, while Ruvuma is located in the southern side of the region. The district occupies an area of 260 km^2 and population of 227,921 (URT, 2012).

Research approach and design

The study applied mixed approach that utilizes both qualitative and quantitative approaches to obtain the required data. Qualitative approach aims to explore and to discover issues about the problem on hand, because very little is known about the problem (Mwonge and Naho, 2021). There is usually uncertainty about dimensions and characteristics of problem. It uses soft data and gets rich data (Cresswell, 2009). According to Mosha (2010) qualitative approach is designed to help researchers understand people, the social and cultural contexts within which they live. Such studies allow the complexities and differences of worlds-under-study to be explored and represented. With qualitative approach, different knowledge claims, enquiry strategies and data collection methods and analysis were employed (Cresswell, 2009). Also, qualitative data were used in gaining deep understanding of respondent's attitudes and opinions rather than surface description of the large population in the study area (Mwonge and Naho, 2021). Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher's impressions and reactions. On the other hand, Quantitative approach makes use of questionnaires, surveys and experiments to gather data that is revised and tabulated in numbers, which allows the data to be characterized by the use of statistical analysis. Quantitative researchers measure variables on a sample of subjects and express the relationship between variables using effective statistics such as correlations, relative frequencies or differences between means; their focus is to a large extent on the testing of theory (Kothari, 2004). While quantitative approach presents statistical results represented by numerical or statistical data, qualitative approach presents data as descriptive narration with words and attempts to understand the phenomena in natural settings. The study employed case study design was employed whereby questionnaire and interview guide were used to solicit information from TRA and Morogoro municipality staff regarding revenue collection.

Study population

According to Kothari (2004) the population denotes to the populace where an investigator needs to take a broad view emanating from the results of a study. The population touches the resolutions researchers make about resources and sampling essential for the research (Kothari, 2004). The study population involved TRA and Morogoro municipality staff totalling 750 responsible for revenue collection.

Sampling technique and sample size

Purposive sampling technique was used in this study. Purposive sampling is a non-probability sampling, which refers to sampling procedures where the sample for the study is deliberately selected by the researcher (Kothari, 2004). In this respect, elements of the population have no equal and known chance of being selected into the sample (Saunders et al., 2007). Respondents were selected based on knowledge of tax collection. A minimum sample size of 88 respondents was purposefully selected from which 25 involved TRA staff and 63 Morogoro municipal staff. This sample size was drawn using a model proposed by Yamane (1987) which shows the following relationship.

$$\mathrm{n} = \frac{N}{1 + Ne^2}$$

Where: N = population size; n = sample size; e = Confidence Interval (10%).

Thus,

$$\mathrm{n} = \frac{750}{1 + [750 \times (0.1)^2]}$$

Sample Size = 88.2 Approximately to 88

Data collection

Questionnaires and interview guide were used in the study data collection. Structured and semi-structured questionnaires were administered to tax/revenue collectors to get information. Copies of questionnaires were organized based on the essentials of a good questionnaire, that is short and simple, and organized in a logical progression moving from relatively simple to more difficult issues (Yin, 2003). Questionnaire is a list of questions given to respondent and fills them themselves. The main reasons for the use of questionnaires in this study arose from the fact that they were relatively economical and can be used to cover a wide geographical area with minimal cost in terms of both time and money, they have standardized questions, can ensure anonymity; and questions were written for the specific purposes. Questionnaires also increased the chances of response; they made it possible for the researcher to measure what a person knows or information, what a person likes and dislikes. Additionally, questionnaires are good for measuring what a person values and preferences and what a person thinks attitudes and beliefs. In this study questionnaires were used for formal education in the study area (Kelly, 1996). The schedule-structured interview was considered appropriate for this study as it enabled one to obtain elaborate answers to open ended questions from the respondents. It also helped to obtain responses from property owners who had modest school education. Besides, the personal interview enabled the study to avoid the pitfalls of mail questionnaire and telephone interviews, which are the other types of data gathering instruments in the survey method. On the other hand, the researcher used face to face interview to the management for TRA [manager and heads of revenue department] and Morogoro Municipality [director and heads of revenue and trade department] in order to solicit information concerning the matter.

Data analysis

Both quantitative and qualitative data were collected. The collected data were edited and coded. Descriptive statistics was applied for quantitative data where frequencies and percentages were computed. Statistical Package for Social Science (SPSS) facilitated the analysis and reliability of data. Moreover, for qualitative data content analysis was used.

RESULTS AND DISCUSSION

To examine the effects on tax collection following the

Table 1. Challenges facing Morogoro Municipal own source collection.

Challenge(s)	SA		A		UN		D		SD	
	N	%	N	%	N	%	N	%	N	%
Poor administrative capacity to assess the revenue base	71	80.68	0	0	0	0	17	19.32	0	0
Reduced revenue and tax evasion	0	0	60	68.18	0	0	28	31.82	0	0
Poor administrative capacity to enforce the taxes	53	60.23	23	26.14	0	0	12	13.63	0	0
Explicit and internal tax evasion and resistance from taxpayers	0	0	70	79.55	10	11.36	8	9.09	0	0
Corruption including embezzlement of revenue	62	70.45	26	29.55	0	0	0	0	0	0
Political pressure on the local tax administration to relax on revenue collection	80	90.90	8	9.10	0	0	0	0	0	0
Overdependence on the central government for financial transfer	52	59.09	20	22.73	0	0	16	18.18	0	0

Source: Research Data, 2021.

shifting of billboard and property tax to TRA, respondents were asked to provide their opinions on six variables; poor administrative capacity to assess the revenue base; reduced revenue and tax evasion; poor administrative capacity to enforce the taxes; explicit and internal tax evasion and resistance from taxpayers; corruption including embezzlement of revenue; political pressure on the local tax administration to relax on revenue collection; and overdependence on the central government for financial transfer. The respondents were required to identify the challenges by indicating whether they strongly agree (SA), Agree (A), Uncertain (UN), Disagree (D) and Strongly Disagree (SD). Table 1 presents the study results. The results in Table 1 indicated that there have been various challenges that face MMC own source collection after shifting of non-tax revenue to TRA. The results show that 71(80.68%) of respondents stated that there has been poor administrative capacity to assess the revenue base. It was found that failure to assess the revenue base resulted into little collection of revenue and reliance of funds from the central government. One of the key respondents was of the following view:

We admit that, MMC lacks administrative capacity to assess the revenue base from the fact that our personnel are not more equipped on the matter. Our request to be provided with competent personnel has not yet been fulfilled as the implementation of plans put are awaiting for the approval from the central government. The personnel available have helped the MMC to get some of revenue after the shift (Municipal treasurer).

On the other hand, 17(19.32%) of respondents disagree that there is no poor administrative capacity to assess the revenue base from the fact that personnel responsible for assessing revenue base have either been demoralized or are engaging in corruption. Such challenges have resulted in little revenue base and some of the revenue collected is mismanaged. One of the key respondents was of the following view:

We have some revenues sources such as service levy and hotel levy not collected to the required amount. What happens is that some of personnel do not do well their jobs and end up into corrupt practices although they have adequate expertise to enable the MMC to attain its targeted goals (Informant from trade and revenue department).

Furthermore, the results in Table 1 indicate that 60 (68.18%) of respondents agreed that the other challenge is the reduced revenue and tax evasion while 28 (31.82%) disagreed. This implies that after shifting non-tax revenue to TRA, there has been a reduction of revenue. It is argued that, revenue reduction, together with tax evasion, is the reason the MMC entered into revenue crisis. Moreover, there has been little tax education that hindered smooth revenue payment. One of the key respondents was of the following view:

Reduced revenue was due to inability to tap other sources while being unable to provide services to the dwellers in the MMC. Such hindrances resulted into drop in revenue collection and evasion (Informant from revenue unit).

The study result is consistent with the findings of Mosha (2010) who asserted that many LGAs lack personnel to assess the tax base and those available are immersed into corruption something that renders many LGAs to deliver poor services

to its dwellers. It is argued that there are some LGAs that are able to collect and utilize well their revenue. Revenues such as service and hotel levies have not been well collected from the fact that some LGAs officials do the businesses of the same and become reluctant to fully collect revenue.

Similarly, the results in Table 1 indicates that 53 (60.23%) respondents accounted to 60.23% of respondents strongly agreed that there is poor administrative capacity to enforce the taxes while 23 (26.14%) of respondents disagreed. The study result implies that some personnel do not have the capacity to fulfil their obligations well resulting into little revenue enforcement. Moreover, 12 (13.63%) of the respondents accounted to 13.63% disagreed with the statement that poor administrative capacity to enforce the taxes has not been a challenge from the fact that although some revenue sources have been transferred, alternative sources have come into existence. One of the key respondents stated as follows:

After shifting non-tax revenue to TRA, new sources of revenue to MMC were introduced such as sales of plots, adjustment of business license provision to legible tax payers and enhancement of waste disposal to boost revenue collection (Informant from trade and revenue department).

The statements above concur with Yan (2010) who stressed on diversification of tax base to enable government entities to add alternative revenue sources that do not harm peoples' income.

Regarding explicit and internal tax evasion and resistance from tax payers, it was found that 70(79.55%) of respondents agreed, while 10 (11.36%) of respondents were neutral and 8(9.09%) of respondents disagreed. Despite the general inclination to resist taxes, it was found that people were able to pay revenue as assessed, so long as the revenue collection follows procedures and is administered equitably. One of the key respondents was of the following view.

Our tax payers have been non-resistance when revenue introduced is for the benefit of the whole dwellers in MMC. Also, people are non-resistant when revenue proposed passes through proper channels for decision and implementation. Therefore, when these procedures are followed people are able and ready for implementation (Informant from revenue unit).

Additionally, the results in Table 1 indicate that 62(70.45%) of respondents strongly agreed that there is corruption that includes embezzlement of revenue to some revenue collectors and those who practice corruption are dealt with in accordance to the law. 26(29.55%) of respondents agreed that there is corruption that includes embezzlement of revenue, while none of the respondents were uncertain or disagreed:

One of the key respondents stated as follows: Although some corrupt practices cannot end completely, personnel who get identified are dealt with. In this MMC corrupt including embezzlement has been minimal and steps are taken to eliminate such practices (Informant from legal department).

The findings above are in line with Besley and Persson (2013) who reported that corruption has been a hindrance in many LGAs where provision of services has been minimal. Such practices have rendered people to resist in paying revenue in some instances as what is paid for does not meet the development expectations of LGA dwellers. The results in Table 1 shows that 80(90.90%) of respondents strongly agreed that the availability of political pressure on local tax administration to relax on revenue collection followed by 8 (9.10%) of respondents who agreed to some extent that there is political pressure on local tax administration to relax on revenue collection. It was found that Morogoro municipality council is challenged by politicians who always like to see their voters un-harassed in paying taxes. Although, taxes are insisted for payment, some politicians go further and interrupt the implementation process unnecessarily. One of the key informants stated as follows:

It has been a challenge to some politicians to persuade people not to pay what pertains revenue something that results into little revenue collection. Although such issues have been happening, orientations have been done in each tenure of service to educate politicians on their role to significantly be part and parcel of tax enforcement (Municipal treasurer).

Finally, the results in Table 1 indicate that 52(59.09%) of respondents strongly agree that in the period of shifting non-tax revenue, there has been an overdependence of central government for financial transfer followed by 20(22.73%) of respondents who agreed to some extent that there has been overdependence from central government. Also, the study found that 16 (18.18%) of the respondents disagreed that overdependence on the central government for financial transfer was a challenge. The study result implies that the availability of overdependence of central government were in opinion that Morogoro municipality council was obliged to seek for funds from the central government to fulfil its obligations. Such funds include; salary and emoluments, infrastructure development, free education funds, health services etc. One of the key respondents was of the following view:

We are obliged to seek for funds from the central

government to finance issues such as free basic education; health related financing, infrastructure development, salary and others. Such financing rendered the MMC to be dependent on central government subsidies to carry out its developmental projects (Municipal treasurer).

It was observed that various challenges have been encountered by Morogoro municipality council (MMC) such as poor administrative capacity to assess and broaden the revenue base due to lack of competent personnel, reduced revenue and tax evasion among dwellers, poor administrative capacity to enforce taxes introduced, corruption from revenue collectors, political interference causing relaxation on revenue collection and overdependence on central government for financing the MMC. Moreover, in order to mitigate the challenges competent personnel employment and fighting for corrupt revenue collectors have been emphasized and implemented.

Conclusion

The shifting of non-tax revenue (billboard fee and property tax) from Morogoro municipality council (MMC) to TRA had fiscal consequences to MMC from the fact that it was unable to fulfil its obligations such as planning and completing its projects in time, loss of jobs to workers who dealt with revenue collection, resulting into tax burden among taxpayers due to introduction of other alternative taxes (that is, waste disposal tax). Also, there was inadequate education services provision after the transfer of non-tax revenue from the fact that, what was utilized by MMC from non-tax revenue could not be replaced, thus hindering the planned projects that would enable citizens get rid of some challenges that befall them. On the TRA side, it utilized well its personnel to manage and collect more revenue than that collected by MMC previously. Moreover, the non-tax revenue collected had no special measure for property and billboard fees that would enable owners pay the required amount as result, they ended up paying flat rates. Additionally, the reduction of revenue to MMC was indicated by an average annual decrease of TZS 239 million from billboard fees and an average decrease of TZS 567 million on property tax shift for the three years of 2017 to 2019. This shift rendered the MMC to fulfil its obligations with difficulties while some initiated projects became had to be stopped. Moreover, such shift had spill over positive effect at national level as there has been a positive improvement and implementation of services in the country. Therefore the perception of stakeholders on such shift gave credit to the central government on health and education related services but with little credit on municipal infrastructure development such as roads maintenance. Finally, MMC was found to have poor administrative capacity to assess and broaden the revenue base due to lack of competent personnel, reduced revenue and tax evasion among dwellers, poor administrative capacity to enforce taxes introduced, corruption from revenue collectors, political interference causing relaxation on revenue collection and over-dependence on central government among the challenges. Moreover, in order to mitigate the challenges encountered, MMC need to have competent personnel in line of revenue assessment and administration; and fight corrupt revenue collectors as mitigating strategies.

Recommendations

Based on the conclusion, the subsequent recommendations are put forward:

1. It is recommended that the system TRA adopted needs to be adapted for MMC revenue collection enhancements generally, and if non-tax revenue collection is returned to its mandate.
2. It is recommended that MMC needs to enhance its internal revenue collection in order to be able to fulfil its obligations while facilitating voluntary compliance in payment of revenue.
3. The availability of poor administrative capacity to assess and broaden the revenue base due to lack of competent personnel, reduced revenue and tax evasion among dwellers, poor administrative capacity to enforce taxes introduced, corruption from revenue collectors, political interference causing relaxation on revenue collection and overdependence on central government among the challenges need to be solved by having competent personnel in line of revenue assessment and administration and fight corrupt revenue collectors as mitigating strategies.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interest.

REFERENCES

Besley T, Persson T (2013). Taxation and development. In: Auerbach AJ, Chetty R, Feldstein M, Saez E (eds), Handbook of Public Economics (Vol. 5), Elsevier, Amsterdam.

Cresswell P (2009). Research Methodology Methods and Techniques, Second Edition, New Delhi: New Age International publisher.

Fjeldstad OH, Ali M, Katera L (2017). Taxing the urban boom in Tanzania: Central versus local government property tax collection. CMI Insight.

Fjeldstad OH, Chambas G, Brun JF (2014). Local government taxation in Sub-Saharan Africa: A review and an agenda for research. CMI Working Paper.

Fjeldstad OH, Fjeldstad OH, Katera L, Ngalewa E (2010). Local government finances and financial management in Tanzania: empirical evidence of trends 2000-2007. REPOA Special Paper no. 10-2010. Dar es Salaam: Mkuki na Nyota Publishers.

Fjeldstad OH, Moore M (2009). Revenue authorities and public authority

in sub-Saharan Africa. The Journal of Modern African Studies 47(1):1-18.
Fjeldstad OH, Semboja J (2011). Dilemmas of fiscal decentralization: a study of local government taxation in Tanzania. Forum for Development Studies 27(1):205-214.
Kelly R (1996). The Evolution of a Property Tax Information Management System in Indonesia: In Information Technology and Innovation in Tax Administration, edited by G. Jenkins. Cambridge, MA: Kluwer pp. 115-135.
Kothari CR (2004). Research Methodology Methods and Techniques, 2nd Ed. New Delhi: New Age Int. (P) Ltd.
Manwaring P (2017). Enhancing Revenue for Local Authorities in Tanzania, International Growth Centre, IPS. Available at: https://www.theigc.org/wp-content/uploads/2017/10/ALAT-2-page-note-02.10.17v1.pdf
Masaki T (2018). The impact of intergovernmental transfers on local revenue generation in Sub-Saharan Africa: Evidence from Tanzania. World Development 106:173-186.
Mosha A (2010). Challenges of Municipal Finance in Africa. Nairobi: United Nations Human Settlements Programme (UN-HABITAT).
Mwonge LA, Naho A (2021). Determinants of credit demand by smallholder farmers in Morogoro, Tanzania. African Journal of Agricultural Research 17(8):1068-1080.
Ngotho J, Kerongo F (2016). Determinants of Revenue Collection in Developing Countries: Kenya's Tax collection Perspective. Journal of Management and Business Administration 1(1):1-9.
Saunders M, Lewis P, Thornhill A (2007). Research Methods for Business Students, 4th Ed., Pearson Education Limited, London.
Tanzi V (2000). Policies, institutions and the dark side of economics. Books.
UN-HABITAT (2015). The challenges of local government financing in developing countries', United Nations Human Settlements Programme, Nairobi, Kenya.
United Republic of Tanzania (URT) (2008). Report of the sub-committee on matters required to be accomplished to enable Tanzania Revenue Authority to collect property rate on behalf of local government authorities in mainland Tanzania (July). Dar es Salaam: Prime Minister's Office Regional Administration and Local Governments and Tanzania Revenue Authority.
United Republic of Tanzania (URT) (2012). Population and Housing Census: Population Distribution by Administrative Areas.
United Republic of Tanzania (URT) (2017). Speech by the Minister for Finance and Planning, Hon. Dr Philip I. Mpango (MP), presenting to the National Assembly, the estimates of government revenue and expenditure for 2017/18, Dodoma (8 June).
Yamane T (1967). Statistics: An Introductory Analysis, 2nd Edition, New York: Harper and Row.
Yan S (2010). Competitive Strategy and Business Environment: The Case of Small Enterprises in China. Asian Social Science 6(11):64-71.
Yin RK (2003). Case Study Research: Design and Method: Applied Social Research Methods, Vol.5: Sage Publications Ltd.

Vol. 14(2), pp. 143-149, April-June 2022
DOI: 10.5897/JAT2021.0492
Article Number: 8D52B4569113
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

Welfare effect of aid

Fredrick Ikpesu

School of Management and Social Science, Pan-Atlantic University, Nigeria.

Received 3 August, 2021; Accepted 18 January, 2022

Developing economies have often relied on developmental finance (aid) in improving the welfare and social being of their citizenry. However, the developmental effect of aid on developing economies has sparked a lot of interest among scholars and policymakers. The objective of the study is to examine the welfare effect of aid in Nigeria for the period of 1981 to 2017. The study employed the autoregressive distributed lag (ARDL) approach in analysing the data. The study confirmed that in the short-run and long-run, aid positively influences welfare. Based on the findings from the study, the government should design and implement policies that will encourage the inflow of aid to spur growth and increase welfare in the country. More so, the government should ensure that the inflow of aid is judiciously used to ensure continuous improvement of citizen welfare in the country.

Key words: Aid, welfare, autoregressive distributed lag (ARDL).

INTRODUCTION

Aid within the growth literature has been recognised as one of the key sources of external finance to developing economies. According to the literature, these external sources of funds have played a crucial role in boosting growth in developing economies. Developmental economists generally believed that through the availability of these external funds (aid), developing economies can achieve the needed resources that will propel them to achieve sustainable growth. Based on the World Bank report, the inflow of aid to emerging economies has grown tremendously in the last couple of years (Kurihara, 2014; Raza et al., 2021a). More so, the developmental effect of aid on developing economies has sparked a lot of interest among scholars and policymakers on the effect of these external funds on the growth of an economy. Hence, this paper attempts to address the welfare effect of aid in Nigeria, since available records and statistics have shown that the country has been one of the major recipients of foreign aid among the Sub-Saharan African continent (World Bank, 2021), as shown in Figure 1. Empirical studies have shown that aid have the capacity to enhance growth and reduce poverty in developing economies (Kurihara, 2014; Setargie, 2015; Moolio, 2015; Salahuddin and Gow, 2015; Chowdhury, 2016; Akter, 2016; Meyer and Shera, 2017; Jawaid and Saleem, 2017). However, while the growth effect of aid flows have been widely recognised in the available literature, the welfare effect of aid had remained largely unexplored in the country. Hence, this study fills the gap in the literature. In a bid to address the research objective, the study employed an ARDL framework to estimate the welfare effect of aid in Nigeria. The rest of

E-mail: fikpesu@pau.edu.ng.

JEL Classification: F24, F35, O41

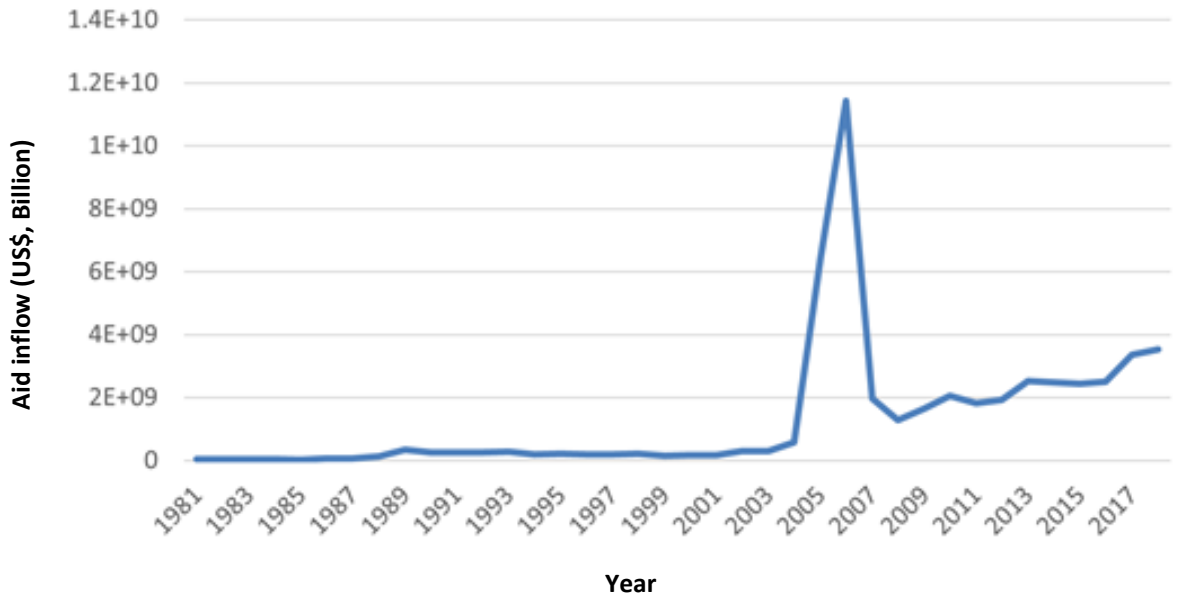


Figure 1. Graph of aid inflow to Nigeria in US$ (billion).

the study is sub-divided into the following section. Section two examines the model and econometrics issues. Section three present and discuss the outcome of the research findings. The final section presents the conclusion of the study.

REVIEW OF THEORIES AND LITERATURE REVIEW

Several theories in the literature have been used to explain why aid flow to developing economies is paramount. The two-gap theory advanced by Chenery and Strout (1968) showed that developing economies need external fund because most of them are usually faced with savings and foreign exchange constraint which have hindered them in embarking developmental project that is required to enhanced productivity and ensure sustainable growth. The two-gap model provides the justification for foreign aid into developing economies. The big push model introduced by Paul Rosenstein-Rodan (1943) also provides the need for foreign aid into developing countries. According to the theory, less developing countries needs large amount of investment, and the inflow of aid is needed to serve as a big push for developing economies to attain sustained growth and reduce poverty (Raza et al., 2021b). The poverty trap theory concept which was propounded by Nelson (1956) has also been used to explain the significance of external capital inflows (aid) to developing economies (Lensink and White, 2001; Mcmillan, 2011; Harms and Lutz, 2004; Kraay and Raddatz, 2005; Hokmeng and Moolio, 2015, Raza et al., 2021b). According to the theory, most developing economies' growth is stalled by poverty traps due to poor savings, low production among others which limits the capacity of an economy growing (Kraay and Raddatz, 2005).

The theory thus postulates that for an economy to move out of the poverty trap, the growth rate of income needs to rise above the rising population rate. Thus an inflow of external capital is required to raise the growth rate of income.

In the empirical literature, there exists a mixed finding on the welfare effect of aid. While the following studies advocate the flow of aid to developing economies (Kurihara, 2014; Setargie, 2015; Moolio, 2015) because of its developmental impact on recipient economies, others documented that aid retards growth (Lensink and White, 2001; Moyo, 2009; Tadesse, 2011; Ndambiri et al., 2012; Abd El Hamid, 2013; Girma, 2015; Omoruyi and Meibo, 2016) because it makes developing economies to be over-dependence on aid which have trapped them in a vicious cycle and poverty..

Besides, while the majority of the literature has examined the growth effect of aid, the welfare effect of aid had remained largely unexplored. Hence, the need to understand the welfare effect of aid in the country. Thus, this study fills the gap in the literature by employing an ARDL framework to estimate the welfare effect of aid on welfare in Nigeria.

MODEL AND ECONOMETRIC ISSUES

Data

The study employed yearly time series data between the periods 1981 to 2017. Data on workers' remittance received (REM), official

Table 1. Variable, notation, justification and source.

Variable	Measurement	Notation	Justification	Source
Dependent variable				
Welfare	GDP per capita	GDPPC	Kpodar and Le Goff (2012), Stojanov and Strielkowski (2013), Marwan et al. (2013), Nwaogu and Ryan (2015) and Evans and Kelikume (2018)	WDI
Independent variables				
Aid	Aid received in USD before conversion to local currency	ODA	Lensink and White (2001), Moyo (2009), Tadesse (2011), Ndambiri et al. (2012), el Hamid Ali (2013), Marwan et al. (2013), Kurihara (2014), Setargie (2015), Moolio (2015), Nwaogu and Ryan (2015) and Raza et al. (2021b)	WDI
Human and physical capital variables				
Human Capital	School enrolment. secondary (% gross)	HC	Marwan et al. (2013), Beatrice and Samuel (2015), Bhandari (2015), Meyer and Shera (2017), Evans and Kelikume (2018) and Raza et al. (2021c).	WDI
Domestic Investment	Gross capital formation	DI	Marwan et al. (2013), Kolawole (2013), Beatrice and Samuel (2015) and Meyer and Shera (2017)	WDI
Macroeconomic stability variables				
Inflation	Consumer prices (annual %)	INF	Gupta (2009), Stojanov and Strielkowski (2013), Marwan et al. (2013), Beatrice and Samuel (2015), Bhandari (2015) and Nwaogu and Ryan (2015)	CBN Statistical Bulletin
Remittance	Remittance received in USD before conversion to local currency	REM	Aggarwal et al. (2011), Marwan et al. (2013), Beatrice and Samuel (2015), Salahuddin and Gow (2015), Nwaogu and Ryan (2015), Chowdhury (2016), Akter (2016), Meyer and Shera (2017) and Jawaid and Saleem (2017)	WDI
Real Exchange Rate	The ratio of a foreign price level and the domestic price level, multiplied by the nominal exchange rate.	REXR	Amuedo-Dorantes and Pozo (2004), Gupta (2009), Acosta et al. (2009) and Meyer and Shera (2017)	CBN Statistical bulletin

Source: Authors (2021).

development assistance (ODA), human capital (HC), welfare was measured using GDP per capita (GDPPC) as a proxy, Domestic Investment (DI) were sourced from World Bank (World Bank, 2018) world development indication while data on inflation and real effective exchange rate was sourced from CBN statistical bulletin. Table 1 shows the variables, notation, justification and sources of all the variables used in the study.

Theoretical framework

The study is hinged on the production function of Cobb-Douglas which specifies the output as a function of physical capital and labour. The Cobb-Douglas production is expressed as:

$$Y_t = A_t K_t^{\alpha} L_t^{\beta} \quad (1)$$

Where Y_t represent output at time t while A_t represent total factor productivity, K_t capital stock and L_t labour stock, α and β are the output elasticities of capital and labour respectively.

In line with previous studies, through external capital inflows (foreign aid), developing economies can acquire the needed technology that will enhance total factor productivity (A). Hence, total factor productivity (A) is modelled as:

$$A_t = f(ODA_t) \quad (2)$$

Where, ODA is aid Substituting Equation 2 for Equation 1, the following is obtained:

$$Y_t = ODA_t K_t^{\alpha} L_t^{\beta} \quad (3)$$

Model specification

Based on the aim of the study (the welfare effect of remittance and aid) and the theoretical framework, the functional model is

Table 2. Stationarity test.

KPSS (Null: Variable is stationary)			
Variable	**LM- Statistic**	**Critical Value at .05 level**	**Order of Integration**
L(GDPPC)	0.1169	0.146	1(1)
L(ODA)	0.142	0.146	1(0)
L(DI)	0.102	0.146	1(0)
HC	0.095	0.146	1(0)
INF	0.1065	0.146	1(0)
Log (REXR)	0.104	0.146	1(1)
L(REM)	0.141	0.463	1(1)

Table 3. ARDL bound test.

K	F-statistics	Critical value (%)	Lower bound value	Upper bound value
7	3.44	5	2.32	3.5
-	-	10	2.03	3.13

expressed as:

$$GDPPC_t = f(ODA_t, DI_t, HC_t, INF_t, REXR_t, REM) \quad (4)$$

Expressing equation (4) in econometric form

$$LGDPPC_t = \beta_0 + \beta_1 LODA_t + \beta_2 LDI_t + \beta_3 HC_t + \beta_4 INF_t + \beta_5 REXR_t + \beta_6 LREM_t + \varepsilon_t \quad (5)$$

Where LODA is log of aid; LDI is log of gross domestic investment; HC is human capital; INF is inflation rate; LREXR is log of real exchange rate; LREM is log of workers remittance; β_0 is intercept β_1 to β_6 are the parameters to be estimated while ε is the error. In the empirical literature, GDP per capita is usually used as a proxy for welfare (Evans and Kelikume, 2018) since it divides a nation's economic output per person and it is often used as a worldwide measure for gauging the economic prosperity of nations. The human capital is used as a substitute for labour while DI (gross domestic investment) is used as a substitute for gross capital formation.

Autoregressive distributed lag (ARDL) model

The study employed the ARDL approach in estimating the welfare effect of aid. The justification for using the approach was based on the stationarity of the variables which is integrated at order 1(1) and 1(0); small size and its ability in measuring both the long-run and short-run (Razaet al., 2020). The ARDL model was employed in the study based on the aim of the study. To address the key objective (the welfare effect of aid), the ARDL model is expressed as follows:

$$\Delta \mathrm{L}(GDPPC)_t = \beta_0 + \beta_1 GDPPC_t + \beta_2 LODA_t + \beta_3 LDI_t + \beta_4 HC_t + + \beta_5 INF_t + \beta_6 REXR_t + + \beta_7 LREM_t \sum_{i=0}^{..} \propto_1 \Delta \mathrm{L}(GDPPC)_{t-1} + \sum_{i=0}^{..} \propto_2 \Delta \mathrm{L}(ODA)_{t-1}$$
$$+ \sum_{i=0}^{n} \propto_3 \Delta \mathrm{L}(DI)_{t-1} + \sum_{i=0}^{n} \propto_4 \mathrm{L(HC)}_{t-1} + \sum_{i=0}^{n} \propto_5 \Delta \mathrm{INF}_{t-1} + + \sum_{i=0}^{n} \propto_6 \Delta \mathrm{LREXR}_{t-1} + \sum_{i=0}^{n} \propto_7 \Delta \mathrm{L}(REM)_{t-1} + \mathrm{ECT}_{t-1} + \mu_t \quad (6)$$

Where: β_0 refers to the drift component, β_1 to β_8 are the long-run coefficient, Δ refers to first difference of the variables, n is the lag length while $\propto_1$ to $\propto_8$ connotes the short-run coefficient, ECT is the error correction term, while μ_t represent the error term.

Employing the ARDL bound test, the null hypothesis of no long-run link is accepted if the calculated F-statistic is lesser than the critical value of the lower bound 1(0) while the null hypothesis is rejected if the calculated F-statistic exceeds the critical value of the upper bound 1(1). In a situation when the calculated F-statistic is within 1(0) and 1(1) the result becomes inconclusive.

EMPIRICAL RESULTS

The stationarity property of the variable was first examined before the model was estimated. The study employed Kwiatkowski-Phillips-Schmidt-Shin (KPSS). As revealed in Table 2, the result of the unit root test showed that the variables are integrated at 1(1) and 1(0). This suggests that the variables have a mix of 1(1) and 1(0) which is suitable for the ARDL technique. The ARDL bound test was carried out if the variables are cointegrated as shown in Table 3 having confirmed that the variables are a mix of 1(1) and 1(0). Table 3 presents the ARDL bound test. The ARDL bound test revealed that the calculated F-statistic is within 1(0) and 1(1) at 5% indicating inconclusiveness while at 10% the calculated F-statistic exceeds 1(1) showing that the variables are cointegrated. Table 4 depicts the ARDL short-run and long-run estimates. The result revealed that foreign aid

Table 4. ARDL short-run and long-run estimates.

Dependent variable LOG(GDPPC)		
Variables	**Short-run coefficient**	**Long-run coefficient**
LOG(ODA)	0.0305(0.0095)***	0.09830(0.0399)**
LOG(DI)	0.1721(0.0637)**	0.5553(0.0285)***
HC	0.1336(0.0422)***	0.4312(0.2812)
INF	0.0047(0.0013)***	0.0151(0.0094)
LOG(REXR)	-0.00001(0.00015)	-0.000038(0.00046)
LOG(REM)	0.0394(0.0198)*	0.1272(0.0305)***
ECT(-1)	-0.3099(0.1132)***	-

Note: ***, ** and * indicate 1, 5 and 10% level of significance respectively. The figure in bracket represents standard errors.

Table 5. Diagnostic test result.

Type of Test	Test statistic	Prob.
Jarque- Bera normality test	Jarque- Bera: 0.2032	0.9
Breusch-Godfrey serial correlation LM test	F-statistic: 1.8025	0.1857
Breusch-Pagan-Godfrey Heteroskedasticity test	F-statistic: 0.1109	0.74

exerts a positive effect on welfare in the short-run and long-run. This implies that foreign aid improved welfare. The results confirm previous empirical work (Kurihara, 2014; Setargie, 2015; Moolio, 2015; Evans and Kelikume, 2018) who concluded that aid affects welfare positively. Furthermore, the human capital, domestic investment, inflation and remittances variables all have a positive effect with welfare in the short-run and long-run except the real exchange rate variable that has an adverse effect on welfare in the short-run and long-run. The lagged error term, ECT (-1) in Table 4 is equal to -0.3099 and is negative and significant at 1% level of significance. This indicates that the deviation from the long-run is corrected by 31% in the following year. The study also carried out a diagnostic test in Table 5 to ascertain the normality test, autocorrelation test and heteroscedasticity test. The result from table 5 indicates that the regression residual followed a normal distribution. Also, the outcome of Table 5 showed that the model is free from autocorrelation and heteroscedasticity.

The stability test in Figure 2 revealed the stability and reliability of the model which suggests that the outcome of the study can be used for policy-making.

DISCUSSION

Empirical evidence from the data analysed revealed that in the short and long-run, foreign aid affects welfare positively. In addition, the research outcome also showed that in the long run, foreign aid also affects welfare in the country positively. The results support previous empirical work (Kurihara, 2014; Setargie, 2015; Moolio, 2015; Evans and Kelikume, 2018) that advocate the need for aid in supplementing domestic resources in a bid to achieve sustainable growth.

Conclusion

The study employed the ARDL technique between the periods 1981 to 2017 to address the research objective of estimating the welfare effects of aid in Nigeria. The outcome of the ARDL results revealed that aid affects welfare positively in the short-run and long-run. The findings from the study posed significant policy implications. Firstly, the government should design and implement policies that will encourage the inflow of aid to spur growth and increase welfare in the country. Secondly, the government should ensure that the flow of aid into the country is judiciously utilized, and a higher portion directed to preferred sector of the economy. Besides, the donor country should design policy framework on the utilization of fund and ensure that the aid provided meant its purpose.

Limitation and areas for future studies

The study investigated the effect aid on welfare using Nigeria as a point of reference. This study is a single-country study. For future study, it is recommended that this study be carried out on a regional level, for instance, in Sub-Saharan African (SSA) economies to unravel the

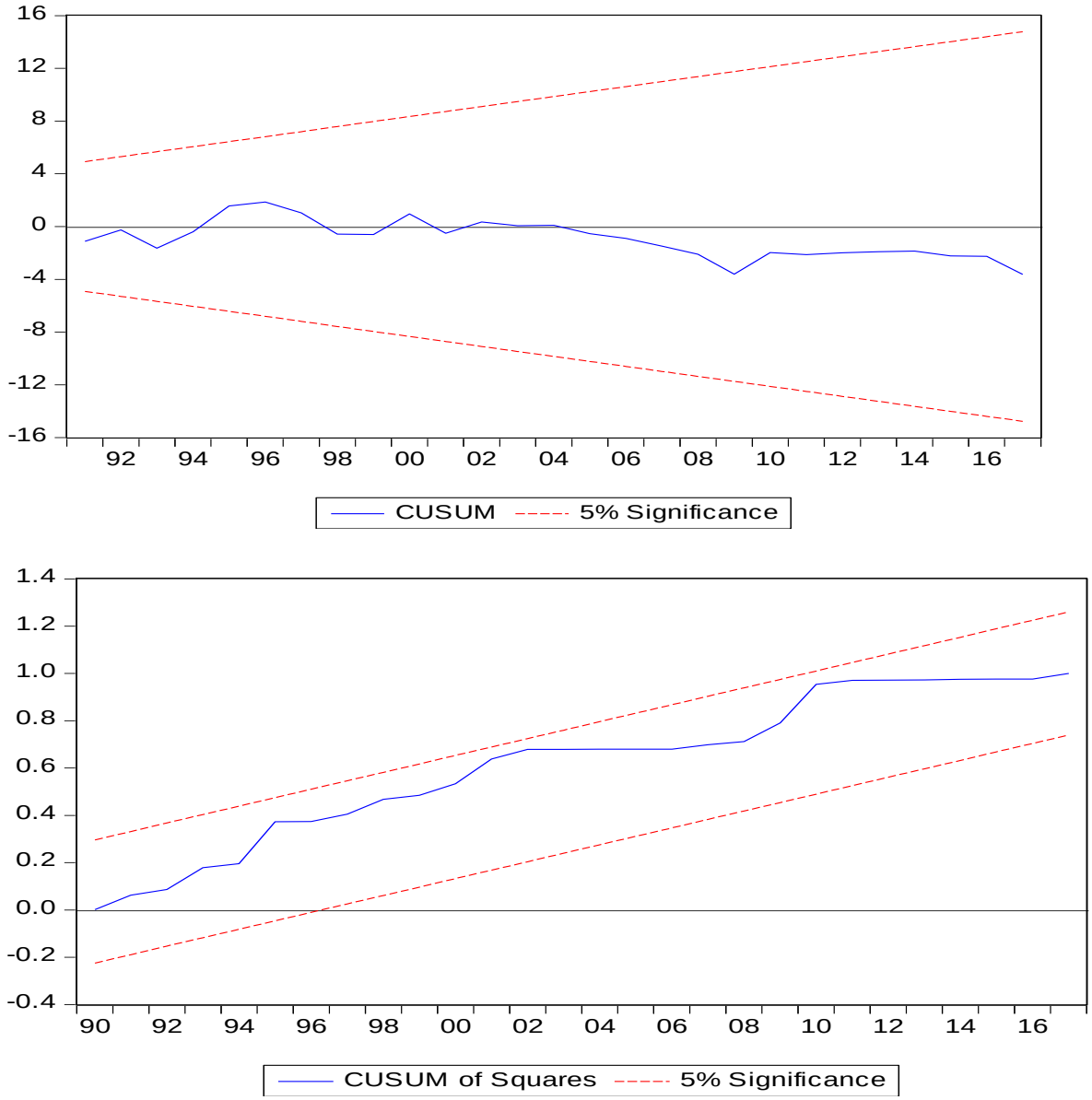


Figure 2. Stability test.

welfare effect of aid.

CONFLICT OF INTERESTS

The author has not declared any conflict of interest.

REFERENCES

Abd El Hamid H (2013). Foreign aid and economic growth in Egypt: A cointegration analysis. International Journal of Economics and Financial Issues 3(3):743-751.

Acosta PA, Baerg NR, Mandelman FS (2009). Financial development, remittances, and real exchange rate appreciation. Economic Review 94(1):2-12.

Aggarwal R, Demirgüç-Kunt A, Pería MSM (2011). Do remittances promote financial development? Journal of Development Economics 96(2):255-264.

Akter S (2016). Remittance inflows and its contribution to the economic growth of Bangladesh. Niigata University Graduate School of Contemporary Social Culture 62(3):215-245.

Amuedo-Dorantes C, Pozo S (2004). Workers' remittances and the real exchange rate: a paradox of gifts. World Development 32(8):1407-1417.

Beatrice NM, Samwel NM (2015). The effect of remittances on economic growth in Kenya. International Journal of Microeconomics and Macroeconomics 3(1):15-24.

Bhandari B (2015). Impact of remittance in developing countries South Asian countries (Master's thesis, University of Agder).

Chenery HB, Strout AM (1968). Foreign assistance and economic development: Reply. The American Economic Review 58(4):912-916.

Chowdhury M (2016). Financial development, remittances and economic growth: Evidence using a dynamic panel estimation. The Journal of Applied Economic Research 10(1):35-54.
Evans O, Kelikume I (2018). The effects of foreign direct investment, trade, aid, remittances and tourism on welfare under terrorism and militancy. International Journal of Management, Economics and Social Sciences 7(3):206-232.
Girma H (2015). The impact of foreign aid on economic growth: empirical evidence from Ethiopia (1974-2011) using ARDL approach. Journal of Research in Economics and International Finance 4(1):1-12.
Gupta S, Pattillo CA, Wagh S (2009). Effect of remittances on poverty and financial development in Sub-Saharan Africa. World Development 37(1):104-115.
Harms P, Lutz M (2004). The macroeconomic effects of foreign aid: A survey. University of St. Gallen Economics Discussion Paper No, (2004-11).
Hokmeng H, Moolio P (2015). The Impact of Foreign Aid on Economic Growth in Cambodia: A co-integration approach. KASBIT Business Journal 8(1):4-25.
Jawaid ST, Saleem SM (2017). Foreign capital inflows and economic growth of Pakistan. Journal of Transnational Management 22(2):121-149.
Kolawole BO (2013). Foreign assistance and economic growth in Nigeria: The two-gap model framework. American International Journal of Contemporary Research 3(10):153-160.
Kpodar MK, Le Goff MM (2011). Do remittances reduce aid dependency?. International Monetary Fund.
Kraay A, Raddatz C (2005). Poverty Traps. Aids and Growth, The World Bank, Washington, DC.
Kurihara Y (2014). Does foreign aid promote economic growth? Global Business and Economics Research Journal 3(4):20-30.
Lensink R, White H (2001). Are there negative returns to aid? Journal of Development Studies 37(6):42-65.
Marwan NF, Kadir NA, Hussin A, Zaini AA, Rashid ME, Helmi ZA (2013). Export, aid, remittance and growth: Evidence from Sudan. Procedia Economics and Finance 7:3-10.
McMillan L (2011). Foreign aid and economic development. School of Doctoral Studies European Union Journal 3:158-165.
Meyer D, Shera A (2017). The impact of remittances on economic growth: An econometric model. EconomiA 18(2):147-155.
Moolio P (2015). The Impact of Foreign Aid on Economic Growth in Cambodia: A co-integration approach. KASBIT Business Journal (KBJ) 8(1):4-25.
Moyo D (2009). Dead aid: Why aid is not working and how there is a better way for Africa. Macmillan.
Ndambiri HK, Ritho C, Ng'ang'a SI, Kubowon PC, Mairura FC, Nyangweso PM, Cherotwo FH (2012). Determinants of economic growth in Sub-Saharan Africa: A panel data approach. International Journal of Economics and Management Sciences 2(2):18-20.
Nelson RR (1956). A Theory of the Low-Level Equilibrium Trap in Underdeveloped Economies. The American Economic Review 46(5):894-908.
Nwaogu UG, Ryan MJ (2015). FDI, foreign aid, remittance and economic growth in developing countries. Review of Development Economics 19(1):100-115.
Omoruyi EMM, Meibo H (2016). Fostering economic development: is external finance responsible for the poor economic growth in sub-Saharan Africa? Global Economy Journal 16(2):313-347.
Raza A, Akbar S, Raza Z (2021a). Does Greenfield-foreign direct investment inflow contribute in socioeconomic development? Empirical evidence from developing countries. Pakistan Journal of Humanities and Social Sciences 9(3):469-481.
Raza A, Azam M, Tariq M, Sadiqa BA (2021c). An Empirical data investigation of the Greenfield investment: Welfare nexus from low-income countries. International Journal of Innovation, Creativity and Change 15(8):820-835.
Raza A, Azam MK, Tariq M (2020). A Panel Data Investigation of Greenfield Investment on the Welfare of African Developing Countries. International Review of Social Sciences 8(8):41-57.
Raza A, Iqbal M, Hussain N (2021b). Is Greenfield investment greener for the welfare of lower-middle income countries? Market-based empirical analysis with GMM approach. Journal of Marketing Strategies 3(3):194-206.
Rosenstein-Rodan PN (1943). Problems of industrialisation of eastern and south-eastern Europe. The Economic Journal 53(210):202-211.
Salahuddin M, Gow J (2015). The relationship between economic growth and remittances in the presence of cross-sectional dependence. The Journal of Developing Areas 49(1):207-221.
Setargie F (2015). The impact of foreign aid on economic growth of Ethiopia. Journal of Economics and Sustainable Development 6(7):121-131.
Stojanov R, Strielkowski W (2013). The role of remittances as more efficient tool of development aid in developing countries. Prague Economic Papers 22(4):487-503.
Tadesse T (2011). Foreign aid and economic growth in Ethiopia: A co-integration analysis. The Economic Research Guardian 1(2):88-108.

Vol. 14(2), pp. 150-160, April-June 2022
DOI: 10.5897/JAT2022.0530
Article Number: DA99ACB69151
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

Economic and accounting performance of Greek innovative firms through knowledge-based entrepreneurship

Kanellos Toudas and Nikos Kanellos*

Department of Agribusiness and Supply Chain Management, School of Applied Economics and Social Sciences, Agricultural University of Athens, 118 55 Athens, Greece.

Received 10 March, 2022; Accepted 5 May, 2022

In modern industrial sectors, the margins for companies' development constantly shrink, urging a rise in R and D and various sections' expenditures. Throughout this phase, the role of innovative firms has submerged, especially via the knowledge-based entrepreneurship. Knowledge-based entrepreneurship can potentially benefit companies performing in the high-tech sectors, in terms of economic performance and financial management. Research's main focus shifts to Greek high-tech industrial market and more specifically to innovative firms and companies seeking to capitalize various economic factors to boost economic performance. For this purpose, sample was collected from high-tech innovative firms during 2009-2012, regarding economic and demographic stats, as well as information about their staff members. Methodological framework of the paper consists of cluster analysis, likelihood estimation methodology and regression analysis. As a result, the research concluded that, staff members of high-tech companies with high levels of technical knowledge led to increased financial and economic performance, in comparison to companies in the same industrial sector, employing less technically qualified staff.

Key words: Economic factors, innovation, knowledge-based entrepreneurship, economic growth, cluster analysis, regression analysis.

INTRODUCTION

The concept of entrepreneurship is strongly heterogeneous, due to the many different processes involved in firms' creation. Creation factors vary by firms because of the different founders' motivations, the different environments and the different inputs and outputs. This results in the heterogeneity of entrepreneurship, which is difficult to explain by embracing a general model. A classification of firms according to their specific characteristics, indicating certain models of entrepreneurial behavior, is required.

As part of this research, firms have been classified in various high-tech sectors based on their characteristics linked to the phenomenon of knowledge-based entrepreneurship (KBE). Although these firms are

*Corresponding author. E-mail: nikos.kanellos2@aua.gr.

technology-related and most firms are expected to have high knowledge reserves and significant innovation performance, this is not the case for the majority of firms the authors would expect, because a large set of firms is characterized by relatively low-intensity innovation and knowledge. Therefore, the fact that a firm can operate in a high-tech sector in the Greek area does not necessarily ensure that the firm will be distinguished for its basic characteristics related to knowledge entrepreneurship.

Therefore, the state policies concerning the promotion of this type of entrepreneurship, which usually refer to sectors with technological content, should be done under other conditions and, above all, be targeted at the specific features of Greek firms. Understanding the differences in business behavior can play an important role in this, and the proposed classification can help. Since knowledge entrepreneurship is a kind of high-potential entrepreneurship and can be a driving force for economic growth, its targeted promotion can be realized if people focus on those factors that can influence it.

Regulation, market circumstances, technology, and laws all have significant consequences for financial management in businesses (Yurdakul and Kazan, 2020). Entrepreneurs act as detrimental transformational leaders and differ from small business entrepreneurs through operational model variation: instead of focusing solely on financial gain, they vigorously attempt to determine market distortions and generate wealth that demonstrates a growing industry while upending network infrastructure and systems in large enterprises. Commodities that produce or destroy value can fuel such a paradigm. The consequences are the domestic and foreign implications of resource usage as a function of company actions and exports.

Financial models aim to maximize and transform them via company operations and exchanges to generate exports and results which establish or degrade value for the company, its stakeholders, industry, and the ecosystem during the immediate, moderate, and long run. Accordingly, in assessing an institution's corporate value, one must examine the interdependence between the institutions creating competitive advantage and the stakeholders, supply chains, and eco - systems (Bakker et al., 2020). To determine the operational structure that specifies methods to improve a company's economic performance; it began with the topic of yearly financial information, the potential for reflecting the relationships between paternalist aspects, as well as the findings of past study (Burja, 2011).

In the context of the research, the authors have seen that such factors may be the knowledge and skills that the founders possess the size of the firm, their ability to recognize and exploit market opportunities, their export orientation and whether they have been established before or after the economic crisis. That is to say, the simple assumption that the creation of new firms in high-tech sectors will provide multiplier effects and benefits for the other economic sectors will not be absolutely correct.

In order to make sense in the search for such businesses in high-tech industries, a firm should consider the following: whether it is distinguished by the technical knowledge of its founders, is sufficiently large or has the potential to grow in a short time, has the ability to adapt to technological changes and produce diverse products and services, is extroverted, and was founded by taking advantage of a market opportunity rather than the need that may have been caused by the economic crisis.

Some of these factors also have a strong influence on the financial performance of firms. Generally, the economic course of firms depends positively on the founders' technical knowledge, export activity, ability to perceive and adapt to technological changes and offer similar products and services, implement a strategy that focuses on increasing sales through the creation of new products and services and through entry into new market islands, and whether a business belongs to a cluster of firms, based on the proposed classification, which are distinguished for characteristics linked to KBE.

Throughout the literature, research gap can be spotted, concerning intense focus on the plethora of knowledge-based factors affecting the economic performance of high-tech firms. Since high-tech firms can be divided into, at least, 4 distinct categories/clusters, analysis of individual clusters as well as of the whole high-tech market is yet to be materialized. Thus, setting the propriate knowledge-based factors and connecting them with the economic performance of the ensemble of high-tech firms could provide valuable insights for their growth and development.

This paper is organized as follows: in literature review section, theoretical background for key definitions in this research was provided, while in the methodology section the structure of the framework is elaborated. Next, in results section, the authors extensively assay the process followed for main outputs extraction, while in conclusion and discussion section, a throughout quotation of the inferences takes place.

LITERATURE REVIEW

Knowledge-based entrepreneurship

Every form of entrepreneurship is based on the exploitation of some kind of knowledge, even when it comes to arbitrage opportunities (investment opportunity that brings profit without risk). KBE is a special form of entrepreneurship and is linked to the so-called knowledge economy, which is characterized by the crucial role of ICT, the high proportion of knowledge-intensive activities, the largest capital of intangible resources in relation to the corresponding capital of material resources in the whole stock capital, and increased R and D costs (Foray, 2004; Stam and Garnsey, 2008).

When KBE is talked about, it refers to activities in which the role of creating new knowledge is central to creating value (Garavaglia and Grieco, 2005).

Starting from a broader definition of entrepreneurship and incorporating the concept of knowledge into it, the authors consider that: "*entrepreneurship is the process of creating something new with value, devoting the necessary time and effort to knowledge-intensive economic activities, taking on economic, mental and social risks, and taking as a reward monetary and personal satisfaction and independence*", (Hisrich et al., 2005; Bosma, 2010). This definition is based on three key characteristics of entrepreneurship. First, the creation process, and indeed the creation process, of something new that is of value both to the entrepreneur himself and to the target audience. Secondly, the time and effort required to create this new one, which must also be operational. All time and effort are estimated only by those involved in the firm process.

Finally, the third important aspect of entrepreneurship that stands out from this definition is the assessment of the risks needed to obtain the expected benefits. These risks, despite their diversity, focus on the economic, psychological and social areas. When studying the KBE phenomenon, it is important to take into account, in particular, the first of three key aspects of entrepreneurship. In the context of the article, we will adopt some key elements that Malerba and McKelvey (2010) present for the concept of KBE. Therefore, KBE is linked to:

1) New firms,
2) Innovative firms (in terms of knowledge-based manufacturing processes),
3) Firms with significant knowledge intensity in their activities,
4) Firms that exploit innovative opportunities not only in high-tech sectors but in various sectors and
5) Firms participating in collaborative networks (Groen, 2005; Radosevic et al., 2008).

KBE is not just about start-ups. It's more than just new firms. These are new and innovative firms with high knowledge intensity in their activities, involved in a process of transforming knowledge into innovation. These firms are transforming knowledge into new or significantly improved products and services that can be brought to market. They are also firms that exploit innovative opportunities in various sectors and achieve through the strategy that pursue sustainable competitive advantage.

Innovation and economic growth

World financial difficulties have resulted in the conclusion that most businesses are run on unsustainable economic models. There has been agreement in discourses. In order to discover answers to those same difficulties, things must be done in a distinct way, so the common methodologies entail, to a significant part, the development of new knowledge and innovation (OECD, 2011). Chesborough (2003) addresses the shift into innovation, wherein linkages and interactions are as crucial as knowledge creation and property. According to Schumpeter (2017), innovation is considered as a revolutionary commodity, methodology, or technique of industry, with novel markets or supply of goods, or an innovative economic enterprise or corporation.

The preceding results highlight the relevance and urgency of examining entrepreneurs' perspectives on economic regulatory, since they not only expand the worldwide knowledge, but ultimately report back to economic regulators (Derdemezi et al., 2021). In investigating the importance of total factor productivity in describing economic growth, Barcenilla-Viss et al. (2013) studied datasets for 15 OECD nations between 1989 to 2004. Their findings suggest that technology, as measured via internal R and D expenditures, drives variance in technological evolution. The assessed findings suggest that the relationship among entrepreneurship and growth is not quite as evident as predicted by the variety of internal growth models (Kacprzyk and Dory, 2017).

Companies' economic performance factors

Companies in the industry accomplish economic performance, by utilizing the most relevant factors that indicate factors connected to economic growth and company efficiency growth must be selected from across the relevant profitability variables (Burja, 2011). Methodologies created to investigate financial performance inside firms' link performance with the involvement of different factors to increased performance, represented in degrees of revenue (Dumbravă, 2010).

Industrial data suggest that even sustainable firms do not really outperform those lacking such characteristic in terms of financial growth. The above implies the fact that, there appears to be no financial rewards for businesses to embrace more sustainable plans and operations (Santis et al., 2016). When the revenue and solvency ratios were examined, additional factors, such as sectorial categorization had a higher impact on the firms' economic and financial performance, in comparison with expenditure in sustainable projects (Santis et al., 2016).

Decrease in profit and increased costs have a detrimental effect on a company's economic performance and financial management. Enterprises are in a debt spiral due to a shortage of or extremely limited expected revenue (Ivanov et al., 2020) from selling as well as constant cash expenditure to support constant expenditures (e.g., payroll, debt obligations, etc.). To

Afonso et al. (2012), the essential avenue for exploration consideration would be categorizing organizations based on innovation strategies and analyzing those that have a stronger relationship between innovation and economic success. According to Ivanov et al. (2020), innovative technologies benefit organizations by lowering operating expenses, establishing a technical barrier that permits geographic separation, and offering an economic edge over non-innovative enterprise.

Networking, R and D and low innovation intensity factors

High-tech firms which are likely to become more tightly connected to international markets rely heavily on national and local connections. Companies participating in the innovation process understand the need of developing R and D collaboration to get necessary skills. As a result, internal capacities for developing new goods can be improved. Cooperation with other organizations and companies in R and D are an important strategy for creative enterprises to make exterior resources available since they allow for extensive sharing knowledge, capital sharing, and organizational learning (Becker and Dietz, 2002). R and D collaborations are employed as a supplement towards the innovation cycle; increasing enterprises' innovation contribution is measured by the concentration of in-house R and D and the implementation of innovative products (Becker and Dietz, 2002). R and D cooperation among firms and organizations increase the results of innovation processes. Firms operating in networking clusters do not achieve automatically better growth or economic performance (Broekel et al., 2015). Lee (2011) highlighted that firms located outside networks stimulate the R&D development better than other firms operating outside of clusters, named in this research R and D firms.

Lee et al. (2010) back up the idea of open innovation in low-innovation firms by pointing to interaction and collaboration as one potential strategy to improve their innovativeness. Such companies lack the skills and expertise in engineering, administration, promotion, and long-term R and D financing that are required to turn innovations into products or processes. One of the most important external factors in low innovation intensity firms' innovation process is the barriers to innovation (Lee et al., 2010). From the above review, the aim of this study is to clarify the research field regarding the evaluation of Greek high-tech firms' results, in terms of economic and accounting performance, and the role of knowledge-based entrepreneurship factors in them. For this purpose, authors seek to identify the impact of six separate knowledge-based factors on Greek high-tech firms' economic performance, organized in 4 clusters, and thus settle 3 hypotheses containing 2 factors each. The referred review and research's objectives can be addressed through the research hypotheses listed below.

H1: *Does the adaptability of Greek high-tech firms in technological and market changes affect their economic performance?*

H2: *Greek high-tech firms' product strategy and exports pose a significant factor for enhancing their economic performance.*

H3: *The level of market knowledge and the innovation level of Greek high-tech companies can impact their economic performance.*

METHODOLOGY

Variables of analysis

Some of the key features of knowledge-based firms are: knowledge, innovation and networking. In addition, another feature of interest to us in the context of KBE is the 'age' of firms and the sector to which they belong. The focus of the investigation is new firms operating in high-tech sectors, and therefore the selection of the sampled companies was based on their date of establishment and the economic sector in which they operate. Companies were searched throughout the web, including Greek government companies' registry (ACCI, 2022), in order to construct a list of firms to send the questionnaire for completion. The total response of the firms reached 26% of the total survey questionnaires sent, forming a sample of 209 high tech firms. Therefore, for the first three traits of KBE it is necessary to have indicators that will allow us to measure the specific sizes; while for the other two traits the initial selection of the firm population was sufficient to satisfy. All the variables that were used to determine the characteristics of KBE are presented below.

In order to classify firms on the basis of specific traits that they have and which relate to the concept of knowledge entrepreneurship, we have used three categories of variables. The first category is the knowledge intensity of firms. We distinguish this category into two subcategories of variables: (a) sources of knowledge and (b) the firms' knowledge stock. The sources of knowledge contain the internal dimension of the firm as well as two ratios derived from factor analysis: the value chain (competitors - customers - suppliers) and the scientific sources of knowledge (academic institutions and research institutes - research programs - scientific journals). The firms' knowledge stock includes the educational level of the founding group (1=Primary-Secondary-Vocational education, 2=Higher education, 3=Master, 4=PhD), the previous professional experience of the founders (Experience in founding - Experience in the sector) and the educational level of the employees (same categorization as that of the founders, but considering whether it exceeds 75%).

The second category is firm networking, where there are two indicators indicated by factor analysis. These are: exploring opportunities and creating something new (opportunities for exploiting new technologies and knowledge - developing new products/services - exploring opportunities for export activity - hiring highly qualified staff/skills) and managing day-to-day operations and obligations (addressing tax and other legal issues - operations and operations management).

The third category of variables is innovation, which includes: the creation or introduction of innovation in the last three years, the introduction of a product from abroad, the introduction of ready-made technology (e.g. equipment) from abroad, the adaptation of technology from abroad, the exploitation of results of research activity, either by own means or through cooperation, the

exploitation of firms' practices, the modernity of innovations (new/new for the enterprise - new for the market - new (new for the international market) and the protection of intellectual property in the last three years (patents, copyrights, trademarks, confidentiality agreements).

After classifying firms into clusters, variables were selected with which comparative analysis was performed between them. Here the authors have four categories of variables, where the indexes contained in each were indicated by factor analysis. The first category is the factors of firms' creation. This category includes: the general incentives (need for personal creation - social recognition - job independence), the knowledge factors (market knowledge - work experience in the same industry), the specific incentives (job search for a livelihood - expectation of income growth), the recognition and exploitation of opportunity (recognition of a technological opportunity - recognition of a market opportunity - exploitation of scientific research results).

The second category, which is the obstacles to the operation of enterprises, always includes, according to the effects analysis: the risks and costs of developing technology (high costs for developing technology - technological risks - high costs of skilled labor) and the economic crisis (market uncertainty - limited domestic demand). Next is the third category concerning firms' strategy, which focuses on new products and new niche market (increased sales by offering new products and services - entry to new markets).

The last category is the innovation barriers: innovation uncertainty (uncertainty associated with the commercial success of the innovative project - uncertainty in demand for innovative products/services - uncertainty associated with the technical part of the innovative project) and research requirements (high research and development costs - lack of funding for innovation - lack of qualified staff).

Comparative analysis allows us to confirm the differences between the four firm clusters by using variables that were not used in the classification process. Thus, the authors try to confirm some logical differences that exist between the groups and are associated with the selected variables. In order to do so, the authors organized the methodological framework by dividing the total 209 firms of the sample into 4 discrete clusters with similar characteristics. It was done by harvesting the factor analysis. Then, the authors present a comparative analysis of the 4 clusters in 5 important variables. They are included in the latter stage of the regression analysis, so as to give descriptive information of each cluster. Furthermore, descriptive statistical analysis and gradient accounting regression analysis were done, aiming to estimate each distinct independent variable's impact on firms' economic performance dependent variable. Following the results section, comprehensive analysis of the results is performed, connecting them with the settled research hypotheses, and concluding the findings of this study.

The four clusters

After the analysis and in order to explain the heterogeneity of the sampled companies and propose a classification based on their specific characteristics linked to KBE, a cluster analysis technique was applied. The classification proposed by the results of the analysis is particularly useful for studying the differences and relationships that firms have with respect to the concept of knowledge entrepreneurship. It is not just a categorization of firms into groups, as it allows us to trace the different levels of knowledge, networking and innovation in firms, in order to draw useful conclusions about the theoretical framework of research.

The purpose of the cluster analysis approach is to group observations based on their similarity into a number of variables. In the context of the investigation, we have applied hierarchical approach methods, which like the other approach offered by the SPSS statistical package, K-Means, does not require the existence of a model and relies only on algorithmic solutions. The final choice of the number of groups is made after the smallest observations in the distance are united at each step (each observation is itself a group).

On the basis of the analysis carried out arise, four firm clusters: (a) Innovative firms (29.7%), (b) Networking firms (23.5%), (c) Research and Development enterprises (R and D) (12.4%) and (d) Low Innovation Intensity firms (LII) (34.4%). Factor loadings of each cluster as can be seen in Table 1. According to each firm's results that were declared in the shared questionnaire, the sampled firms were classified into 4 clusters with specific characteristics. Each factor contributes to illustrate a distinct cluster and describe unique type of firms, either alone or combined with other factors. More specifically, innovative enterprises have the highest levels of innovation. Networking firms exploit to a greater extent than other firms. They explore new opportunities or settle everyday issues. R and D firms innovate, using exclusively the results of research carried out within them. LIIs show almost zero rates of innovation.

The analysis shows that the majority of the firms (34.4%) belong to the fourth category, where there are low innovation-intensive businesses. A key characteristic of KBE is that innovation does not show or it shows with minimal percentages in a large part of the sampled firms. This result is not in line with the fact that the sectors to which these firms belong are high-tech industries, expecting high innovative performance. Next in the number of projects is the category of Innovative firms with 29.7% and networking firms with 23.5%. The smallest group in terms of number is that of R and D firms with only 12.4%.

Economic trends of clusters

This part of the study will look at the financial data of firms per cluster. These figures, expressed in percentages, relate to the change in sales in 2009-2012, change in exports in the same period, change in permanent staff in the three years 2009-2011, an estimate of the change in the number of employees for 2012, and the turnover rate of innovative products for 2011. Each table was completed by summing up and categorizing the financial data of each cluster firms that responded to the authors' survey. Starting from the change in sales from 2009 to 2012 the researchers observe from the percentages in Table 2, that at least 40% of the firms belonging to each group increased their sales. In fact, 1 in 2 firms belonging to the innovative firms and R and D firms have increased their sales during this period. On the other hand, the largest percentages of companies that show a decrease in their sales belong to the LIIs (41.7%), with a considerable difference from the corresponding percentages of firms of other groups. It would also be interesting to see what percentage of sales increase or decrease in each group.

As can be seen from the data in Table 3, LIIs and R and D companies have the smallest percentage increases in their sales, as 75% and 81% of them respectively have 10% increase. However, in general the percentages beyond that (over 10%) are quite low and move mainly in single digits. It is worth noting that the largest percentage of companies that increased sales by more than 50% belongs to innovative firms (8.1%), which to some extent reflect their - anyway - strong dynamics.

The export part often indicates the innovation of a firm as, according to the literature, when a firm produces products that are "tested" abroad then it tends to be more innovative than another firm that may only approach the domestic market. The firms in the sample to a large extent do not export. The companies that belong to the R and D category are more export-oriented, where about 1 to 2 firms export products; while the LIIs are less export-oriented, since only 30% of these firms export.

Between 2009 and 2012, as portrayed in Table 4, 42% of export-oriented R and D firms showed an increase in their exports, as well

Table 1. Factor analysis for cluster creation.

Variable	Innovative	Networking	R and D	LIIs
Initial Eigenvalues	2.286	1.717	1.366	1.130
% of Variance	22.861%	17.173%	13.658%	11.30%
Factor loadings				
Existence of need for personal creation	0.802	-0.044	-0.039	0.184
Social recognition	0.764	0.115	0.037	-0.043
Work independence	0.645	0.142	0.363	-0.097
Market knowledge	-0.013	0.873	0.095	0.011
Work experience in the same field	0.221	0.821	0.020	0.053
Job search for livelihood	-0.055	0.004	0.862	-0.170
Expectation for income increase	0.254	0.097	0.776	0.167
Recognition of a technological opportunity	0.045	0.071	-0.149	0.818
Recognition of a market opportunity	-0.121	0.375	-0.039	0.660
Utilization of scientific research results (e.g. research results of doctoral dissertation)	0.094	-0.201	0.134	0.554

Table 2. Variation in sales between 2009-2012.

Variable	Innovative (%)	Networking (%)	R and D (%)	LIIs (%)
Sales increase	35 (56.5)	23 (46.9)	13 (50)	30 (41.7)
Sales reduction	13 (21)	10 (20.4)	6 (23.1)	30 (41.7)
No change	14 (22.6)	16 (32.7)	7 (26.9)	12 (16.7)
TOTAL	62/209 (29.7)	49/209 (23.5)	26/209 (12.4)	72/209 (34.4)

Table 3. Sales growth rates between 2009–2012.

Sales increase	Innovative (%)	Networking (%)	R and D (%)	LIIs (%)
0-10%	39 (62.9)	34 (69.4)	21 (80.8)	54 (75)
11-25%	10 (16.1)	8 (16.3)	4 (15.4)	7 (9.7)
26-50%	8 (12.9)	4 (8.2)	1 (3.8)	8 (11.1)
51-100%	5 (8.1)	3 (6.1)	0 (0)	3 (4.2)
TOTAL	62 (100)	49 (100)	26 (100)	72 (100)

Table 4: Variation in exports between 2009–2012.

Variable	Innovative (%)	Networking (%)	R and D (%)	LIIs (%)
Increase in exports	19 (30.6)	12 (24.5)	11 (42.3)	8 (11.1)
Reduction in exports	4 (6.5)	1 (2)	1 (3.8)	3 (4.2)
Stable exports	5 (8.1)	6 (12.2)	2 (7.7)	9 (12.5)
No exports	34 (54.8)	30 (61.2)	12 (46.2)	52 (72.7)
Total	62 (100)	49 (100)	26 (100)	72 (100)

as a large percentage of innovative companies showed an increase in their exports (30.6%). This element shows on the one hand the strategy followed by many of the companies belonging to these two groups of firms (Innovative and R and D) and which is based on their export character; on the other hand, it suggests that this choice resulted in the last four years, as exports in this period increased.

An important parameter for the development of an economy in general is employment. Firms that show positive economic data and grow employ more employees resulting in reducing the

Table 5. Variation in permanent staff between 2009–2011.

Variable	Innovative (%)	Networking (%)	R and D (%)	LIIs (%)
Increase in employees	26 (41.9)	15 (30.6)	14 (53.8)	24 (33.3)
Reduction in employees	19 (30.6)	17 (34.7)	5 (19.2)	32 (44.4)
No change	17 (27.4)	17 (34.7)	7 (26.9)	16 (22.2)
TOTAL	62 (100)	49 (100)	26 (100)	72 (100)

Table 6. Turnover rate of innovative products in 2011.

Percentage of turnover from innovative products	Innovative (%)	Networking (%)	R and D (%)	LIIs (%)
0-10%	15 (24.2)	14 (28.6)	6 (23.1)	67 (93.1)
11-25%	13 (21)	11 (22.4)	3 (11.5)	2 (2.8)
26-50%	22 (35.5)	19 (38.8)	5 (19.2)	3 (4.2)
51-100%	12 (19.4)	5 (10.2)	12 (46.2)	0 (0)
TOTAL	62 (100)	49 (100)	26 (100)	72 (100)

unemployment rate in the economy around them. That is why we examined the change in the permanent staff of the four groups of companies during the period 2009–2011 (Table 5). It seems that 1 in 2 R and D firms are doing well, thus attracting more people to their potential. The percentage of Innovative firms (42%) that show an increase in employees is also high. On the contrary, the biggest reduction in employees is held by firms, as 44% of them reduced their human resources in the three years 2009–2011.

In fact, as can been seen from the data in Table 5, the founders of 20% of these companies estimated that there will be another reduction in the number of their employees.

It became obvious that, most firms in all groups estimate that in 2012 there will be no change in their permanent staff. This is particularly important for R and D and Innovation firms that have recently created new jobs, which seem to have remained stable. Finally, the authors present the percentage of turnover that came through innovative products for 2011 (Table 6). It is worth noting here two important facts. First, those LIIs firms with the lowest innovation rates, when they innovate have equally small turnovers from these innovative products. The percentage of turnover from innovative products of the vast majority of these companies (93%) ranges from 0 to 10%. Secondly, that the firms with the highest percentage of turnover from innovative products belong to the R and D firms, since the turnover percentage of innovative products of 46% of these firms exceeds 50%. Therefore, it is concluded that these firms do not just innovate, but also that the result of the innovation process yields fruits and significant benefits.

However, it is important to consider, in addition to the particular characteristics of firms, the factors that affect their financial performance. It is not enough to join a firm in a certain group in order to show good financial performance and growth. In other words, the authors have to see from which factors the different "colors" of companies that we presented before affect their economic course.

In the context of this search, authors applied the method of gradual accounting regression (ordinal logistic regression), having as a dependent variable the financial performance of companies (variable "growth"). More specifically, they utilized the four clusters created at the previous stage of the methodology. The first cluster contains the firms that had a negative average sale during this period (59 companies); in the second cluster are the firms with an average growth between 0 and 10% (82 firms); in the third cluster are those that have an average growth of 11 with 50% (50 firms) and, finally, in the fourth group there are firms with an average sales increase of 51 to 100% (18 firms). The independent variables we use fall into five categories.

The first concern of the founders of the firms is choosing the technical knowledge and product design as the areas of knowledge and skills that best reflect their professional identity. The second is the ability of firms to recognize and take advantage of opportunities that, as can been seen from the results of factor analysis, there are two factors that distinguish this ability: the ability to adapt to market changes and the ability to adapt to technological change and production of differentiated products. The next independent variable is related to corporate extroversion, taking into account whether or not a firm is exporting in 2009–2012. As an independent variable, however, they also use business groups, as emerged from the cluster analysis. The companies are included in the following groups, in the order in which they were used as a variable in the analysis (in parentheses is the number of companies per group):

1) Low Intensity Innovation firms (72),
2) Networking firms (49),
3) Innovative firms (62),
4) Research and Development firms (26).

The last independent variable is the business strategy, focusing on that strategy of increasing sales by offering new products and services and entering new islets of the market (by factor analysis).

RESULTS

Previously, the proposed classification of firms belonging to various high-tech sectors was presented. Their behavior was assessed, depending on the group to which they belong, and based on the number of variables. The results of the ordinal logistic regression are interpretatively acceptable, as F-statistic is statistically significant at less than 1%. Also, the value of the adjusted R^2 is satisfactory,

Table 7. Descriptive statistics of firms' variables.

Variable	Min	Max	Mean	StD
CEP	55	100001163.67	68113347.13	42878391.06
TK	8	300000003	1923094.5	21894648.86
EX	0.01	100015997	77034344.47	42161368.98
PAC	4	20	14.22	2.7837
CC	19	999999970	4784723.51	69171441.9
MCAC	1	99999997	574166.57	7047605.64
TCE	6	200000007	1435424.99	15437431.3

revealing a fairly good fit to the data. As we can see all variables play a statistically important role. It is also characteristic that five of the six variables have a positive relationship with the dependent variable, while one factor which is the ability of the firm to adapt to changes in the market has a negative relationship.

The independent variables consist of specific factors from the survey, which the sampled firms filled. More specifically, technological knowledge consists of subfactors like sources of knowledge from customers, suppliers, competitors, academic institutions and research institutes, research programs and scientific magazines. Exports independent variable is based on the number of exports each firm of the sample performs, while the Market Changes and Adaptation Capacity consists of sub-factors as a company's response to competitors' movements, quick response to changes in demand, flexibility to produce differentiated products/ services, perception of technological changes and adaptability to them and response to following market trends.

A company's cluster refers to sub-factors like the existence of need for personal creation, social recognition, work independence, market knowledge, work experience in the same field, job search for livelihood, expectation for income increase, recognition of a technological opportunity, recognition of a market opportunity and the utilization of scientific research results. Subfactors like uncertainty related to innovative projects' technical part, uncertainty in demand for innovative products/services, lack of funding for innovation, uncertainty related to the commercial success of innovative projects, lack of specialized staff and high costs for research and development make up the Technological Changes and Exchanges independent variable.

Finally, Products and Adaptation Capacity consists of subfactors as increased sales through penetration into new markets by offering the same products/services, increased sales by offering new products/services, increased market share in existing markets by offering the same products/services and entry to new islets of the market factors. Therefore, the general equation of gradient accounting regression can be given as follows:

$CEP = f(TK - EX - PAC - CC - MCAC - TCE)$ Where,

1) CEP - Company's Economic Performance,
2) TK - Technological Knowledge,
3) EX - Exports,
4) PAC - Products and Adaptation Capacity,
5) CC - Company's Cluster,
6) MCAC - Market Changes and Adaptation Capacity and
7) TCE - Technological Changes and Exchanges.

Furthermore, the necessary descriptive statistics of firms' cluster are provided below, consisting of the mean, standard deviation, max and min statistics. Table 7 provides information about each population's dispersion and key characteristics. Analyzing each cluster's mean and standard deviation statistics combined with the results of the regression that follows, can allot an important base for the outcomes of the overall analysis. Table 8 shows the correlations of dependent and independent variables of the regression performed. Out of this correlation matrix, comparison of the connection of regression's independent variables with firms' cluster can be performed, enabling the expansion of research results. Table 9 presents the results of the regression analysis in detail.

The outcomes depicted in Table 9 give valuable insights regarding the verification of the 3 research hypotheses, settled at the Literature Review section. Since the significance level of MCAC and TCE variables is below 0.01, there is flagged significance at 99% level, and the 1st research hypothesis (H1) can be verified. This means adaptation in market and technological factors impacts significantly high-tech firms' economic performance. The same implies to EX and PAC variables, that with significance levels below 0.05 and 0.01 barriers accordingly, the 2nd research hypothesis (H2) is also verified and Greek high-tech firms' economic performance can be enhanced by increased efficiency of a company's exports and products' strategy. Lastly, the 3rd research hypothesis (H3) is verified, with the level of market knowledge and innovation of Greek high-tech firms impacting their economic performance, since TK and CC variables of the regression have significance levels below the 0.5 barrier.

Table 8. Correlation matrix of clusters' variables.

Variable	CEP	TK	EX	PAC	CC	MCAC	TCE
CEP	1	0.056	0.639**	-0.025	0.012	-0.059	-0.116
TK	0.056	1	-0.085	0.151*	0.242**	0.294**	0.101
EX	0.639**	-0.085	1	-0.070	-0.055	0.074	-0.091
PAC	-0.025	0.151*	-0.070	1	0.134*	0.305**	0.093
CC	0.012	0.242**	-0.055	0.134*	1	0.110	0.155*
MCAC	-0.059	0.294**	0.074	0.305**	0.110	1	0.062
TCE	-0.116	0.101	-0.091	0.093	0.155*	0.062	1

* and ** indicate statistical significance at the 95 and 99% levels respectively.

Table 9. OLS results on business financial performance.

Variable	Company's Economic performance (CEP)	
	Rate (B)	Typical error
CONSTANT	2.68(0.24)	1.03
Technical Knowledge (TK)	0.62*(1.84)	0.28
Exports (EX)	0.61*(1.77)	0.27
Market Changes and Adaptation Capacity (MCAC)	-0.54**(-2.86)	0.21
Company Cluster (CC)	0.32*(2.56)	0.13
Technological Changes and Exchanges (TCE)	0.63**(1.76)	0.19
Strategy concerning new products and new islets of the market (Products and Adaptation Capacity - PAC)	0.29**(1.97)	0.15
Adjusted R^2	0.217	
Log Likelihood	-122.01	
F-statistic	2.68***	

Valid Remarks N = 209. In parentheses t-statistic values * and ** indicate statistical significance at the 95 and 99% levels respectively.

DISCUSSIONS

As can be deducted from the regression analysis above, certain abilities and skills provide increased economic and thus, accounting performance for most types of firms. The authors included highly innovative firms, networking and R and D firms, as well as, lower innovation rate firms. Research results show that all independent variables are significant for enhancing the economic performance of firms, but in particular, firms' ability to adapt efficiently to market and technological changes combined with effective product adaptation strategy can increase firms' economic performance.

Therefore, firms with founders with significant technical knowledge and product design skills, who have a clear export orientation, perceive and adapt to technological changes by offering quality products, follow a strategy that is more associated with achieving innovative results, and belonging to clusters that have high reserves of knowledge and achieve significant innovative performance, are more likely to show better financial performance. The percentages of companies that forecast a decrease in sales and exports for 2012 are lower. 29% of companies estimated that they reduced their sales by an average of 24% and 16% of exporting companies that they reduced their exports by 10% (average). However, there are however, firms that -according to their founders- would have no change in sales and exports (21% and 23% respectively).

As part of the research, authors tried to create a model that assesses the factors that affect the financial performance of firms. For this reason, we distinguished them according to the average sales they had for the period 2009–2012. The first group included the firms that had negative sales during the period under review; the second grouped the firms with an average growth between 0 and 10%, and the third group of those firms that had an average growth of 11 to 50% and, finally, the fourth with average growth of 51 to 100%.

The variables used as independent variables in the model were technical knowledge and product design such as the most important areas of knowledge and skills of the founders, the ability of companies to adapt to market changes but also to adapt to technological

changes by offering similar products, the export business orientation, the four business clusters resulting from the proposed classification and, finally, the firm strategy based on increasing sales by offering new products and services and entering new market islands.

Regarding the regression outcomes, it becomes obvious that firms could have an increased economic performance if they tend to adapt better to technological changes of the market, enhance their strategy and their products' adaptability to markets' demand. Moreover, when referring to company cluster factor and Table 7, the bigger the value the more innovative the firm and the lesser the value the less innovative the firm. This means that values near max characterize innovative firms and values near min refer to low innovation intensity firms.

In the same context, authors distinguish the strong connection between TK, PAC, MCAC and CC variables. These strong positive correlations of the independent variables can forebode the important role of technical knowledge (TK) in enhanced levels of firms' product and market adaptation. Apart from that, the high mean values of CC, TK, PAC and TCE variables combined with their strong positive correlations mean that firms in the innovative cluster have better performance in technical knowledge, product and market adaptation capacity variables, as attributive factors of knowledge-based entrepreneurship.

Conclusions

From the financial data of the sampled firms, during 2009–2011, the plethora of those firms did not experience significant variation in terms of their sales. On the contrary, most increased profits and exports, where they are made, in the period under review; while there was a significant decrease in research and development costs in terms of percentage of sales. In addition, the founders were optimistic about the financial performance of their companies for 2012, as one in two firms estimated that it would increase its sales by an average of 35%. The exports of 61% of the exporting firms will increase by about the same percentage, always according to the estimates of the founders themselves.

From the results of the statistical analysis, the authors saw that all these factors are important for the financial performance of firms and in fact five of the six show a positive relationship. In particular, when a firm has a founder or founders with technical knowledge related to the industry and ability to design products, it is extroverted, can perceive and take advantage of changes in technology and follow a strategy that focuses on creating new products and services and in penetrating new market islands. Then this firm is expected to show better financial performance compared to other firms that do not have the same characteristics.

In addition, when a firm belongs to the group of R and D firms, authors estimate that it will have better financial data than another company placed in a different group, as the variable related to the classification of firms also has a positive effect on financial performance. On the contrary, the only factor that negatively affects our dependent variable, that is, the growth of firms such as percentage of sales, is the ability of firms to adapt to market changes. Remember that this variable distinguished the LIIs with the Innovative firms and in the comparison made between them in order to see how the groups differ.

RESEARCH IMPLICATIONS

Research results demonstrate the need for high-tech firms, in many countries with the characteristics of Greek economy, to enhance their economic performance in order to achieve sustainability. This concern can be addressed by investing mostly on a company's knowledge-based factors. This research proposed investing in factors connected with high-tech firms' adaptability to market, product and technological changes to enhance economic performance in the market. Low innovation intensity firms and generally firms aiming to improve innovation processes should focus more on enhancing the proposed factors and sub- factors of knowledge-based entrepreneurship.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

ACCI (2022). Prospects and Opportunities of Greek Entrepreneurs for Trade and Investment in Nigeria Available at: https://en.sev.org.gr/events/virtual-event-prospects-and-opportunities-of-greek-entrepreneurs-for-trade-and-investment-in-nigeria/

Afonso SC, Fernandes PO, Monte AP (2012). CSR of top Portuguese Companies: Relation between Social Performance and Economic Performance. World Academy of Science, Engineering and Technology 6(6):798-802.

Bakker R, Georgakopoulos G, Sotiropoulou VA, Tountas KS (2020). The Impact of Integrated Reporting on Analysts' Forecasts. International Journal of Economics and Finance 12(1):76-89.

Barcenilla-Visús S, Gómez-Sancho JM, López-Pueyo C, Mancebón MJ, Sanaú J (2013). Technical change, efficiency change and institutions: Empirical evidence for a sample of OECD countries. Economic Record 89(285):207-227.

Becker W, Dietz J (2002). R&D cooperation and innovation activities of firms—evidence for the German manufacturing industry. Research Policy 33(2):209-223.

Bosma N (2010). Overview of theory, statistical evidence and case studies on knowledge-based entrepreneurship, clusters and economic growth. AEGIS project, del 2(1).

Broekel T, Fornahl A, Morrison A (2015). Another cluster premium: Innovation subsidies and R&D collaboration networks. Research Policy 44(8):1431-1444.

Burja C (2011). Factors Influencing The Companies' Profitability. Annales Universitatis Apulensis Series Oeconomica 13(2):215-224.

Chesborough H (2003). Open innovation: The new imperative for

creating and profiting from technology. Harvard Business School Press.
Derdemezi A, Toudas K, Boufounou P, Georgakopoulos G (2021). Financial Implications of Capital Controls Enforcement on Large-Cap Companies Listed on the Athens Stock Exchange. Journal of Economics and International Business Management 9(1):20-34.
Dumbravă M (2010). Analysis of the firm's performance: methods and models. Economic Publishing House.
Foray D (2004). The economics of knowledge. MIT Press.
Garavaglia C, Grieco D (2005). Hand in hand with entrepreneurship. A critical overview from entrepreneurship to knowledge-based entrepreneurship. KEINS. Knowledge-based entrepreneurship: institutions, networks and systems.
Groen A (2005). Knowledge intensive entrepreneurship in networks: towards a multi-level/multi-dimensional approach, Journal of Enterprising Culture 13(1):69-88.
Hisrich R, Peters M, Shepherd D (2005). Entrepreneurship, 6. McGraw Hill.
Ivanov SH, Webster C, Stoilova E, Slobodskoy D (2020). Biosecurity, crisis management, automation technologies and economic performance of travel, tourism and hospitality companies – A conceptual framework. Available at: https://journals.sagepub.com/doi/abs/10.1177/1354816620946541
Kacprzyk A, Doryń W (2017). Innovation and economic growth in old and new member states of the European Union. Economic Research-Ekonomska Istraživanja 30(1):1724-1742.
Lee S, Park G, Yoon B, Park J (2010). Open innovation in SMEs—An intermediated network model. Research Policy 39(2):290-300.
Lee CY (2011). The differential effects of public R&D support on firm R&D: theory and evidence from multi-country data. Technovation 31(5-6):256-269.
Malerba F, McKelvey M (2010). Conceptualizing knowledge-intensive entrepreneurship: concepts and models. AEGIS project.
OECD (2011). Better Policies to Support Eco-innovation. OECD Studies on Environmental Innovation. OECD Publishing. Available at: https://doi.org/10.1787/9789264096684-en
Radosevic S, Savic M, Woodward R (2008). Knowledge-based entrepreneurship in Central and Eastern Europe: myth and reality. Economics Working Papers 93. Centre for the Study of Economic and Social Change in Europe, SSEES, UCL.
Santis P, Albuquerque A, Lizarelli F (2016). Do sustainable companies have a better financial performance? A study on Brazilian public companies. Journal of Cleaner Production 133:735-745.
Schumpeter J (2017). A Theory of Economic Development. Routledge.
Stam E, Garnsey E (2008). Entrepreneurship in the knowledge economy. In Creating wealth from knowledge. Meeting the innovation challenge pp. 145-173.
Yurdakul M, Kazan H (2020). Effects of Eco-Innovation on Economic and Environmental Performance: Evidence from Turkey's Manufacturing Companies. Sustainability 12(8):3167.

Vol. 14(2), pp. 161-169, April-June 2022
DOI: 10.5897/JAT2021.0517
Article Number: F74417669210
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

Simplification factors addressing tax systemic complexity during tax reform periods: Evidence from the Greek tax system

Alkiviadis Karagiorgos[1*], Grigoris Lazos[2], Petros Lois[3], Dimitrios Katsifas[4] and Maria Kasiouli[4]

[1]Department of Business Administration, International University of Greece, Greece.
[2]Department of Economics, International University of Greece, Greece.
[3]School of Business, Department of Accounting, University of Nicosia, Cyprus.
[4]Taxation and Financial Management of Strategic Decisions, University of Macedonia, Greece.

Received 21 December, 2021; Accepted 29 April, 2022

Tax procedures have increased due to the expansion of international trade opportunities, administrative strategies and technology. As a result, tax complexity increases and burdens citizens, enterprises and tax authorities. Traditional causes of complexity are found in political instability, legislation, central and operational planning. The interpretation of legislation greatly affects tax awareness; thus, information systems aimed at tax system modernizations and upgrades, according to international practices. Questionnaires were sent to tax payers and tax authorities investigating their perception of complexity. Through factor analysis, the items generated factors that simplify or complicate a tax system. Some of the traditional factors of complexity such as administration and information systems were expected. However, governmental influence and tax awareness were significantly reduced when dealing with taxation as a system. On the other hand tax reforms simplified the tax system, while tax awareness due to technology has little influence on complexity. This swift of some traditional governmental and citizens' oriented factors denotes the necessity of simplifying and reforming procedures in favor of demands in technology and tax standardization in a smaller country's tax system.

Key words: Taxation, tax complexity, tax systems, information systems, systemic complexity, tax simplifications

INTRODUCTION

Modern studies argue taxes are the monetary, compulsory and unpaid provision of individuals to the state for revenue generation and fulfillment of economic and social policy purposes. An interesting approach from Tran-Nam and Evans (2014) highlighted the elements of complexity in a tax system. In summary, components of complexity are divided into two categories; legal complexity, which includes both the legislative and administrative elements mentioned above; and cost-effectiveness or financial complexity originating from time

*Corresponding author. E-mail: alkiskar@gmail.com. Tel:+306975876464.

spent and the cost of tax revenue collection. They argue that breaking down these elements allow the drafting of indicators that measure. Taking this index of indicators as a reference point, tax experts can came up with plans and strategies that reduce complexity levels allowing simplifications without reducing fairness and efficiency. Tax complexity interests state and researchers alike, as a phenomenon having earned the attention of political advisors, tax legislators and economic experts. Most studies argue a positive correlation between high levels of tax systems complexity and non-compliance (Brockmann et al., 2016; Alm et al., 2017).

Furthermore, complexity greatly deters transparency, creates tax illusion and increases public expenditure (Borrego et al., 2018). Voluntary tax compliance is vital for the state in order to cope with budget deficits. Traditional methods for improving tax compliance, such as increasing the number of audits per year, have severe implementation costs (Lois et al., 2019). Complexity rises from increased sophistication in tax laws (Sawyer and Freudenberg, 2019). Tax complexity can take many forms such as computational complexity, forms complexity (Saad, 2014), compliance complexity, rule complexity (Carnes and Cuccia, 1996; Saad, 2014), procedural complexity (Cox and Eger, 2006; Saad, 2014) and the low level of readability (Saad, 2014; Sawyer and Freudenberg, 2019). Despite prior research on the increasing role of tax complexity, there has not been a comprehensive tax complexity measure. Hoppe et al. (2019) argue that the level of tax complexity varies depending on the country. They concluded that tax complexity represents a distinct country's characteristic and proposed the use of a tax complexity index (TCI) for corporations' varying exposures to tax complexity in the assessment of country-specific corporate decisions. According to recent research (OECD, 2018; Lois et al., 2019) the complex tax system in Greece does not encourage compliance with tax provisions, reinforces tax evasion and reduces fiscal income. For many years tax compliance in Greece was based on the imposition of fines after audits; however, the task of audits was difficult and the fines often were not collected. This was a result of standing cases, obstructiveness and bureaucracy as demonstrated by data of 2017 (OECD, 2018). The research showed that these fines constituted 35% of the uncollected taxes. Recently, in an effort to simplify and modernize procedures aiming to strengthen confidence in tax administrations, Greece established the "Independent Public Revenue Authority" (IAPR) and introduced integrated tax information systems. This included an increased number of targeted tax audits and a more in depth digitized approach of both the audit and the auditee's transactions (OECD, 2018).

The aim of this study is initially to present the main causes of tax system complexity in a small country and the key simplifying strategies that can be utilized. The paper uses questionnaires sent to citizens in order to measure strategies with complexity reductive capabilities, such as high tax compliance. Literature Review derived a theoretical framework finalized into a research model through correlation analysis. Greece's economy, despite being a small country, is strongly correlated with the world's market due to its connection to the EU. Furthermore the country's tax system is a representative example of tax complexity. The Greek state recently subjected its tax system to a series of reforms. Thus, problematic issues that increased tax complexity were addressed including matters of bureaucracy and planning. Furthermore, the struggles that originated from the fiscal crisis of 2009 made the work of tax authorities towards increased tax revenues more difficult but at the same time inevitable.

LITERATURE REVIEW

A tax system's complexity is a multifaceted issue. This study separates complexity depending on its different stages of the tax system. Tran-Nam and Evans (2014) defined four types of complexity. They argued that one type of complexity is related to political issues. Political complexity consists of political expediency, since tax policy makers deliberately use it for political and other purposes, deviating from the usual purpose of the tax system. On the other hand, legislative complexity arises from the tax legislation and its possible interpretations. The third type, administrative complexity, is encountered in the manner of tax legislation's enforcement and the guidelines followed during its implementation, by the tax administration and the various agencies. Finally, complexity of compliance concerns taxpayers and refers to their tax calculations, provisions and compliance to the law and covers their various tax obligations (Almunia and Lopez-Rodriguez, 2018; Vincent, 2021). Tax complexity is globally and strongly affected by transfer pricing regulations in the tax code and complexity of tax audits. While countries experience complexity in both their tax code and tax framework, rankings of complexity differ significantly. Furthermore, some cases demonstrated high tax code complexity and a low tax framework complexity or vice versa (Hoppe et al., 2019).

Tran-Nam and Evans (2014) further analyzed the sources of complexity, focusing on actions of the state. They argue the fundamentals of complexity ultimately regard governmental policies. However there are elements partially or virtually out of the government's control. This demands public agencies approach of complexity issues and the various possible coping mechanisms from an appropriate approach. The state controls elements that complicate or stabilize a tax system (such as securing government revenue, political expediency, tax return systems, and separation from citizens and tax consultants). Moreover, state related complexity is affected from the legislative framework's

frequency of changes, the interpretation of the legislation but also from the necessary actions for securing tax revenue.

When analyzing the associations between tax complexity and other country characteristics, we identify different correlation patterns. For example, we find that tax (framework) complexity is negatively associated with countries' governance, suggesting that strongly governed countries tend to have less complex tax frameworks (Hoppe et al., 2019). Tax culture and the general economy also influence the complexity of a country's system as a whole and partially within the state's jurisdiction. The state has little influence regarding taxpayers' compliance and tax professional's dependability and work ethic (Hallsworth et al., 2017). The above tax complexity's separation in different systematic stages highlights the primary factors that affect it (Tran-Nam and Evans, 2014).

Based on the above an indicator for measuring a tax system's complexity should utilize both quantitative and qualitative components. The quantitative part usually consists of data derived from tax revenues, number or type of taxes. The amounts spent on administrative costs may be the most important element but at the same time is one of the most difficult to calculate. The qualitative component can be found from provisions' volume, amount of text lines or pages in the physical file of the audit, and also an auditor's ability to understand each case. The number of problematic audit reports successfully can play the latter role (Lois et al., 2019). Moreover, the number and extent of which taxpayers receive advice from accountants or tax experts combined with the number of appeals for disputes with tax authorities would greatly enhance an indicator's strength for measuring complexity. Finally, the index should cover the overall assessment of complexity in a country's system, separately for citizens and organizations. At the same time, the empirical data used for constructing factors of complexity are the basis of the whole index for ensuring the reliability of the results (Tran-Nam and Evans, 2014).

Lack of political stability and constant legislative changes perpetually complicate tax systems. Freudenberg et al. (2012) conducted a survey using small businesses from the USA, Australia and New Zealand. Each sample country strived with different types of tax complexity. However, frequent changes in legislation regarding tax provision calculations were found in all three countries as one of most important factor of tax complexity for small businesses in all three countries. Bureaucracy, according to Papaconstantinou et al. (2013), always remains a constant factor of complexity. Thus, based on the above the following hypothesis was formed:

H_1: Current tax framework increases tax complexity.

Complexity derived from accumulating amount of cases, modern managerial options available to tax payers as well as technological swifts calls for the involvement of risk management implementations accompanied by sufficient resources. Digitalization of the public administration provides many benefits in terms of fulfilling these processes (Sadiq, 2021), but another important resource for the public administration is its human resources (Lazos et al., 2019; Lois et al., 2019b). The main tax revenue authority in Greece, the "Independent Public Revenue Authority" (IPRA) was established in 2017 and plays an important role in the smooth operation of the tax system. IPRA is charged to provide and support electronic services, facilitate transactions, reduce bureaucracy, simplify procedures and reach tax revenue goals (Katharakis and Tsakas, 2010). IPRA integrated information systems with the tax system in Greece and introduced e-government. The effectiveness of tax services in Greece was found dependent not only on the central administration, but also on various characteristics found in different geographical regions. More specifically internal procedures and policies were found to differ regardless by region despite the state's guidelines. Digitization still needs vision and methodology implementations. Geographical Information Systems (GIS) identified the need for clear e-government policies and objectives, and reoriented information management strategies for high quality services (Stamoulis et al., 2001).

At the same time, public sector employees were more concerned with the quality of services and information than with the quality of the system. In order to improve information systems, higher quality, simplification and standardization of tax procedures is vital for improved decision-making processes (Floropoulos et al., 2010). Thus, based on the above the following hypotheses were formed:

H_2: Informational Systems decrease tax complexity.
H_3: Informational Systems increase tax awareness

Another component of tax complexity emanates from administrative causes, that is, the way tax law is implemented by the tax administration and the various authorities (Tran-Nam and Evans, 2014). Although complexity is unavoidable to a certain degree, it is described as a "structural pathogenesis" when derived from sources in an administrative level. This burdens the system with expenses that are ultimately transferred to taxpayers. Administrative tax complexity is considered of grave importance in Greece, especially regarding tax authorities and officials. State administration should aim for an efficient and easy way for tax payers to interact with the system of services. However, administrative and by extension tax authorities complexity is considered the most hard type of complexity in matters of measurement and evaluation. This is especially true in Greece, regarding characteristics and high corruption rates in public administration (Lois et al., 2019).

Tax administrations face the problem of managing complex procedures beyond their job description (OECD, 2019). Tax administrations are charged with the responsibility of registering taxpayers in the tax services, processing tax revenues and payments, while simultaneously supporting taxpayers in fulfilling the latter's' obligations. Greece's public sector, due to covid-19 and the accumulative debt issues with E.U., underwent a serious series of reforms towards digitization and modernization. However, research demonstrates low administrative capacity, which remains a key challenge for providing high quality public services, and attracting investments. These issues relate mostly to low levels of trust in the state and on the evaluation of the public sector's performance. Overall, various causes of complexity regarding the state's tax and administrative system are concentrated on policies and approaches of public administration. Perhaps, one of the most troubling issues is the high level of corruption found in the Greek tax system. The latter not only strengthens individuals towards tax avoidance but also the tax system's complexity in general (Lazos et al., 2019; Lois et al., 2019b).

Corruption causes complexity and complexity enhances corruption. In 2006, Katsios investigated the dimension of corruption and highlighted three major causes; the first being a high taxation rate and the second complexity and volume of tax legislation regarding provisions. These inevitably lead to corruption and cases of shadow economy. The third was inadequacy in the public sector. Furthermore, frequent cases of unregistered informal economy activities in Greece, greatly diminish tax originated revenues. This income reduction consequently also diminishes the quality of services in the public sector. These issues point out the importance in reforming the tax system in order to face complexity and consequently corruption issues as well as unregistered activities. Meeting these tax reforms incurs significant expenses, since many cases of legislative interpretations are difficult. Thus, based on the above the following hypotheses were formed:

H_4: Tax administration increases tax complexity.
H_5: Reforms in the tax system decrease tax complexity.

Tax compliance with tax rules and legislation includes completing and submitting financial data and paying tax. States should cultivate citizens' tax compliance. From its ethical point of view non-tax compliance has a significant social impact, since it reduces the state's corporate originated tax revenue and defies corporate social responsibility tactics (Awang and Amran, 2014; Hertiningtyas and Yustina, 2021; Almunia and Lopez-Rodriguez, 2018). Regarding Greek economy, Vousinas (2017) attempted to highlight some major issues favored by the current tax system; tax evasion, corruption and unregistered informal economy. Greece demonstrates high levels of corruption, complexity and an inefficient tax system's structure. Citizens' educational level and tax knowledge decreases corruption and tax evasion incidents. High education levels correlate with high levels of tax compliance and perceived tax fairness (Saad, 2014). Tax knowledge of procedures is a key factor for tax compliance, since it explains the reasons for tax compliance (Bornman and Ramutumbu, 2019). To acquire such tax knowledge employees and taxpayers need education and training regarding the tax system (Yong et al., 2019) and its reforms. Thus, based on the above the following hypothesis was formed:

H_6: Tax awareness decreases tax complexity

METHODOLOGY

This research investigates the perceived tax system's complexity. A Likert scale questionnaire was drafted based on literature to highlight the factors of tax complexity. The sample consisted of 105 taxpayers and tax officials. Stratified sampling divided the population into subgroups based on the education and employment. The questionnaire included thirty eight (38) items used to investigate the main reasons for tax system's complexity, causes and coping mechanisms. The items formed a theoretical framework, separated into five sections as shown in Table 1: one section was on demographics profiles of the respondents (gender, age, education, employment). The first section evaluates tax framework and its particular characteristics, which according to literature, cause complexity. The second section measures participants' perception about complexity and its immediate causes and effects in the tax system. In the third section, the questionnaire measures digitization and the use of information systems. The fourth section examines tax authorities' influence on increased complexity. Finally, in the fifth section, tax consciousness of citizens is evaluated as a cause and coping mechanism of complexity. This research aims to demonstrate the factors influencing tax complexity and how they are formed. Furthermore, due to little previous research on tax complexity in a small country during a simultaneous series of tax reforms, a Principal Component Analysis was used in order to reveal structure in data and relationships between variables.

RESULTS AND ANALYSIS

Descriptive statistics

Table 2 describes the demographic data of the sample. The sample comprised 42.9% men and 57.1% women. The second item concerned the age of the participants. It is worth noting that people of all ages participated in the study. The third item concerned the education of the participants, and the educational background of the respondents is shown in the same table. As can be seen, majority are graduates of a higher education institution (56.2%), while 37.1% are postgraduates. Overall, the educational background is quite high. Then, in the fourth item regarding the employment of the respondents the sample consists of private employees (49.5%), freelancers, students and private employees. Overall, the main characteristics were the ages of the respondents

Table 1. Theoretical Framework.

Theoretical Framework's Section	Theoretical Section's Description
Current tax framework	Existing tax framework evaluation formed from its basic characteristics
Systemic complexity	Perceived systemic complexity and its immediate causes
Information systems and digitization	The relationship between information systems and complexity
Tax authorities	Responsibilities and enforcement capabilities of tax authorities
Tax awareness	Tax consciousness and knowledge of citizens as a cause and coping mechanism

Table 2. Research results descriptive statistics.

Variable		Frequency	Rating %	Valid rating %	Cumulative rating%
Gender	Male	45	42.9	42.9	42.9
	Female	60	57.1	57.1	100.0
Age	18-24	27	25.7	25.7	25.7
	25-34	59	56.2	56.2	81.9
	35-45	13	12.4	12.4	94.3
	46-55	3	2.9	2.9	97.1
	56-65	3	2.9	2.9	100.0
Education	High school graduate	6	5.7	5.7	5.7
	Higher education graduate	59	56.2	56.2	61.9
	Vocational training institute or Vocational training centers graduate	1	1.0	1.0	62.9
	Postgraduate program graduate	39	37.1	37.1	100.0
Employment	Other	8	7.6	7.6	7.6
	Civil servant	8	7.6	7.6	15.2
	Business owner/ freelancer	17	16.2	16.2	31.4
	Private employee	52	49.5	49.5	81.0
	University student	20	19.0	19.0	100.0

(25 to 34 years), educational level (higher education institutions) and working sector (private sector).

Factor analysis

Factor analysis correlates variables to groups (factors) and help draw conclusions. Analysis calculates variability for each item. Communalities show relations between variables and factors. Specifically, the values above 0.5 explain 61.8% of the sample. The "Initial Eigenvalues" were greater than 1.0. Following the main components analysis a Rotated Component Matrix resulted in seven (7) factors with loads greater than 0.3 (Table 3). The first factor was named "Administrative Tax Complexity" (ATC) which refers to the ability and knowhow of tax authorities and represents the administrative causes of complexity. The second factor (Systemic Tax Complexity- STC) emphasizes complexity of the tax system and the latter's ability to reach tax revenues goals. The third factor's items focused on tax consciousness of citizens as a cause of complexity; it is named "Citizens Tax Awareness and their influence on tax system complexity is named "Digitized Assisted Taxation" (DAT). The fifth factor "Tax System Reforms" (TSR) refers to taxation system's reforms as mean of addressing complexity. The sixth factor emphasized the characteristics of the current tax framework and was named Current Tax Framework (CTF). Finally, the last factor Governmental Tax Complexity (GTC) emphasized governmental influences on a tax system's complexity. The emerged factors are near the questionnaire's thematic analysis and are supported from the literature review. However, factors include items from different thematic sections.

Research continues with the reliability analysis of the 7 factors. The Cronbach alpha index was used and showed that only 5 factors could be considered reliable (near or above 0.7). Specifically the factors that best describe and

Table 3. Factor analysis's results.

Factor	Rotated Component Matrix	Components						
		1	2	3	4	5	7	10
E3	Tax principles and ability to comply with E.U. standards	0.844						
E4	Tax authorities and knowledge to comply with EU requirements	0.747						
E2	Tax authorities and willingness to comply with EU requirements	0.716						
E1	Tax authorities and audit support capabilities	0.691						
B7	Tax System Complexity and achievement of state revenues		0.78					
A10	Increase in tax liabilities/ government revenues		0.733					
B4	Complexity of provisions and assistance in social justice		0.624					
B3	Volume of provisions and assistance in social justice		0.603					
E6	Complexity due to social phenomena		0.454					
F1	Increasing the number of tax laws and strengthening tax awareness			0.732				
F2	Tax legislation aims to increase tax awareness			0.724				
F3	Education system strengthens tax awareness of citizens			0.599				
C2	Use of information systems reduces the complexity of the tax system.				0.814			
C1	Use of information systems reduces the complexity of the tax system				0.776			
C3	E-government helps with tax audit				0.649			
B2	The complexity of the tax system makes tax compliance difficult				0.437			
E7	The current tax system supports corruption					0.682		
A1	The tax framework is complex					0.668		
B1	Tax System Complexity favors tax evasion					0.546		
A5	Necessity of reforming the tax system					0.506		
A4	The tax framework is harmonized with the international system						0.693	
C4	Taxpayers have the knowledge of information systems to support audits						0.602	
A3	The tax framework is stable						0.458	
A11	The tax framework should contribute to a fair distribution of tax burdens						0.419	
E5	The complexity is due to political expediency							0.804
B8	The imposition of a single tax rate simplifies the tax system							0.49
F5	Tax system simplification aids social justice							0.369

Table 4. Factor analysis results – factors.

Factor	Variables	Description	Acronym	CRONBACH a
1	E3, E4, E2, E1	Administrative Tax Complexity	ATC	0.783
2	B7, A10, B4, B3, E6	Systemic Tax Complexity	STC	0.726
3	F1, F2, F3	Citizens Tax Awareness	CTA	0.636
4	C2, C1, C3, B2	Digitized Assisted Taxation	DAT	0.724
5	E7, A1, B1, A5	Tax System Reforms	TSR	0.617
6	A4, C4, A3, A11	Current Tax Framework	CTF	0.465
7	E5, B8, F5	Governmental Tax Complexity	GTC	0.554

influence systematic tax complexity were found to be administrative causes (ATC), tax awareness (CTA), information systems (DAT) and tax reforms (TSR). Regarding the last factor and its low Cronbach score, its proximity to 0.7 and its relation to literature urged retaining it. More specifically, the indicators are summarized in Table 4. In order to better explain the results and as the main issue of this research, the second factor (Systemic Tax Complexity) was considered as the dependent variable. The remaining factor as the independent variables will explain how complexity is affected. Table 5 explains the correlations between the five remaining factors. The second hypothesis measured Informational Systems and their ability to deal with complexity. The two factors, Digitized Assisted Taxation-DAT and Systemic Tax Complexity- STC correlated and

Table 5. Correlation analysis.

Correlations		Administrative causes	Systemic Tax complexity	Tax consciousness	Information systems	System reform convenience
Administrative Causes	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	105				
Systemic Tax Complexity	Pearson Correlation	0.066	1			
	Sig. (2-tailed)	0.507				
	N	105	105			
Tax Consciousness	Pearson Correlation	0.209*	0.259**	1		
	Sig. (2-tailed)	0.032	0.008			
	N	105	105	105		
Information Systems	Pearson Correlation	0.249*	-0.098	0.112	1	
	Sig. (2-tailed)	0.010	0.322	0.257		
	N	105	105	105	105	
System Reform Convenience	Pearson Correlation	-0.154	-0.048	-0.064	0.323**	1
	Sig. (2-tailed)	0.117	0.628	0.516	0.001	
	N	105	105	105	105	105

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

supported the second hypothesis. The third hypothesis was the ability of information system reforms to increase tax awareness. The second correlation concerned information systems and their influence on tax awareness. More specifically the factor Digitized Assisted Taxation positively influenced the factor regarding Citizens Tax Awareness. Thus, the third hypothesis was supported.

The fourth hypothesis referred to tax authorities and tax administration related complexity and its increase of systemic complexity issues. This hypothesis is supported since Administrative Tax Complexity correlates and influences the Systematic Tax complexity. The next hypothesis regarded reforms in the tax system and how the latter decrease systemic complexity. The fourth correlation was expected, and kept mainly because it was strongly supported by literature since the reliability of the Tax System Reforms factor was low. The final hypothesis concerned tax awareness and its negative correlation with tax system complexity, where the hypothesis is significantly supported. It was found that the factor "Systemic Tax Complexity" decreases by higher level of the Citizens Tax Awareness's factor.

Out of the six hypotheses, four were supported. The reliability of the last two factors "Current Tax Framework" and "Governmental Tax Complexity" was not strong enough to include it in this current research. The first hypothesis concerned the current tax framework and how it influences complexity. Since the seventh factor (CTF) measuring the current tax framework was not reliable, the hypothesis was not supported. The hypotheses and the correlations found are further explained and analyzed in the Discussion section.

DISCUSSION

This study provides data on complexity found in a small country's tax system with turbulent issues regarding tax awareness and tax undergoing tax reforms. It identifies the main correlations between the factors influencing systematic complexity. Determinants that emerged include administrative function's related complexity of tax authorities, citizens' tax awareness, digitalization and tax system's reforms. The correlations of the factors through the research's hypotheses are shown schematically in Figure 1. Initially, it is understood that the current tax system does not affect systemic complexity. This result can be explained by the fact that the study respondents and questionnaires focused mainly on issues that reduce or increase complexity and do not measure its current levels. Furthermore, the small reliability of the latest factor showed that the factors related to action plans and

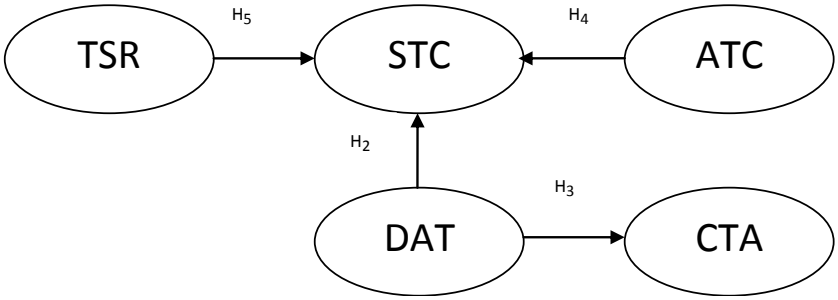


Figure 1. Correlation paths.

solutions were found more significant. Information systems and the digitization of the tax system were expected to influence and simplify tax systems (Sadiq, 2021). The impact of information systems also seems to affect the relationship of taxpayers with the tax system. In particular, changes and developments in information systems seem to explain to citizens issues of taxation which they could not understand (Lois et al., 2019b). This was also related to whether the education and training of citizens and tax officials on these systems is sufficient to simplify the procedures. The information available to citizens and tax officials through technology helps them to understand the tax system and its requirements (Lazos et al., 2019). In this way, information systems seem to increase tax awareness (Alm et al., 2017; Lois et al., 2019). However, the tax conscience itself does not directly affect systemic complexity. The latter can be explained by the absoluteness of the system and the possibility of following orders irrelevant to conscience but to necessity.

Administrating tax system and the issues that arise from it were expected to affect systemic complexity as confirmed by literature (Hoppe et al., 2019). Administrations could nurture elements of complexity; thus, administrative causes are directly related to complexity tax officials who are ultimately responsible for implementing tax legislation and guidelines. Government complexity did not seem to affect systemic complexity at this stage. This can be explained by the fact that decisions regarding changes and the need for simplification have already been taken at the governmental level. At the same time, technology and digitization have defined more closely tax processes. Furthermore, copying and applying international tax administration practices and strategies leaves few options for external influences. This is similar to the requirements and directives of International Economic Associations (EU, OECD (Lois et al., 2019)).

Tax reforms in the tax system have been found to affect systemic complexity. Public administration and the need to modernize education and training of employees were expected factors and supported by the literature (Lazos et al., 2019; Lois et al., 2019b). Similarly, the relationship between tax awareness and systemic tax complexity demonstrated negative correlations. Tax complexity is affected by a number of factors. Nevertheless, it seems that in a period of tax reforms, more importance is given to systemic tax complexity. Reform factors of the system regard regulations, tax practices and information systems. These changes affect both citizens and tax officials. On the contrary, the only factor that seems to complicate the tax system was administrative complexity and the way the tax legislation's enforcement and guidelines are followed during its implementation.

Conclusion

Reforms in technology, information systems and tax legislation were found to simplify tax systems. During these changes, some of the traditional tax complexities such as governmental complexity were lessened compared to other types. Administrative complexity influenced and increased complexity through tax legislation implementations. These implementations are performed by tax administrations that further support the results on complexity. The significant role of information systems and technology also simplify the way the taxation system is followed and viewed. Tax reforms were regarded as necessary elements towards simplification. Tax awareness was found irrelevant to systemic complexity. However, digitization and information systems were positively correlated with citizens' tax awareness due to availability of information and clarity of guidelines and procedures.

RESEARCH IMPLICATIONS

Through this research proposal, solutions could be sought to face tax system's complexity. The latter directly affects citizens and enterprises. Simplification factors increase entrepreneurship levels, since an inflexible and

complex tax system deters the private and public sectors' development. Moreover, the small influence of governmental tax complexity on the general phenomena demonstrates a decentralization of responsibility regarding both complexity and enforcement of tax regulations from the state to tax authorities. Corruption levels, according to the literature, significantly affect simplifications on tax systems (Cabello et al., 2019). However, results indicate that practices of corruption might have moved from their traditional channels.

FUTURE RESEARCH AND RESEARCH LIMITATIONS

The sample was questioned on issues of complexity and not on assessment of the current tax system. Although complexity of the tax system is an issue that greatly concerns literature the case of Greece could cover more specific data on corruption, entrepreneurship and risk management due to fiscal and sanitary crises. Furthermore, research on informal channels that enable black economy could highlight a swift from traditional to modern practices of corruption related and influenced by technology and legislation. The results are obtained from the sample's perception of tax complexity factors. The findings are supported by literature but more research could include comparative analysis with respective countries from economic groups to which they jointly belong (Freudenberg et al., 2012).

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Alm J, Bloomquist KM, McKee M (2017). When you know your neighbour pays taxes: Information, peer effects and tax compliance. Fiscal Studies 38(4):587-613.

Almunia M, Lopez-Rodriguez D (2018). Under the radar: The effects of monitoring firms on tax compliance. American Economic Journal: Economic Policy 10(1):1-38.

Awang N, Amran A (2014). Ethics and Tax Compliance. Ethics, Governance and Corporate Crime: Challenges and Consequences. Developments in Corporate Governance and Responsibility 6:105-113.

Borrego AC, Lopes CM, Ferreira CM (2018). The perception of tax complexity within local authorities' VAT framework: Evidence from Portugal. In Handbook of Research on Modernization and Accountability in Public Sector Management. pp. 384-405.

Bornman M, Ramutumbu P (2019). A conceptual framework of tax knowledge. Meditari Accountancy Research 27(6):823-839.

Brockmann H, Genschel P, Seelkopf L (2016). Happy taxation: increasing tax compliance through positive rewards?. Journal of Public Policy 36(3):381-406.

Cabello OG, Gaio LE, Watrin C (2019). Tax avoidance in management-owned firms: evidence from Brazil. International Journal of Managerial Finance 15(4):580-592.

Carnes GA, Cuccia AD (1996). An analysis of the effect of tax complexity and its perceived justification on equity judgments. Journal of the American Taxation Association 18(2):40-56.

Cox SP, Eger III RJ (2006). Procedural complexity of tax administration: The road fund case. Journal of Public Budgeting, Accounting and Financial Management 18(3):259-283.

Freudenberg B, Tran-Nam B, Karlinsky S, Gupta R (2012). A comparative analysis of tax advisers' perception of small business tax law complexity: United States, Australia and New Zealand. In Australian Tax Forum 27(4):677-718.

Floropoulos J, Halvatzis D, Spathis C, Tsipouridou M (2010). Measuring the success of the Greek Taxation Information System. International Journal of Information Management 30(1):47-56.

Stamoulis D, Gouscos D, Georgiadis P, Martakos D (2001). Revisiting public information management for effective e-government services. Information Management and Computer Security 9(4):146-153.

Hallsworth M, List JA, Metcalfe RD, Vlaev I (2017). The behavioralist as tax collector: Using natural field experiments to enhance tax compliance. Journal of Public Economics 148(1):14-31.

Hertiningtyas I, Yustina AI (2021). Taxation Ethical Issues: Perspectives of Tax Professionals in Indonesia. The Indonesian Journal of Accounting Research 24(1):21-50.

Hoppe T, Schanz D, Sturm S, Sureth C (2019). Measuring tax complexity across countries: A survey study on MNCs. Arqus Discussion Paper 245:1-79.

Lazos G, Pazarskis M, Karagiorgos A (2019). Business Taxation in the Digital Economy: Existing Problems and Perspectives. Actual Problems of Economics 10:86-92.

Lois P, Drogalas G, Karagiorgos A, Chlorou A (2019). Tax compliance during fiscal depression periods: the case of Greece. EuroMed Journal of Business 14(3):274-291.

Lois P, Drogalas G, Karagiorgos A, Tsikalakis K (2019b). The Contribution of Internal audit in the Digital era, Opportunities, Risks and Challenges. EuroMed Journal of Business 21(4):645-662.

Katharaki M, Tsakas M (2010). Assessing the efficiency and managing the performance of Greek tax offices. Journal of Advances in Management Research 7(1):58-75.

Katsios S (2006). The shadow economy and corruption in Greece, South-Eastern Europe Journal of Economics 1:61-80.

Organisation for Economic Cooperation and Development (OECD) (2018). OECD Economic Surveys: Greece 2018. Available at: https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-greece-2018_eco_surveys-grc-2018-en

Organisation for Economic Co-operation and Development (OECD) (2019). Tax Administration 2019: Comparative Information on OECD and other Advanced and Emerging Economies. Available at: https://read.oecd-ilibrary.org/taxation/tax-administration-2019_74d162b6-en#page1

Papaconstantinou P, Siriopoulos C, Tsagkanos GA (2013). How bureaucracy and corruption affect economic growth and convergence in the European Union The case of Greece. Managerial Finance 39(9):837-847.

Saad N (2014). Tax Knowledge, Tax Complexity and Tax Compliance: Taxpayers' view. Procedia - Social and Behavioral Sciences 109(2014):1069-1075.

Sadiq M (2021). Impact of making tax digital on small businesses. Journal of Accounting and Taxation 13(4):304-316.

Sawyer AJ, Freudenberg B, Yong S, Lo K (2019). Tax Compliance in the New Millennium. UC Business School Conference Contributions pp. 1-45.

Tran-Nam B, Evans C (2014). Towards the development of a tax system complexity index. Fiscal Studies 35(3):341-370.

Vincent O (2021). The development of a scale to measure SMEs tax compliance in Nigeria: An adaptation of Fischers model. Journal of Accounting and Taxation 13(3):132-143.

Vousinas LG (2017). Shadow economy and tax evasion. The Achilles heel of Greek economy. Determinants, effects and policy proposals. Journal of Money Laundering Control 20(4):386-404.

Yong S, Lo K, Freudenberg B, Sawyer A (2019). Tax compliance in the new millennium: Understanding the variables. In Australian Tax Forum 34(4):766-808.

Vol. 14(2), pp. 170-188, April-June 2022
DOI: 10.5897/JAT2022.0529
Article Number: 2F42A9C69266
ISSN 2141-6664

http://www.academicjournals.org/JAT

ACADEMIC JOURNALS
expand your knowledge

Journal of Accounting and Taxation

Full Length Research Paper

Board-diversity, audit committee characteristics and earnings management: Family versus non-family controlled firms

Mohammad Helal Uddin[1,2]

[1]School of Economics and Management, Southwest Jiao tong University, Chengdu, Sichuan, China.
[2]Department of Business Administration, Faculty of Business studies, International Islamic University, Chittagong, Bangladesh.

Received 10 March, 2022; Accepted 25 May, 2022

This study examines the impact of board diversity, audit committee attributes, and the interaction of family ownership on earnings manipulation. The study employs the Caylor and Roy Chowdhury models to quantify accrual and real earnings management, respectively, in a developing country setting. Data was collected from non-financial organization operating in Bangladesh during the period from 2011 to 2019. Furthermore, depending on 10% or more ownership, a chosen sample was split into family and non-family managed enterprises. The findings of the research suggest that board size and audit committee meetings can reduce accrual earnings management, but the independent director in the boardroom increase real-earnings management. Moreover, the corporate governance index (CGI) decreases accrual earnings management. Interestingly, board diversity and audit committee characteristics effectively curb earnings management in family companies more than in non-family enterprises. Family ownership strengthens the impact of board diversity and audit committee characteristics on earnings management. Finally, the findings of the study are resilient when considered for endogeneity and other diagnostic checks. The study's findings also add to the corporate governance literature by revealing the impact of board diversity and audit committee characteristics on earnings management in a developing country setting. The application of the Caylor model to measure accrual earnings management and a comparative analysis of family and non-family enterprises in this regard are limited and the first study in the context of Bangladesh.

Key words: Board and audit committee characteristics, earnings management, non-financial organization, family and non-family firms, Bangladesh stock exchanges.

INTRODUCTION

Earnings manipulation is a deliberate strategy business leaders use to gain financial benefits from the commercial center (Almasarwah, 2015). Sometimes, executives take part in unscrupulous earnings treatment for their own gains and generate some expected affluence for the organization (Bergstresser and Philippon, 2006). It might happen for various reasons, including shaky corporate governance and control frameworks. Indeed, effective

E-mail: helalais@iiuc.ac.bd. Tel: +8801913954760.

corporate governance mechanisms may help a company develop the quality of its commercial transactions and decrease earnings management. On the other hand, poor corporate governance increases the chances of mismanagement, dishonesty, and unprofessional behavior in the company (Leventis and Dimitropoulos, 2012; Almasarwah, 2015). According to Cadbury (1992), corporate governance is a complex structure for managing a company. Moreover, Hamzah and Zulkafli (2014) shows that company governance may be used to prevent insider expropriation. It also uses a systematic way of protecting shareholders' wealth (La Porta et al., 2000). Moreover, corporate governance mechanisms augment the right to entry to external capital and endure economic shocks (Hashim and Amrah, 2016). Consistent with these backgrounds, whether corporate governance mechanism (board diversity, audit Committee characteristics) does have any relationship with earnings management has been an issue of the extreme contest and a center of many former pieces of research. Unlike research conducted in this regard, but tends to limit the measures and methodologies. Most of the studies have used one or two corporate governance characteristics and related them to accrual and real earnings management in a different economy, particularly in developed economies (Bouaziz et al., 2020; Gull et al., 2018).

In reality, testing single elements of corporate governance discretely on earnings management led to the partial representation of the relationship, also demonstrates mixed results (Almasarwah, 2015). Moreover, (Fields et al., 2001) stated that only a particular earnings management system would not correspond to the overall effects of earnings management activities.

This study was motivated to link board diversity and audit committee characteristics with earnings management for two reasons. First, most previous studies on the Bangladeshi economy focused on other influencing factors of earnings management, such as; business group affiliation (Muttakin et al., 2017), CSR disclosures (Muttakin et al., 2015), enterprise resource planning systems (Sarkar, 2018), highly volatile revenue and operating profit (Ahmed and Azim, 2015), firm-specific determinants (Habib, 2005). In contrast, there is little study on the relationship between corporate board and audit committee characteristics in a developing country. So this study contributes to the existing literature by addressing the developing country's economy. Moreover, because of the regulated corporate governance framework, most studies in this area centered on the industrialized economy (Bouaziz et al., 2020; Gull et al., 2018). Therefore, studying the rising economy, especially in Bangladesh, is crucial because a lot of investment and development projects have been seen in this country; this, in turn, increases investors attraction of.

Furthermore, several pieces of research on accrual earnings management employ the Jones model and the Modified Jones Model proposed by Dechow et al. (1998) (Lemma et al., 2018; Bhuiyan, 2015), as well as Beneish Model (Khan and Akter, 2017); cross-sectional Jones' (1991) model (Haque and Imam, 2014); the standardized cross-sectional model (Imam and Jaber, 2014); discretionary accruals (Muttakin et al., 2017) to quantify accrual earnings management. However, the application of the Caylor (2010) model is rare in literature; thus, it was addressed to measure accrual earnings management in the study. Furthermore, while many earlier studies concentrated on accrual earnings management strategies, this study employs both accrual and real-activity-based earnings management.

Secondly, "around the globe, family companies have significant and common business characteristics" (Bunkanwanicha et al., 2013); however, whether family ownership makes any difference to the reporting practice of the firms is still a contentious issue. Research shows that family firms are omnipresent in many emerging and advanced countries (Khanna and Rivkin, 2001). Family firms manipulate ownership and management to acquire family aims and plans (Chrisman et al., 2013). Moreover, firms also utilize company resources to execute their agendas that might have unusual pressures on the affluence of the stockholders (Chrisman et al., 2013); it might lead to misunderstanding between family and non-family shareholders Madison et al. (2016). Furthermore, family firms accept strategies conducive to their benefits, influencing minority shareholders (Yeh and Woidtke, 2005). Previous studies demonstrate that family-oriented firms are virtually managed and operated by close relatives; thus, corporate governance negatively affects managerial aspects and corporate financial reporting (Prencipe and Bar-Yosef, 2011). However, no study has illustrates a comparative analysis regarding the impact of board diversity and audit committee characteristics on earnings management in family and non-family firms. In addition, family businesses are more prone to deviate from corporate governance best practices (Arcot and Bruno, 2012). Evidence demonstrates that 58.42% of respondents in a study considering the ability to guarantee good governance in Bangladesh under a family-based culture feel it is not achievable (Hasan et al., 2014). To what extent these are wide-ranging and applicable to ensure reasonable control in the corporate financial reporting of Bangladesh is still a question of controversy. Therefore, Bangladesh is a rising market with leading family enterprises, low institutional attachments, a feeble legal structure, and fewer inducements for institutional shareholders to monitor firms' fiscal decisions. Earnings manipulation provides a more encouraging setting to study the consequence of corporate governance, that is, board-diversity and audit committee characteristics on earnings management in family and non-family organizations.

The study examines the association between board diversity and audit committee features with earnings

management based on the data from an emerging economy. Bangladesh, the 39th biggest economy in the world, features a GDP of more than US$300 billion. Given the recent infrastructure developments and GDP growth, Bangladesh has received the attention of foreign investors in various sectors. Effective corporate governance, including accurate financial management, ensures foreign investment. In Bangladesh, non-financial firms are required to adhere to corporate governance guidelines to ensure transparency of financial activities. Studies show that compliance with corporate governance in Bangladesh is very poor. The reasons behind it are violations of shareholders' rights, "absence of law enforcement mechanisms, lack of obligation on the part of boards of directors, lack of commitment to regulatory frameworks, weak enforcement and monitoring systems, and lack of transparency and disclosure" (Okpara, 2011), as well as a large portion of shares occupied by family members (Hasan et al., 2014). The World Bank (2009) reports that Bangladesh's capital market is not as developed as expected, and economic monitoring and enforcement are below standard (Siddiqui, 2010). In addition, export-oriented organizations are the mainstay of the country's economy (Islam and Deegan, 2008).

A recent report by the Bank of Bangladesh shows that the capital market has seen several regulations and administrative headways, such as stock exchanges, central depository, stock dealer/stockbroker, merchant banker, portfolio manager, and corporate governance amendments (Amit, 2016). As a result, earning manipulation is not unlikely in Bangladesh as a report demonstrates that 85.71% of food and allied industries have significantly higher manipulation-score; at least for one year during a five-year period (Khan and Akter, 2017).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Board size and earnings management

Board size consists of individuals who play fundamental decision-making rules in an organization. They have the legal authority to care for the well-being of shareholders in both financial and non-financial areas of the organization and oversee the managers' duties and obligations. Research shows that efficient boards can limit agency problems and satisfy managers and shareholders by increasing the consciousness of accountants to ensure the quality of financial reporting (Liu and Fong, 2010; Alves, 2011). A variety of experimental studies, on the other hand, suggest that having a high number of board members leads to inferior performance since each member is dependent on others; therefore, managers hold the organization's authoritative power (Core and Guay, 1999). Consequently, managers show control over the financial statement's preparation and disclosure.

Similarly, Talbi et al. (2015) stated that big boards are more prone to distort financial statements in family-owned businesses by reducing discretionary spending to boost revenue. Several studies demonstrates negative relationship between board size and earnings management, for example, Peasnell et al. (2005) study on the UK sample; an empirical study on the Indian sample (Sarkar et al., 2008; Ahmed et al., 2006) a study on the economy of New Zealand; (Abed et al., 2012) a study on Jordanian non-financial firms. In contrast, some studies demonstrate board size positively affects earnings management (Ball and Shivakumar, 2008). The above views and findings proved that the relationship between board size and earnings management is still a debatable research question (Ghosh et al., 2010). Given these opposing predictions and findings, and the present status of the board-size structure of Bangladeshi firms leads the author to propose the hypothesis as follows:

H1: There is a negative association between board size and earnings management.

Independent board of director and earnings management

Previous literature shows that independent board members are one of the most powerful regulating variables in earnings management (Xie et al., 2003). Yet, the relationship between independent directors and managerial activities is complex, and many arguments exist. The first view holds that a significant portion of independent directors on the board can supplement the board's independence and controlling power, limiting managers' opportunities and authoritative strength but increasing their competence. Eventually, reducing the gap between managers and shareholders, and equity holders can maximize their interests and minimize an organization's fraudulent acts (Kelton and Yang, 2008).

Similarly, resource dependence theory supports the above view (Kesner and Johnson, 1990). The second view contends that family-oriented firms are virtually managed and operated by close relatives; thus, independent directors have low managerial aspects (Prencipe and Bar-Yosef, 2011). Besides this, personal relationship and previous service attachment with the organization affects independent directors negatively like; prompt and unnecessary action (Goodstein et al., 1994); undue review (Baysinger and Butler, 1985); the problem of absolute freedom of work (Demb and Neubauer, 1992). Several studies are consistent with the views that the board's supremacy of independent directors (in the case of number) is more sustainable and functional in overlooking managerial activities. However, Haniffa and Cooke (2002) demonstrated that the presence of independent directors leads to quality report.

Consequently, they found that there is a negative association between independent directors and earnings management. On the other hand, the study of Sarkar et al. (2008) and Osma and Noguer (2007) illustrated those more independent directors on the board lead to more earnings management practices. Hence, the diversified views and findings regarding this phenomenon lead to the following hypothesis:

H2: There is a negative relationship between independent board members and earnings management.

Gender-diverse boards and earnings management

Gender diversity has long been a topic of discussion among business boards of directors. However, Norway is the first country to mandate a portion of a female director but has seen affirmative development of laws and regulations for female representation in several nations, including Belgium, France, Iceland, Italy, Norway, Spain, and the Netherlands (Groysberg and Bell, 2013). It was evident that the thinking power, workability, and typical behavior of males and females are different; however, to deal with the organization's financial aspects, females tend to support others while men concentrate on profitability and career development. Moreover, to record revenue expenditure, guys are more likely than ladies to violate corporate and accounting guidelines to maximize profit (Betz et al., 1989). Similarly, research evidence demonstrates that women involved in earnings management are comparatively lower than men due to their interest in professionalism (Srinidhi et al., 2011). Based on moral standards and consciousness, some studies pointed out that usually, female accountants show greater accountability than their male counterparts (Bernardi and Arnold, 1997). They offer reluctance to augment economic returns through unethical ways due to immense loathing for taking risks (Kaplan et al., 2009). Furthermore, girls are more flexible and sensitive than boys in making economic decisions (Byrnes et al., 1999).

In contrast, Harakeh et al. (2019) illustrated that female director may involve in manipulation by compromising quality to supplement financial benefits and professional status. Consistent with the above views, research evidence shows a negative association between gender-diverse boards and earnings management (Peni and Vahamaa, 2010). Similarly, Gul et al. (2011) pointed out that if a company falls upon the risk of earnings management, qualified female directors can handle this phenomenon by using a conservative approach. Based on the above discussion, it is crystal clear that female directors on the boards might be remunerative for a company to handle earnings management. Thus, the hypothesis was proposed as follows:

H3: There is a positive association between gender-diverse boards and earnings management.

Board meeting and earnings management

To deal with official concerns, board members must participate in the regular board meeting (Obigbemi et al., 2016); hence the firm must incur meeting arranging expenses. Therefore, the frequency of board meetings is still a matter of intense debate among researchers and policymakers (Vafeas, 1999). Depending on the type of corporate governance, research sample, and period, some believe that board meetings affect earnings management (Almasarwah, 2015).

According to Vafeas (1999), if a company has a board meeting violating corporate governance norms, it may face earnings management. In contrast, Gulzar (2011) show that increasing board meeting participation strengthens board members' oversight and effectiveness, which reduces an organization's fraudulent actions.

On the other hand, according to Almasarwah (2015), if a firm can provide a good corporate governance environment and qualified board members, repeated board meetings will reduce earnings manipulation. A recent empirical study on the Shanghai and Shenzhen stock exchange firms shows a significant positive relationship between board meeting and earnings management due to weak corporate governance (Gulzar, 2011). Similarly, Obigbemi et al. (2016) show the precise relationship between board meeting and earnings management, indicating that having more board meetings intensifies earnings management. Given these various arguments and evidence about the relationship between board meetings and earnings management, the author propose the following hypothesis:

H4: There is a negative relationship between number of board meeting and earnings management.

Audit committee member and earnings management

The audit committee's principal goal is to guarantee that a company's financial reporting is transparent. However, depending on the number of non-executive directors in the team, the committee might be small, medium, or large (Alkdai and Hanefah, 2012). Indeed, the audit committee structure is practically different across the world. For example, UK Corporate Governance Guidelines dictate that a company’s audit committee should include two or three non-executive directors (Song and Windram, 2004). The study of Hamdan et al. (2013) shows that Jordan Audit Committee consists of three non-executive directors. Similarly, Bangladesh Corporate Governance Code 2018 is consistent with the Jordan Code (2012).

Furthermore, Xie et al. (2003) suggest that audit teams with highly experienced individuals can better monitor, assess, and avoid fraud and mistakes since they can deal with all facets of accounting and finance.

In contrast, the small audit committee may become prejudiced and lose its independence (Habbash, 2010).

Table 1. Description of study samples.

Panel A; Sample	
Selected companies	198
Number of company-year	1782
Less: Firm-year lack of information	720
Total sample (Firm-year)	1062
Panel B: Industry-wise allocation	
Various sectors	No. of Firm-year
Cement industry	63
Ceramics industry	45
Engineering industry	144
Textile industry	288
Food industry	81
Power industry	108
Pharmaceuticals	180
IT	36
Services & Real Estate	36
Telecommunication	9
Tannery	18
Miscellaneous	36
Paper and printing	18
Total	1062

Panel A contains a sample that was finally considered for the study, Panel B explains sector-wise representatives.

Consistently, Prior literature stated diversified results on the relationship between audit committee size and earnings management in various economic settings. For example, an empirical study on Malaysian firms (Haniffa et al., 2006) and (Al-Haddad and Whittington, 2019) on Jordan-listed organizations reveals positive effects of audit committee size on earnings management.

In contrast, a study conducted by Xie et al. (2003) in the USA and (Baxter and Cotter, 2009) on Australian firms found no association between earnings management and audit committee size. Based on the preceding rationale and findings, it was concluded that this topic's findings are not fixed and that additional research is required to generalize the findings. As a consequence, the following hypothesis was suggested:

H5: There is a negative relationship between audit committee size and earnings management.

Audit committee meeting and earnings management

To ensure the quality of audit procedures and management approaches, the audit committee should maintain regular communication with all entity parties (Habbash, 2010) and hold meetings to resolve any potential conflicts (Klein, 2002; Almasarwah, 2015).

However, many audit committee meetings may foster professionalism and a healthy balance of relationships across a firm's bodies and gear up in-house control mechanisms for optimal performance (Jenny and Lois, 2007). Similarly, Abbott et al. (2000) showed that having at least two meetings per year is sufficient to prevent cash theft, misappropriation of commodities, and accounting manipulations. Due to variances in audit committee power and diverse economic situations, past research has produced conflicting conclusions relating to the frequency of audit committee meetings and an organization's fraudulent activities. While a study of Malaysian organizations (Saleh et al., 2007) discovered a positive relationship between audit committee meetings and earnings management because more audit committee meetings increase meeting operating costs, so companies engage in earnings management to offset these extra costs. Others stated a negative association between the quantity of audit committee gathering and earnings manipulation (Baxter and Cotter, 2009 (Australian); Bedard et al., 2004 (USA); Eriabie and Odia, 2016; Abbas, 2020 (Nigeria); Almasarwah, 2015 (Jordan). Previous research has clearly shown that mixed evidence exists in numerous economic circumstances regarding this issue. The result shows that the audit committee meeting will impact on earnings management. Thus, the hypothesis is as follows:

H6: There is a negative relationship between audit committee meeting and earnings management.

METHODOLOGY

Sample

The examination is primarily based on secondary data. The total sample of this investigation is described in Table 1. From 2011 to 2019, all data were gathered from annual reports of registered non-financial organizations in Bangladesh.

The study period began in 2011 because of the discrepancy in necessary data for all proxies. Bangladesh has 586 listed companies, with 198 being non-financial enterprises (dse.com.bd). Financial organizations were omitted from this analysis due to the nature of transactions, differing regulations (Umer et al., 2020), and unique capital structure (Lim et al., 2007). The authors' research initially included 1782 firm-year observations, but they eliminated 720 firm-year views due to incomplete information and the absence of annual reports for some businesses founded after 2011. Finally, for empirical analysis, 41 family-oriented firms (376 firm-year observations) and 77 non-family-oriented firms (686 firm-year data) were selected from thirteen industries: cement, ceramics, textiles, tanning, paper and printing, pharmaceuticals, service, and real estate, food, engineering, power, miscellaneous, and information technology. To provide a trustworthy and accurate study, all data were carefully gathered from yearly reports.

Variable measurement: Independent variable

According to prior studies, the author quantifies independent variables. First of all, board size is measured by taking the number

of board members listed in the annual report at the end of each year (Peasnell et al., 2005). Secondly, the author assesses independent directors by looking at the number of independent directors on the board after each year, according to Sarkar et al. (2008). Thirdly, female directors in the boardroom are calculated by considering the number of female directors on the board after each year (Peni and Vahamaa, 2010). Then board meetings was measured by addressing the definite quantity of yearly board meetings held by the board each year (Obigbemi et al., 2016). Audit committee size is also evaluated by taking the number of audit members in the boardroom (Saleh et al., 2007); moreover, audit committee meeting indicates the frequency of meetings the audit committee holds (Xie et al., 2003). Furthermore, the family dummy is measured by taking a dummy variable equal to 1 if any board member occupied 10% or more shares otherwise zero (Kuan et al., 2011).

Measurement of accrual-based earnings management

The Caylor (2010)'s model is employed to determine accrual earnings management in this study. Managerial discretion over revenue recognition, such as income on credit, emphasizes the Caylor (2010)'s model. Caylor (2010) frames his research around three triple earnings intentions (which he refers to as benchmarks), such as avoiding thrashing, earnings reductions, and unenthusiastic earnings shocks. The model is based on real-world company actions like softening client credit restrictions. It utilizes gross accounts receivable rather than net accounts receivable since anomalous increases in net accounts receivable might indicate changes in the allowance for bad debt. The Caylor (2010)'s model based on gross accounts receivable implies that gross accounts receivable are connected to current period sales, as accounts receivable represent sales accrued in the current period. Caylor's model (Caylor, 2010) constructs the following equation to examine this factor:

$$\Delta \text{ Gross Account Receivable}_{i,t}/Asset_{i\,t-1}=\beta_0+\beta_1(1/ASSET_{i,t-1})+\beta_2(\Delta SALES_{i,t}/Asset_{i\,t-1})+\beta_3(\Delta CFO_{i,t+1}/ASSEt_{i,t-1})+\varepsilon_{i,t}\ldots\ldots\ldots \quad (1)$$

Where; Δ Gross Account Receivable $_{i,t}$ = gross accounts receivables change for firm (i) during year t; *Asset* $_{i\ t-1}$ is the beginning of year total assets; $\Delta SALES_{i,t}$ is the change in sales during year t; ΔCFO_{t+1} is the change in cash flow from operations during year t + 1.

Measurement of real-activity based earnings management

To increase or decrease recorded earnings, managers bring about this type of activity by controlling cash flow from operating activities, production, and discretionary expenses (Roychowdhury, 2006). Initially, sales management involves swelling sales through various incentives like; discounts, after-sales service, and several credit facilities, consequently lowering cash flows due to irregular margin reduction. On the other hand, overproduction increases manufacturing costs; thus, reducing discretionary expenses amplifies operating cash flows (Lemma et al., 2018).

Previous studies use abnormal cash flows, production costs, and discretionary expenses as proxies for natural earnings management (Lemma et al., 2018). Abnormal indicates the differences between actual and expected outcomes of cash flow, production cost, and discretionary expenses (Lemma et al., 2018). Consistent with previous studies (Roychowdhury, 2006; Lemma et al., 2018), we also measure cash flow from operating activities, production cost, and discretionary cost, according to Dechow et al. (1998)'s model. The study calculates natural earnings management by the following equations.

The first model is used to compute abnormal cash flow from operating activities (R_CFO) by netting in service money flow less than every company's predictable networking cash flow (every year). The first model is as follows:

$$CFO_{i,t}/ASSET_{i,t-1}=\beta_1(1/ASSET_{i,t-1})+\beta_2(SALES_{i,t}/Asset_{i\,t-1})+\beta_3(\Delta SALES_{i,t}/ASSEt_{i,t-1})+\varepsilon_{i,t} \quad (2)$$

Where CFO stands for net operating cash flow and asset denotes a single period lagged value of the total asset, and ∆SALES refers to the overall sales value changes. The following model is applied to calculate production cost and regressed for each firm:

$$PROD_{i,t}/ASSET_{i,t-1}=\beta_1(1/ASSET_{i,t-1})+\beta_2(SALES_{i,t}/Asset_{i,t-1})+\beta_3(\Delta SALES_{i,t}/ASSET_{i,t-1})+\beta_4(\Delta SALES_{i,t-1}/ASSET_{i,t-1})+\varepsilon_{i,t} \quad (3)$$

PROD indicates the sum of the cost of merchandise sold and changes in stocks; at last, abnormal production cost (R_PROD) is estimated by comparing the evaluated estimation of manufacturing costs from the sum of the cost of items sold and the adjustment in stock for each firm. As indicated by the accompanying model, the discretionary expense was measured utilizing the following model:

$$DISC\ Expense_{i,t}/ASSET_{i,t-1}=\beta_1(1/ASSET_{i,t-1})+\beta_2(SALES_{i.t-1}/Asset_{,\,t-1})+\varepsilon_{i,t} \quad (4)$$

DISC refers to research and development, selling, and administrative expenses in the profits and loss statement. Then, abnormal discretionary expenditures (R_DISC) are estimated by taking the differences between the predicted value of discretionary cost and other in-service items expenses. According to the above three models, the author generate an overall measure of earnings management for each firm.

$$\text{Real Earnings Management (REM)}=\sum CFO_{i,t}/ASSET_{i,t-1}+PROD_{i,t}/ASSET_{i,t-1}+DISC\ Expense_{i,t}/ASSET_{i,t-1} \quad (5)$$

Research model

Accrual earnings management model

$$\text{Model-6 (AEM}_{i,t})=\beta0+\beta_1 BS_{i,t}+\beta_2 IND_{i,t}+\beta_3 FMLD_{i,t}+\beta_4 BDM_{i,t}+\beta_5 ACM_{i,t}+\beta_6 ACMT_{i,t}+\sum_{n=1}^{12} Yncontrolvariables+\varepsilon_{i,t}$$

$$\text{Model-7 (AEM}_{i,t})=\beta0+\beta_1 CGI_{i,t}+\sum_{n=1}^{12} Yncontrolvariables+\varepsilon_{i,t}$$

$$\text{Model-8 (AEM}_{i,t})=\beta0+\beta_1 BS_{i,t}+\beta_2 IND_{i,t}+\beta_3 FMLD_{i,t}+\beta_4 BDM_{i,t}+\beta_5 ACM_{i,t}+\beta_6 ACMT_{i,t}+\beta_7 FamilyDummy_{i,t}+\beta_8 FamilyDummy\times BS+$$

$\beta_9 FamilyDummy \times IND + \beta_{10} FamilyDummy \times FMLD + \beta_{11} Family\ Dummy \times BDM + \beta_{12} FamilyDummy \times ACM + \beta_{13} FamilyDummy \times ACMT + \sum_{n=1}^{12} Yncontrolvariables + \varepsilon_{i,t}$

Model-9 ($AEM_{i,t}$) $= \beta 0 + \beta_1 CGI_{i,t} + \beta_2 FamilyDummy_{i,t} + \beta_3 FamilyDummy \times CGI_{i,t} + \sum_{n=1}^{12} Yncontrolvariables + \varepsilon_{i,t}$

Real earnings management model

Model-10 ($REM_{i,t}$) $= \beta 0 + \beta_1 BS_{i,t} + \beta_2 IND_{i,t} + \beta_3 FMLD_{i,t} + \beta_4 BDM_{i,t} + \beta_5 ACM_{i,t} + \beta_6 ACMT_{i,t} + \sum_{n=1}^{12} Yncontrolvariables + \varepsilon_{i,t}$

Model-11 ($REM_{i,t}$) $= \beta 0 + \beta_1 CGI_{i,t} + \sum_{n=1}^{12} Yncontrolvariables + \varepsilon_{i,t}$

Model-12 ($REM_{i,t}$) $= \beta 0 + \beta_1 BS_{i,t} + \beta_2 IND_{i,t} + \beta_3 FMLD_{i,t} + \beta_4 BDM_{i,t} + \beta_5 ACM_{i,t} + \beta_6 ACMT_{i,t} + \beta_7 Family\ Dummy_{i,t} + \beta_8 Family\ Dummy \times BS + \beta_9 Family\ Dummy \times IND + \beta_{10} Family\ Dummy \times FMLD + \beta_{11} Family\ Dummy \times BDM + \beta_{12} Family\ Dummy \times ACM + \beta_{13} Family\ Dummy \times ACMT + \sum_{n=1}^{12} Yncontrolvariables + \varepsilon_{i,t}$

Model-13 ($REM_{i,t}$) $= \beta 0 + \beta_1 CGI_{i,t} + \beta_2 FamilyDummy_{i,t} + \beta_3 FamilyDummy \times CGI_{i,t} + \sum_{n=1}^{12} Yncontrolvariables + \varepsilon_{i,t}$

The variables of interest are board-diversity, such as; board size (BS), independent director on the board(IND), female director (FMLD), board meeting (BDM), audit committee characteristics, such as; audit committee size (ACM), and audit committee meeting (ACMT). The variables for the analysis were decided based on literature and theoretical background.

However, variables already proven in the literature are related to the outcome. Before selecting the variables, diagnostic checking was used, such as multicollinearity, heteroscedasticity, and endogeneity. The results of these tests are shown in Tables 8 to 10 However, based on the evidence of empirical estimation, the study will finalize decisions on the hypothesis, for instance, if any variable shows a statistically positive or negative relationship. Then it can be concluded that board of director and audit committee characteristic is positively or negatively associated with earnings management. Practically a company may use various earnings management techniques as a proxy (Zang, 2012), use a mix of accrual and real-activity-based earnings management, or choose one method over the others for expected earnings (Laksmana and Yang, 2014). Similarly, Fields et al. (2001) stated that only a single earnings management system would not correspond to the overall effects of earnings management activities. However, to address this issue, the accrual earnings management model was used (e.g., model 6, 7, 8, 9) and real-earning management shown above (e.g., model 10, 11, 12, 13).

The models also include some independent variables as control variables because previous studies stated these factors might affect the relationship between corporate governance mechanism and earnings management. For example, many studies used firm size as a control variable due to diversified results (Sellami and Slimi, 2016). However, the more prominent firm experienced some extra power to choose accounting techniques and operating systems (Bouaziz et al., 2020). Consistently Barton and Simko (2002) demonstrated a positive relationship between the size of the firms and earnings management. In contrast, a range of studies depicted that large firms usually have up-to-date internal control systems; as a result, they are less likely to incur earnings management (Chandra and Wimelda, 2018).

Moreover, this study also use some other factors as previous studies found ambiguous results regarding these variables; first of all, firm financial leverage (Kordestani and Mohammadi, 2016; Lemma et al., 2018); secondly, return on assets (Alzoubi, 2018; Lopes, 2018). The third is the market-to-book ratio (El-Guindy and Basuony, 2018). Then, the average operating cycle, according to Kordestani and Mohammadi was measured (2016). After that, the-author also gauges product market power Datta et al. (2013).

Finally, loss dummy and external financing was measured according to financial statement (Zhang et al., 2020); debt maturity structure (Lemma et al., 2018); managerial ownership (Sumantri et al., 2021); lagged total accruals (Muttakin et al., 2015); tobin's Q (Muttakin et al., 2017). Further, the composite corporate governance index was used to evaluate the relationship with earning management. Because the individual characteristic of corporate governance is likely to demonstrate ambiguous results, for example, large board size and audit committee size may increase or decrease the monitoring power of the firms (Al-Haddad and Whittington, 2019). According to Al-Haddad and Whittington (2019), the composite score of corporate governance was measured by adding the score of all individual board diversity and audit committee attributes and then dividing by the total number of characteristics for all firms throughout the sample years. However, the variable definitions are shown in Appendix 1, sketch the data and disclose descriptive statistics next.

RESULTS AND DISCUSSION

Descriptive statistics and uni-variate results

Table 2 summarizes the results for all samples. According to the findings, the average variations in the family and non-family subsamples are minor. Real- earnings management have mean values of 0.40 in family enterprises, 0.51 in non-family firms, and 0.47 in the overall sample. These findings are congruent with Lemma et al. (2018), who found that average discretionary accruals and real-earnings management for these nations are about 0.45 to 0.50, based on 41 countries from 1995 to 2016. However, because of the time difference and sample size, the results are not consistent with some other studies (Klein, 2002) in the US study; (Abed et al., 2012) study on Jordanian firms; (Muttakin et al., 2017) and study on Bangladesh. However, the mean value of accrual earnings management measured by the Caylor (2010)'s model is 0.04, 0.03, and 0.04, respectively. According to this research, the average board size in family businesses is 8.556, 7.769 in non-family businesses, and in the entire sample, it is 8.05. According to the findings, the average board size in family businesses is larger. Several previous research reveals average board size higher than our findings. For example, Ghosh et al. (2010) found the average board size to be 9.27, Xie et al. (2003) found

Table 2. Descriptive statistics results.

	Family oriented firms (N=376)					Non-Family oriented Firms (N=686)					Entire sample (N=1062)				
Variables	**MEAN**	**MEDIAN**	**STND.D**	**MIN**	**MAX**	**MEAN**	**MEDIAN**	**STND.D**	**MIN**	**MAX**	**MEAN**	**MEDIAN**	**STND.D**	**MIN**	**MAX**
AEM	0.04	0.02	0.09	0.00	1.36	0.03	0.02	0.05	0.00	5.36	0.04	0.02	0.07	0.00	5.36
REM	0.40	0.21	0.70	0.00	5.63	0.51	0.18	0.67	0.00	2.01	0.47	0.20	0.41	0.00	5.63.01
BS	8.56	8	2.63	4	16	7.77	7	2.74	3	20	8.05	2.72	3	3	20
IND	1.7	2	0.9	0	5	1.67	2	0.85	0	5	1.68	0.87	0	0	5
FMLD	1.35	1	1.27	0	5	1.08	1	1.05	0	5	1.18	1.14	0	0	5
BDM	8.7	7	5.25	1	37	9.38	8	5.8	1	44	9.13	5.61	1	1	44
ACM	3.67	4	0.82	2	6	3.69	4	0.94	1	8	3.75	0.24	0	1	8
ACMT	4	4	2.51	1	24	3.76	4	1.85	1	14	4	0.19	0	1	24
MNGO	0.61	0.6	0.13	0.05	1	0.25	0.3	0.17	0	1	0.05	0.22	0	0	1
LD	0.03	0	0.18	0	1	0.07	0	0.25	0	1	3.44	1.55	-0.72	0	1
PMP	0.13	0.12	0.15	-1.07	0.55	0.17	0.15	0.19	-1.61	0.92	3.68	0.9	1	-1.61	0.92
LEV	0.11	0.06	0.14	0	0.94	0.12	0.08	0.14	0	2.18	3.85	2.11	1	0	2.18
ROA	0.05	0.04	0.07	-0.14	0.44	0.09	0.05	0.91	-2.96	23.54	0.38	0.23	0	-2.96	23.54
MBR	0.32	0.26	0.21	0.02	0.99	0.41	0.4	0.31	-4.11	0.98	0.05	0.22	0	-4.11	0.99
EXTF	-2.43	0.32	37	-616.16	3.69	-0.47	0.31	6.22	-68.06	1.58	0.16	0.18	-1.62	-616	3.69
TQ	0.46	0.44	0.22	0.09	1	0.55	0.55	0.45	-3.57	9.87	0.11	0.14	0	-3.57	9.87
DSTR	0.42	0.41	0.25	0.01	1.6	0.33	0.31	0.19	0	1.23	0.08	0.73	-2.97	0.01	1.6
SIZE	7.6	7.57	1.16	3.3	10.54	7.42	7.31	1.54	3.15	11.86	0.38	0.28	-4.11	3.15	11.9
AOC	-3.55	2.07	21.61	-158.8	5.16	-22.27	2.11	76.85	-534	3.18	-1.45	24.77	-616.17	-534	5.16
LTAC	-295.99	-194.25	327.12	-1112.7	3.73	-327.2	-188.38	361.11	-1197.3	4.01	0.52	0.39	-3.57	-1197	4.01

Table shows the descriptive statistics of the variables used in this study. Here we divided the result according to family and non-family oriented firms.

12.48, and Yermack (1996) found 12.25. The outcome is in good agreement with the findings of Alghamdi and Ali (2012); Almasarwah, (2015) and Haniffa et al. (2006).

The data also show that the greatest and lowest numbers of independent directors on the board are 5 and 0. However, in family businesses, the average independent directors are 1.699, whereas, in non-family businesses, it is 1.665. The whole sample indicates 1.679, which is consistent with Bangladeshi Governance Principles (e.g., corporate governance code, 2018). Compared to non-family enterprises and the overall sample, the average female director is greatest in family firms. This outcome is in line with Harakeh et al. (2019). The frequency of board meetings is another important feature of the corporate governance literature. However, descriptive statistics show that the average session is 8.702 in family firms, 9.381 in non-family firms, and 9.13 in the entire sample, which is higher than the findings of Almasarwah (2015) in Jordan, Anglin et al (2013) in Canada and Gulzar (2011) in China, which were 6, 8.01, and 7.90, respectively. The number of audit committee members in the company and the number of audit committee meetings in a year are two other essential characteristics of corporate governance in the literature. Evidence shows that the average number of audit committee members is 3.69. According to Bangladesh's corporate governance standards, every publicly traded company must have three audit members. As a result, most firms follow Bangladesh's corporate governance requirements. These findings are lower than those discovered in the United States (Xie et al., 2003)

but higher than those in Saudi Arabia (Habbash, 2010), which found mean values of 3.58, and Jordan (Almasarwah, 2015), which found 2.75.

The audit committee meeting is also a targeted variable of the study. Bangladeshi corporate governance regulations stipulate that every audit committee must have at least four meetings each financial year. However, the findings suggest that family enterprises have an average audit committee meeting of 4.003, whereas non-family firms have an average audit committee meeting of 3.758. As a result, family businesses follow governance guidelines and agree with the findings of Almasarwah (2015).

The relationships between dependent, independent, and control variables are shown in Table 3. Overall, the variables do not exhibit any multicolinearity. Multicolinearity issues, on the other hand, may develop as a result of a high degree of linkage between the variables, notably if the correlation coefficients are more than 0.8 (Almasarwah, 2015; Alghamdi and Ali, 2012). At a 1% level of significance, both accrual and natural earnings management were positively and substantially associated, implying that managers of listed family and non-family oriented non-financial enterprises in Bangladesh use both earning management to reap their intended benefits. A substantial relationship exists between audit committee size, audit committee meeting, and accrual earnings management, as well as a significant relationship between board size, board meeting, audit committee size, and real-earnings management, shown in Table 3. The researcher employs regression analysis to investigate the link further because the univariate test only gives a limited picture of the relationship.

Regression analysis: board-diversity, audit committee characteristics and earnings management

Table 4 shows the regression findings for overall earnings management (the dependent variable) as a function of the independent factors and a few additional control variables. The first two columns show the findings of the relationship between accrual-earnings management, as assessed by the Caylor (2010)'s model, and real-earnings management, as measured by the Roychowdhury (2006) model, including all individual proxies of board characteristics and audit committee attributes. Evidence shows that the coefficient of board size is strongly adversely linked with accrual earnings management, implying that a big board limits managers' ability to prevent thrashing, avoid earnings declines, and avoid negative earnings shocks. Moreover, the negative connection implies that having a large board (more than seven members) leads to better performance since they may share their diverse knowledge and govern different aspects of the business by segmenting the division. As a result, managers have limited control over profit and loss. While this finding supports our hypothesis, it differs from the published outcomes (Almasarwah, 2015; Ball and Shivakumar, 2008).

As shown in Table 4, the IND coefficient has no statistically significant relationship with accrual-earnings management but is positive and statistically significant at the 1% level with real earnings management. This result is consistent with the outcomes of Sun and Liu (2016) and Al-Haddad and Whittington (2019) and suggests that more independent directors in the board may trigger real-activity manipulation by empowering managers to supplement a company's profit reducing production costs. The evidence further shows that female directors on the board, frequency of board meetings, and audit committee size have no significant association with earnings management.

Table 4 further reveals that audit committee sessions and real earnings management have no relevant association. Nonetheless, the audit committee meeting coefficient is inversely linked with accrual earnings management (at a 1% level), implying that more audit committee meetings may reduce financial reporting manipulation. Because many audit committee meetings may improve professionalism and balance of association among the firm's bodies and gear up in-house control mechanisms for optimal performance (Jenny and Lois, 2007), this discovery lends credence to the idea.

Further analysis finds that the family dummy has a significant negative association with real-earnings management and a positive link with accrual earnings management, showing that a board member's ownership dominance negatively influences natural earnings management. It might occur due to a greater emphasis on reducing unusual manufacturing costs, aberrant cash flow from operations, and unusual discretionary accruals. Furthermore, the corporate governance index has a considerable negative impact on accrual earnings management. According to Ewert and Wagenhofer (2005), strong governance standards are likely to reduce earnings manipulation to signal to stakeholders. This conclusion is in line with Hamzah and Zulkafli (2014) and Jensen et al. (2014), who portray corporate governance as a strategy for preventing insider expropriation. The study used a range of control variables, and all variables have a relationship with earnings management. Still, some of the variables have a significant relationship, for example; Managerial ownership (MNGO), Product market power (PMP), Leverage (LEV), Market to book ratio (MBR), Tobin's Q, Debt maturity structure, Firm size, and Lagged total accruals (LTAC).

Interaction effect: the interaction of the family control on the relation between board-diversity, audit committee characteristics and earnings management

Table 5 illustrates the impact of family dummy interactions on the association between board-diversity, audit

Table 3. Univariate analysis.

Variable	AEM	REM	BS	IND	FMLD	BDM	ACM	ACMT	MNGO	PMP
AEM	1									
REM	0.49***	1								
BS	0.01	-0.15***	1							
IND	0.05	0.01	0.44***	1						
FMLD	0.00	-0.02	0.18***	0.09***	1					
BDM	-0.04	-0.09***	0.05*	0.00	-0.07**	1				
ACM	-0.08**	-0.10***	0.13***	0.06*	0.03	-0.03	1			
ACMT	0.10***	-0.04	0.19***	0.11***	-0.13***	0.28***	0.23***	1		
MNGO	-0.02	-0.02	-0.04	-0.08**	0.18***	-0.07**	-0.07**	0.02	1	
PMP	-0.03	-0.16***	0.06*	0.10***	0.03	0.11***	0.05*	0.02	-0.11***	1
LD	0.04	0.05	-0.02	0.00	-0.07**	-0.08**	-0.02	0.03	-0.05	-0.22***
LEV	0.01	-0.10***	0.13***	0.11***	-0.16***	0.20***	0.01	0.25***	0.04	0.01
ROA	-0.02	0.01	-0.03	0.02	0.00	-0.01	-0.01	-0.01	-0.02	0.02
MBR	0.10***	0.08**	-0.15***	0.03	-0.02	0.04	-0.13***	-0.02	-0.11***	0.03
TQ	0.07**	-0.01	-0.08**	0.07**	-0.06**	0.05*	-0.08**	0.07**	-0.04	-0.01
DSTR	0.06**	0.21***	-0.07**	-0.05*	-0.01	-0.17***	-0.07**	-0.06**	0.21***	-0.26***
SIZE	-0.45***	-0.21***	0.16***	0.09***	-0.04	0.12***	0.16***	0.01	0.02	0.07**
LTAC	-0.26***	-0.18***	0.13***	0.11***	-0.01	0.06**	0.09***	0.02	0.00	0.07**
AOC	0.01	0.02	0.00	-0.05	0.02	-0.03	0.06**	0.07**	0.07**	-0.05*
EXTF	-0.05	-0.04	-0.07**	-0.06**	0.01	0.01	0.04	0.05*	0.03	0.03
	LD	**LEV**	**ROA**	**MBR**	**TQ**	**DSTR**	**SIZE**	**LTAC**	**AOC**	**EXTF**
LD	1									
LEV	0.10***	1								
ROA	-0.05*	-0.02	1							
MBR	0.03	-0.07**	-0.03	1						
TQ	0.04	0.20***	-0.03	0.35***	1					
DSTR	0.05*	-0.09***	0.01	-0.08**	-0.01	1				
SIZE	-0.14***	0.09***	0.01	-0.30***	-0.16***	0.03	1			
LTAC	-0.02	-0.02	-0.05	-0.12***	-0.08**	0.05	0.49***	1		
AOC	0.02	-0.04	0.00	-0.03	-0.03	0.06*	0.00	-0.01	1	
EXTF	-0.04	0.01	0.00	0.00	0.01	-0.01	0.03	0.02	-0.01	1

Table shows the univariate results of all the variables. The definitions of variables are given in table 2. Statistical significance level are marked by star *, **, *** for 10, 5, and 1% level respectively.

committee characteristics, and earnings management. Results of model 8 show that the family dummy used as a moderator has a significant effect. The evidence further demonstrates a moderating effect between the association of independent directors, the presence of females in the boardroom, and accrual earnings management. Specifically, the independent director and accrual earnings management show an insignificant negative relationship, but we find a significant positive relationship when we use moderating effect. More independent directors are likely to augment accrual earnings management in dominant family firms.

On the other hand, the existence of a female director on the board may increase accrual earnings management. Still, moderating effects change the direction of the relationship from positive to negative. They indicate that female director is more functional in dominant family firms to handle accrual earnings management.

The authors find significant moderating effects of the family dummy on the association between corporate governance index and earnings management. As shown in Table 5, CGI significantly negatively affects earning management, meaning combining board diversity and audit committee characteristics is likely to reduce earnings management.

Board-diversity, audit committee characteristics and earnings management: family firms

Table 6 shows that the corporate governance index is

Table 4. Board-diversity, audit committee characteristics and earnings management.

Variable	Model 06	Model 10	Model 07	Model 11
	AEM	REM	AEM	REM
	Coefficient	Coefficient	Coefficient	Coefficient
Constant	-1.809***(-6.52)	-0.541**(-2.33)	-1.562***(-5.17)	-1.036***(-4.04)
CGI			-0.089***(-3.03)	0.004(0.16)
BS	-0.019*(-1.78)	-0.010(-1.11)		
IND	-0.006(-0.19)	0.120***(4.73)		
FMLD	0.021(1.00)	-0.003(-0.18)		
BDM	-0.003(-0.79)	-0.001(-0.42)		
ACM	0.013(0.51)	-0.016(-0.76)		
ACMT	-0.035***(-3.10)	0.012(1.27)		
FAMILY	0.122*(1.73)	-0.252***(-4.30)		
MNGO	-0.508***(-3.52)	0.235**(1.95)	-0.328***(-3.37)	-0.134(-1.62)
LD	-0.007(-0.07)	-0.085(-1.03)	-0.033(-0.33)	-0.064(-0.77)
PMP	0.008(0.06)	-0.408***(-3.83)	0.015(0.12)	-0.342***(-3.20)
LEV	-0.041(-0.24)	-0.266*(-1.91)	-0.165(-1.03)	-0.130(-0.95)
ROA	0.014(0.50)	-0.005(-0.23)	0.014(0.49)	0.002(0.09)
MBR	0.123(1.47)	0.078(1.12)	0.116(1.39)	0.122*(1.73)
EXTF	0.000(-0.58)	-0.001(-1.02)	0.000(-0.60)	-0.001(-1.24)
TQ	0.004(0.07)	-0.124**(-2.52)	-0.007(-0.13)	-0.093*(-1.87)
DSTR	0.238**(2.28)	0.515***(5.90)	0.235**(2.26)	0.528***(5.98)
SIZE	0.021(1.09)	-0.028*(-1.74)	0.034*(1.74)	-0.030*(-1.83)
AOC	0.000(0.72)	0.000(-0.19)	0.000(0.54)	0.000(-0.55)
LTAC	0.000(1.02)	0.000***(-3.29)	0.000(1.06)	0.000***(-2.98)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Adj. R-Square	0.134	0.22	0.109	0.194
N	1061	1061	1061	1061

Table shows the regression results of Board-diversity, Audit committee characteristics and Earnings management by using accrual and real-earnings management model**.** Statistical significance level are marked by star *, **, *** for 10, 5, and 1% level respectively. The values under brackets are t-values.

considerably adversely related to earnings management in family businesses, based on models 07 and 11. Moreover, in family-owned firms, the size of the board of directors and the number of female directors had little impact on earnings management. Furthermore, data from models 6 and 10 show that independent directors have a considerable beneficial impact on real earnings management, while board meetings have a negative impact, with a significance level of 5%. Audit committee size is favorably linked with accrual earnings management. In contrast, the audit committee meeting is negatively associated with accrual earnings management, and the association is statistically significant at the 5 and 1% levels, respectively.

Board-diversity, audit committee characteristics and earnings management: non-family firms

In non-family enterprises, the corporate governance index has little effect on earnings management, as shown in Table 7. The number of board members in non-family enterprises' boardrooms, on the other hand, is likely to limit accrual and real earnings management.

Furthermore, the number of female directors on the board and the frequency of board meetings were both favorably related to accrual earnings management. Audit committee meetings have a large negative association with accrual earnings management and a significant positive relationship with real earnings management.

Additional analysis and robustness checks

Test of heteroscedasticity

Ordinary least squares (OLS) regression implies that all residuals are taken from a fixed difference (homoscedasticity) population. Therefore, the homoscedasticity of the observations is checked using

Table 5. The interaction of the family on the relation between Board-diversity, Audit committee characteristics and Earnings management.

Variable	Model 08	Model 12	Model 09	Model 13
	AEM	REM	AEM	REM
	Coefficient	Coefficient	Coefficient	Coefficient
Constant	-1.813***(-6.26)	-0.697***(-2.92)	-1.707***(-5.53)	-1.335***(-5.17)
Family	0.433*(1.71)	0.153(0.73)	0.468**(2.60)	0.445***(2.95)
CGI			-0.050(-1.39)	0.101***(3.38)
BS	-0.014(-1.09)	0.006(0.59)		
IND	-0.041(-1.13)	0.101***(3.33)		
FMLD	0.050*(1.82)	-0.030(-1.31)		
BDM	-0.001(-0.29)	0.009**(2.38)		
ACM	0.013(0.43)	-0.017(-0.69)		
ACMT	-0.030**(-1.96)	0.020(1.54)		
BS × family	-0.026(-1.05)	-0.044**(-2.14)		
IND × Family	0.009***(1.62)	0.001(0.11)		
FLMD × Family	-0.073*(-1.73)	0.052(1.51)		
BDM × Family	-0.007(-0.69)	-0.043***(-5.00)		
ACM × Family	-0.002(-0.05)	0.030(0.66)		
ACMT × Family	-0.011(-0.45)	0.026(1.26)		
CGI × Family			-0.124**(-2.23)	-0.225***(-4.87)
MNGO	-0.551***(3.54)	0.383***(2.99)	-0.417***(-2.93)	0.302**(2.54)
LD	-0.007(-0.07)	-0.077(-0.94)	-0.007(-0.07)	-0.050(-0.61)
PMP	-0.011(-0.09)	-0.378***(-3.58)	0.020(0.16)	-0.336***(-3.19)
LEV	0.014(0.08)	-0.149(-1.06)	-0.066(-0.40)	-0.049(-0.35)
ROA	0.016(0.57)	-0.003(-0.11)	0.016(0.57)	0.003(0.11)
MBR	0.125(1.48)	0.048(0.69)	0.110(1.32)	0.072(1.04)
EXTF	-0.001(-0.66)	-0.001-0.89)	0.000(-0.51)	-0.001(-1.06)
TQ	0.008(0.13)	-0.116**(-2.41)	0.001(0.04)	-0.102**(-2.09)
DSTR	0.243**(2.30)	0.498***(5.73)	0.217**(2.09)	0.506***(5.83)
SIZE	0.016(0.79)	-0.038**(-2.37)	0.028(1.46)	-0.046***(-2.81)
AOC	0.000(0.63)	0.000(0.11)	0.000(0.63)	0.000(-0.22)
LTAC	0.000(1.11)	0.000***(-2.97)	0.000(1.22)	0.000***(-2.75)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Adj. R-Square	0.114	0.245	0.113	0.223
N	1061	1061	1061	1061

Table shows the regression results of Board-diversity, Audit committee characteristics and Earnings management by using accrual and real-earnings management model**.** Statistical significance level are marked by star *, **, *** for 10, 5, and 1% level respectively. The values under brackets are t-values.

the Breusch and Pagan (1979) test. Homoscedasticity indicates that the variations in various groups are equal or comparable because parametric statistical experiments are sensitive to dissimilarity. Usually, uneven discrepancies in observations provide biased and skewed findings. The basic indicator of the Breusch and Pagan (1979) test is the p-value. If the test statistic has a p-value less than a certain threshold (e.g., 0.05), the null hypothesis of homoskedasticity is rejected. But heteroskedasticity is accepted (Breusch and Pagan, 1979). The findings in Table 8 reveal that p-value is greater than 0.05 (P>0.05), indicating homoscedasticity of variance.

Test of multicollinerarity

In a multivariate regression model, multicollinearity occurs when strong inter-correlations exist between two or more independent variables. Multicollinearity can lead to bigger confidence intervals and less reliable probability when it comes to the influence of independent variables

Table 6. Board-diversity, audit committee characteristics and earnings management: family firms.

Variable	Model 06	Model 10	Model 07	Model 11
	AEM	REM	AEM	REM
	Coefficient	Coefficient	Coefficient	Coefficient
Constant	-1.397**(-2.45)	-1.119**(-2.47)	-0.787(-1.46)	-1.330***(-3.14)
CGI			-0.174***(-2.96)	-0.104**(-2.25)
BS	0.009(0.44)	-0.024(-1.56)		
IND	-0.045(-0.88)	0.102**(2.49)		
FMLD	-0.018(-0.49)	-0.002(-0.08)		
BDM	-0.015(-1.35)	-0.020**(-2.28)		
ACM	0.126**(2.51)	-0.040(-0.99)		
ACMT	-0.075***(-3.53)	0.023(1.39)		
MNGO	-0.521(-1.56)	0.349(1.31)	-0.665**(-1.98)	0.402(1.52)
LD	0.098(0.40)	0.072(0.37)	0.050(0.20)	0.213(1.11)
PMP	0.085(0.32)	-1.020***(-4.81)	-0.002(-0.01)	-0.908***(-4.36)
LEV	0.985(1.64)	-0.700(-1.46)	0.819(1.34)	-0.606(-1.26)
ROA	-0.582(-0.78)	0.947(1.59)	-0.194(-0.26)	1.192(2.07)
MBR	-0.310(-0.67)	-0.103(-0.28)	-0.014(-0.03)	-0.206(-0.57)
EXTF	0.000(-0.40)	-0.001(-1.04)	0.000(-0.44)	-0.00(-1.27)
TQ	0.080(0.15)	0.801(1.88)	-0.230(-0.43)	0.939**(2.23)
DSTR	0.087(0.45)	0.205(1.33)	0.008(0.04)	0.256*(1.68)
SIZE	-0.048(-1.02)	0.057(1.54)	-0.037(-0.79)	0.064*(1.72)
AOC	-0.001(-0.54)	-0.003**(-2.33)	-0.001(-0.53)	-0.004***(-2.71)
LTAC	0.000(0.88)	0.000*(-1.79)	0.000(0.65)	0.000*(-1.67)
Industry effect	yes	yes	yes	yes
Year effect	yes	yes	yes	yes
Adj. R-Square	0.267	0.338	0.234	0.366
N	376	376	376	376

Table shows the regression results of Board-diversity, Audit committee characteristics and Earnings management by using accrual and real-earnings management model**.** Statistical significance level are marked by star *, **, *** for 10%, 5%, and 1% level respectively. The values under brackets are t-values.

in a model. As a result, the author employs the multicollinearity VIF test.

The variance inflation factor (VIF) is a metric used to determine the existence of multicollinearity in the multivariate regression variables. The VIF for a regression model variable is equal to the ratio of the total model variance to the variance of a model that includes that single independent variable in mathematics. This ratio is determined for each independent variable. A high VIF shows that the linked independent variable has a high degree of collinearity with the model's other variables. Multicollinearity might be an issue in a regression model since it will not discern between the independent variables' impacts on the dependent variable. According to conventional norms, VIF starts at one and has no maximum limit. There is no association between the independent and other variables when the VIF value is 1. When the VIF is more than 5 or 10, there is a lot of multicollinearity between one independent variable and the others (Snee, 1981). The results, displayed in Table 9, reveal that no variables have a VIF greater than 5, indicating no multicollinearity concern.

Test of endogeneity

Endogeneity occurs when an explanatory variable correlates with the regression equation's error term, and failing to account for it will likely result in skewed parameter estimates, undermining the validity of the conclusions gained from regression-type studies of observational data. The authors employ a two-stage least square (2SLS) instrumental variables technique to solve endogeneity problems such as the Hausman specification test. The uniformity of an estimate is evaluated by comparing it to another, the less efficient estimator that is previously known to be consistent. It aids in determining if a statistical model matches the data (Durbin, 1954; Wu, De-Min, 1973). According to the Durbin-Wu-Hausman test, endogeneity exists if the P-

Table 7. Board-diversity, audit committee characteristics and earnings management: non-family firms.

Variable	Model 08	Model 12	Model 09	Model 13
	AEM	REM	AEM	REM
	Coefficient	Coefficient	Coefficient	Coefficient
Constant	-1.899***(-4.20)	0.179(0.50)	-0.118(-0.38)	-2.022***(-4.89)
CGI			0.003(0.04)	0.048(1.01)
BS	-0.049*(-1.85)	-0.041*(-1.96)		
IND	0.048(0.59)	-0.007(-0.11)		
FMLD	0.227***(4.61)	0.002(0.06)		
BDM	0.017*(1.68)	0.003(0.37)		
ACM	0.029(0.45)	-0.048(-0.95)		
ACMT	-0.050**(-1.97)	0.069***(3.50)		
MNGO	-0.740**(-2.16)	0.349(1.29)	0.287(1.05)	-0.629*(-1.74)
LD	0.090(0.56)	0.217*(1.71)	0.191(1.50)	0.113(0.68)
PMP	-0.256(-1.06)	-0.612***(-3.20)	-0.617***(-3.20)	-0.149(-0.59)
LEV	-0.725***(-2.83)	0.170(0.84)	0.143(0.70)	-0.814***(-3.02)
ROA	1.930*(1.90)	2.005**(2.51)	1.919**(2.38)	2.065*(1.95)
MBR	-0.379(-1.16)	-0.343(-1.33)	-0.327(-1.29)	-0.259(-0.77)
EXTF	-0.016**(-2.57)	0.007(1.41)	0.007(1.29)	-0.01**(-2.26)
TQ	0.823**(2.14)	-0.088(-0.29)	0.042(0.14)	0.544(1.40)
DSTR	1.067***(3.25)	0.999***(3.86)	1.076***(4.28)	0.937***(2.83)
SIZE	-0.026(-0.62)	-0.102***(-3.08)	-0.150***(-4.89)	0.023(0.57)
AOC	0.000(-0.26)	0.000(0.29)	0.001(1.43)	0.000(-0.56)
LTAC	0.000(1.40)	0.000**(2.35)	0.000**(2.45)	0.000(0.77)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Adj. R-Square	0.159	0.298	0.145	0.274
N	686	686	686	686

Table shows the regression results of Board-diversity, Audit committee characteristics and Earnings management by using accrual and real-earnings management model**.** Statistical significance level are marked by star *, **, *** for 10%, 5%, and 1% level respectively. The values under brackets are t-values.

Table 8. Breusch-Pagan / Cook-Weisberg test for heteroskedasticity.

Particulars	Accrual-earnings management	Real-earnings management
Chi^2	2.89	0.69
Prob.> Chi^2	0.089	0.405

value is less than 0.05; however, the results reveal that there are no values less than 5, indicating that there is no endogeneity in the model.

The J-test (over-identifying restrictions test) is a method for determining whether or not extra instruments are exogenous. The J-test requires more instruments than endogenous regressors to be valid, and the Sargan (1958)'s test has a null hypothesis (Ho): The instruments are exogenous as a whole. According to the Sargan's test, the p-value of the Sargan statistic must be between5 and 10%; the higher the p-value, the better (Sargan, 1958). Roodman (2007), on the other hand, recommends that the Sargan p-value be more than 0.25. According to the research, the p-value in both accrual and real-earning management is more than 5. As a result, they may infer that their model has no over-identifying constraints. Furthermore, Basmann's test (Basmann, 1960) shows (Table 10) a P-value greater than 5, indicating that their model is solid in the scenario of over-identification limitation.

Conclusion

From the perspective of Bangladeshi non-financial enterprises, the author investigate the association

Table 9. VIF test for multicollinerarity.

Variable	Accrual earnings management		Real-earnings management	
	VIF	Tolerance	VIF	Tolerance
MNGO	2.48	0.403	2.48	0.403
FAMILY	2.44	0.409	2.44	0.409
SIZE	1.55	0.646	1.55	0.646
BS	1.51	0.66	1.51	0.660
LTAC	1.36	0.736	1.36	0.736
MBR	1.32	0.76	1.32	0.760
IND	1.3	0.768	1.3	0.768
ACMT	1.3	0.77	1.3	0.770
LEV	1.26	0.795	1.26	0.795
TQ	1.24	0.806	1.24	0.806
FMLD	1.19	0.838	1.19	0.838
BDM	1.19	0.839	1.19	0.839
DSTR	1.17	0.856	1.17	0.856
PMP	1.15	0.868	1.15	0.868
ACMT	1.14	0.875	1.14	0.875
LD	1.12	0.896	1.12	0.896
AOC	1.02	0.978	1.02	0.978
EXTF	1.02	0.982	1.02	0.982
ROA	1.01	0.989	1.01	0.989
MEAN VIF	1.36		1.36	

Table 10. Test of endogeneity and over identifying restrictions.

Tests of endogeneity **H_0: variables are exogenous**				
	Accrual-earnings management		**Real-earnings management**	
Durbin (score) $chi^2(7)$	5.83293	p=0.5594	5.9564	p = 0.5448
Wu-Hausman F(7,1032)	0.816529	p=0.5735	0.8339	p = 0.5591
Tests of over identifying restrictions				
Sargan $chi^2(12)$	7.96978	p= 0.7875	4.41229	p=0.9748
Basmann $chi^2(12)$	7.78757	p =0.8015	4.29687	p=0.9775

between corporate governance traits (board diversity, audit committee characteristics), and earnings management. Their goal was twofold: first, to assess the influence of board diversity and audit committee attributes on earnings management.

Second, the authors examine how the family dummy interacts with individual proxies for board diversity and audit committees. They have created a composite corporate governance index to quantify the link. According to their empirical research, all of the board diversity and audit committee characteristics relate to any earnings management. The corporate governance index shows a strong negative association with accrual earning manipulation in the overall sample. They see a significant positive association with real-earnings management when utilizing a family dummy as interaction terms with CGI. Furthermore, CGI has a statistically significant negative relationship with earnings management in family-owned businesses.

The board size demonstrates a substantial negative connection with accrual earnings management in the total dataset. The authors note that the family dummy moderates this correlation; the sign and significant coefficient change, and the author also discovered a significant negative relationship in non-family controlled businesses after interacting with the family dummy. In the association between independent directors in the boardroom and earnings management, they find that independent directors boost real earnings management in the entire sample. Still, they find a moderating impact when they include the family dummy. Interestingly, the interaction variable (IND×Family) has a meaningful

positive effect on accrual earnings management; however, there is no significant relationship in non-family-oriented enterprises. There is a strong positive relationship with actual earnings management in family-controlled firms.

The presence of female directors is remunerative in non-family-controlled firms because several female directors in the boardroom only positively affect accrual earnings management in family-controlled firms. However, there is no significant link in the total sample, but the interaction variable (FMLD× Family) changes the relationship from positive to negative. The board of directors meeting shows no meaningful impact on earnings management in the whole sample.

But they identified a negative link with natural earnings management when they used the interaction term (family dummy), and the relationship is significant at the 1% level. The same relationship, however, may be found in family-owned businesses. In family-controlled enterprises, the size of the audit committee is positively connected to accrual earnings management. When they used interaction terms, they discovered that the size of the audit committee and the family dummy combined did not affect the outcomes. The audit committee meeting has a substantial negative relationship with accrual earnings management in the total sample and family companies. In contrast, it has a significant positive relationship with real earnings management in all non-family firms.

The findings of the study contribute to the corporate governance literature by highlighting the influence of board diversity and audit committee attributes on earnings management in a developing country. The study is the first in Bangladesh to use the Caylor's model to measure accrual earnings management and a comparative analysis of family and non-family firms in this respect. The findings also help legislators alter reporting methods, board formation, and audit committee regulations to protect stakeholders' interests. Heteroscedasticity, multicollinearity, and endogeneity are not issues in the research. However, several features of the study's findings should be taken into account before generalizing the findings. For example, owing to a lack of information and the complexity of data collection, their analysis did not include all publicly traded corporations but instead focused on family and non-family-owned non-financial enterprises exclusively functioning in Bangladesh. Second, the scope of our research was confined to determining the impact of board diversity and audit committee composition on earnings management.
Other elements, including the ruling government's national culture, political philosophy, and personnel characteristics, may influence earnings management. Finally, the scope of this research was confined to a single emerging economy. More research in the fields of board-diversity and audit committee characteristics and earnings management using a large sample size from multiple developing economy contexts and taking into account other factors such as national and political culture, as well as the personal characteristics of higher-level managerial people, may help to improve understandings in the field of interests.

CONFLICT OF INTERESTS

The author has not declared any conflict of interest.

ACKNOWLEDGMENT

The author would like to thank Dr. Mohammad Badrul Muttakin, Senior lecturer, Deakin University, Melbourne, Australia, for his kind cooperation regarding software uses.

REFERENCES

Abbas U (2020). The moderating effect of gender on audit committee attributes and earnings management. International Journal of Business Policy and Governance 7(3):48-62.

Abbott LJ, Parker S (2000). Auditor selection and audit committee characteristics. A Journal of Practice and Theory 19(2):47-66.

Abed S, Al-Attar A, Suwaidan M (2012). Corporate governance and earnings management: Jordanian evidence. International Business Research 5(1):216.

Ahmed K, Hossain M, Adams MB (2006). The effects of board composition and board size on the in formativeness of annual accounting earnings. Corporate Governance: An International Review 14(5):418-431.

Ahmed H, Azim M (2015). Earnings management behavior: a study on the cement industry of Bangladesh. International Journal of Management, Accounting and Economics 2(4):265-276.

Al-Fayoumi N, Abuzayed B, Alexander D (2010). Ownership structure and earnings management in emerging markets: The case of Jordan. International Research Journal of Finance and Economics 38(1):28-47.

Alghamdi S, Ali L (2012). Investigation into earnings management practices and the role of corporate governance and external audit in emerging markets: Empirical evidence from Saudi listed companies (Doctoral dissertation, Durham University).

Al-Haddad L, Whittington M (2019). The impact of corporate governance mechanisms on real and accrual earnings management practices: evidence from Jordan. Corporate Governance 19(6):1167-1186.

Alkdai HKH, Hanefah MM (2012). Audit committee characteristics and earnings management in Malaysian Shariah-compliant companies. Business and Management Review 2(2):52-61.

Almasarwah AK (2015). Earnings management and its relationship with corporate governance mechanisms in Jordanian industrial firms (Doctoral dissertation: Loughborough University. Available at: https://repository.lboro.ac.uk/articles/thesis/Earnings_management_and_its_relationship_with_corporate_governance_mechanisms_in_Jordanian_industrial_firms/9496322/1

Alves S (2011). The effect of the board structure on earnings management: evidence from Portugal. Journal of Financial Reporting and Accounting 9(2):141-160.

Alzoubi ESS (2018). Audit quality, debt financing, and earnings management: Evidence from Jordan. Journal of International Accounting, Auditing and Taxation 30:69-84.

Arcot S, Bruno V (2012). Do standard corporate governance practices matter in family firms? Available at: https://www.fmg.ac.uk/sites/default/files/publications/DP710.pdf

Amit S (2016). Market bubbles, structural developments and present trends: An overview of Bangladesh capital markets. pp. 1-8. Available at: https://sajidamit.com/wp-content/uploads/2019/08/BD-Capital-Markets-ULAB-CES-April-2016.pdf

Anglin P, Edelstein R, Gao Y, Tsang D (2013). What is the relationship between REIT governance and earnings management? The Journal of Real Estate Finance and Economics 47(3):538-563.
Bernardi RA, Arnold Sr DF (1997). An examination of moral development within public accounting by gender, staff level and firm. Contemporary Accounting Research 14(4):653-668.
Basmann RL (1960). On finite sample distributions of generalized classical linear identifiability test statistics: Journal of the American Statistical Association 55(292):650-659.
Ball R, Shivakumar L (2008). How much new information is there in earnings? Journal of Accounting Research 46(5):975-1016.
Bunkanwanicha P, Fan JP, Wiwattanakantang Y (2013). The value of marriage to family firms. Journal of Financial and Quantitative Analysis 48(2):611-636.
Barton J, Simko PJ (2002). The balance sheet as an earnings management constraint. The Accounting Review 77(s-1):1-27.
Barua A, Davidson LF, Rama DV, Thiruvadi S (2010). CFO gender and accruals quality. Accounting Horizons 24(1):25-39.
Baxter P, Cotter J (2009). Audit committees and earnings quality. Accounting and Finance 49(2):267-290.
Baysinger BD, Butler HN (1985). Corporate governance and the board of directors: Performance effects of changes in board composition. Journal of Law, Economics, and Organization 1(1):101-124.
Bedard J, Chtourou SM, Courteau L (2004). The effect of audit committee expertise, independence, and activity on aggressive earnings management. Auditing Journal of Practice and Theory 23(2):13-35.
Bergstresser D, Philippon T (2006). CEO incentives and earnings management. Journal of Financial Economics 80(3):511-529.
Betz M, O'Connell L, Shepard JM (1989). Gender differences in proclivity for unethical behavior. Journal of Business Ethics 8(5):321-324.
Bhuiyan MHU (2015). Earnings management to exceed earnings threshold: Evidence from Bangladesh. Journal of Business Studies 36:3.
Bouaziz D, Salhi B, Jarboui A (2020). CEO characteristics and earnings management: empirical evidence from France. Journal of Financial Reporting and Accounting 18(1):77-110.
Breusch TS, Pagan AR (1979). A simple test for heteroscedasticity and random coefficient variation. Econometrica: Journal of the Econometric Society 47(5):1287-1294.
Byrnes JP, Miller DC, Schafer WD (1999). Gender differences in risk taking: a meta-analysis. Psychological Bulletin 125(3):367.
Cadbury A (1992). Cadbury report: The financial aspects of corporate governance. Tech report: HMG.
Caylor ML (2010). Strategic revenue recognition to achieve earnings benchmarks. Journal of Accounting and Public Policy 29(1):82-95.
Chandra A, Wimelda L (2018). Opportunistic behavior, external monitoring mechanisms, corporate governance, and earnings management. Accounting and Finance Review 3(1):44-52.
Core J, Guay W (1999). The use of equity grants to manage optimal equity incentive levels. Journal of Accounting and Economics 28(2):151-184.
Corporate Governance Code (2018). Bangladesh Securities and Exchange Commission Securities Commission Bhaban. Available at: https://sec.gov.bd/slaws/Corporate_Governance_Code_10.06.2018.pdf
Chrisman JJ, Sharma P, Steier LP, Chua JH (2013). The influence of family goals, governance, and resources on firm outcomes. Entrepreneurship Theory and Practice 37(6):1249-1261.
Datta S, Iskandar-Datta M, Singh V (2013). Product market power, industry structure, and corporate earnings management. Journal of Banking and Finance 37(8):3273-3285.
Dechow PM, Kothari SP, Watts RL (1998). The relation between earnings and cash flows. Journal of Accounting and Economics 25(2):133-168.
Demb A, Neubauer FF (1992). The corporate board: Confronting the paradoxes. Long Range Planning 25(3):9-20.
Durbin J (1954). Errors in variables. Review of the International Statistical Institute 22:23-32.
El-Guindy MN, Basuony MA (2018). Audit firm tenure and earnings management: The impact of changing accounting standards in UK firms. The Journal of Developing Areas 52(4):167-181.
Eriabie SO, Odia J (2016). Effects of characteristics of audit committee on earnings management in Nigerian quoted companies. Sokoto Journal of Management Studies 10(1):139-159.
Ewert R, Wagenhofer A (2005). Economic effects of tightening accounting standards to restrict earnings management. The Accounting Review 80(4):1101-1124.
Fields TD, Lys TZ, Vincent L (2001). Empirical research on accounting choice. Journal of Accounting and Economics 31(1-3):255-307.
Ghosh A, Marra A, Moon D (2010). Corporate boards, audit committees, and earnings management: pre and post sox evidence. Journal of Business Finance and Accounting 37(10):1145-1176.
Goodstein J, Gautam K, Boeker W (1994). The effects of board size and diversity on strategic change. Strategic Management Journal 15(3):241-250.
Groysberg B, Bell D (2013). Dysfunction in the boardroom. Harvard Business Review 91(6):89-97.
Gul FA, Srinidhi B, Ng AC (2011). Does board gender diversity improve the informativeness of stock prices? Journal of Accounting and Economics 51(3):314-338.
Gull AA, Nekhili M, Nagati H, Chtioui T (2018). Beyond gender diversity: How specific attributes of female directors affect earnings management. The British Accounting Review 50(3):255-274.
Gulzar MA (2011). Corporate governance characteristics and earnings management: Empirical evidence from Chinese listed firms. International Journal of Accounting and Financial Reporting 1(1):133.
Habbash M (2010. The effectiveness of corporate governance and external audit on constraining earnings management practice in the UK. Available at: http://etheses.dur.ac.uk/448/1/FINAL_WHOLE_PHD_pdf.pdf
Habib A (2005). Firm-specific determinants of income smoothing in Bangladesh: An empirical evaluation. Advances in International Accounting 18:53-71.
Hashim HA, Amrah M (2016). Corporate governance mechanisms and cost of debt: Evidence of family and non-family firms in Oman. Managerial Auditing Journal 31(3):314-336.
Hamzah AH, Zulkafli AH (2014). Board diversity and corporate expropriation: Procedia-Social and Behavioral Sciences 164:562-568.
Hamdan AM, Mushtaha S, Musleh Al-Sartawi A (2013). The audit committee characteristics and earnings quality: Evidence from Jordan. Australasian Accounting Business and Finance Journal 7(4):10.
Haque R, Imam MO (2014). Earning Management, Timing Ability and Long-Run Underperformance of IPOs in Bangladesh.
Haniffa RM, Cooke TE (2002). Culture, corporate governance and disclosure in Malaysian corporations: Abacus 38(3):317-349.
Haniffa R, Rahman RA, Ali FHM (2006). Board, audit committee, culture and earnings management: Malaysian evidence. Managerial Auditing Journal 21(7):783-804.
Hasan MS, Rahman RA, Hossain SZ (2014). Monitoring family performance: family ownership and corporate Governance structure in Bangladesh: Procedia-Social and Behavioral Sciences145:103-109.
Harakeh M, El-Gammal W, Matar G (2019). Female directors, earnings management, and CEO incentive compensation: UK evidence. Research in International Business and Finance 50:153-170.
Imam MO, Jaber MI (2014). Earning management of IPOs in Bangladesh-test of value relevance hypotheses: Evidence from Dhaka Stock Exchange. Independent Business Review 7(2):1.
Islam MA, Deegan C (2008). Motivations for an organisation within a developing country to report social responsibility information: Evidence from Bangladesh. Accounting, Auditing and Accountability Journal 21(6):850-874.
Jensen NM, Malesky E, Weymouth S (2014). Unbundling the relationship between authoritarian legislatures and political risk: British Journal of Political Science 44(3):655-684.
Jenny S, Lois M (2007). The Impact of Audit Committee Existence and Audit Committee Meeting Frequency on the External Audit: Perceptions of Australian Auditors. International Journal of Auditing 11(1):51-69.
Kaplan S, Pany K, Samuels J, Zhang J (2009). An examination of the association between gender and reporting intentions for fraudulent

financial reporting. Journal of Business Ethics 87(1):15-30.
Kelton AS, Yang YW (2008). The impact of corporate governance on Internet financial reporting. Journal of Accounting and Public Policy 27(1):62-87.
Kesner IF, Johnson RB (1990). An investigation of the relationship between board composition and stockholder suits. Strategic Management Journal 11(4):327-336.
Kuan TH, Li CS, Chu SH (2011). Cash holdings and corporate governance in family-controlled firms. Journal of Business Research, 64(7):757-764.
Khan AR, Akter M (2017). An analysis of earnings management: Evidence from food & allied industry of Bangladesh. International Journal of Accounting and Financial Reporting 7(2):359-372.
Khanna T, Rivkin JW (2001). Estimating the performance effects of business groups in emerging markets. Strategic Management Journal 22(1):45-74.
Klein A (2002). Audit committee, board of director characteristics, and earnings management. Journal of Accounting and Economics 33(3):375-400.
Kordestani GR, Mohammadi MR (2016). A study of the relationship between product market competition & earnings management: Procedia Economics and Finance 36:266-273.
Laksmana I, Yang YW (2014). Product market competition and earnings management: Evidence from discretionary accruals and real activity manipulation. Advances in Accounting 30(2):263-275.
La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R (2000). Investor protection and corporate governance. Journal of Financial Economics 58(1-2):3-27.
Lemma TT, Negash M, Mlilo M, Lulseged A (2018). Institutional ownership, product market competition, and earnings management: Some evidence from international data. Journal of Business Research 90:151-163.
Leventis S, Dimitropoulos P (2012). The role of corporate governance in earnings management: experience from US banks. Journal of Applied Accounting Research 13(2):161-177.
Lim S, Matolcsy Z, Chow D (2007). The association between board composition and different types of voluntary disclosure. European Accounting Review 16(3):555-583.
Liu H, Fong MW (2010). Board characteristics of medium and large Chinese companies, Corporate Governance: The International Journal of Business in Society 10(2):163-175.
Lopes AP (2018). Audit quality and earnings management: Evidence from Portugal. Athens Journal of Business and Economics 4(2):179-192.
Madison K, Holt DT, Kellermanns FW, Ranft AL (2016). Viewing family firm behavior and governance through the lens of agency and stewardship theories: Family Business Review 29(1):65-93.
Muttakin MB, Khan A, Azim MI (2015). Corporate social responsibility disclosures and earnings quality Are they a reflection of managers' opportunistic behavior? Managerial Auditing Journal 30(3):277-298.
Muttakin MB, Khan A, Mihret DG (2017). Business group affiliation, earnings management and audit quality: evidence from Bangladesh. Managerial Auditing Journal 32(4/5):427-444.
Obigbemi IF, Omolehinwa EO, Mukoro DO, Ben-Caleb E, Olusanmi OA (2016). Earnings management and board structure: evidence from Nigeria. Sage Open 6:3.
Okpara JO (2011). Corporate governance in a developing economy: barriers, issues, and implications for firms. Corporate Governance 11(2):184-199.
Osma BG, Noguer BGDA (2007). The effect of the board composition and its monitoring committees on earnings management: Evidence from Spain. Corporate Governance: An International Review 15(6):1413-1428.
Peasnell KV, Pope PF, Young S (2005). Board monitoring and earnings management: do outside directors' influence abnormal accruals? Journal of Business Finance and Accounting 32(8):1311-1346.
Peni E, Vahamaa S (2010). Female executives and earnings management. Managerial Finance Journal 36(7):629-645.
Prencipe A, Bar-Yosef S (2011). Corporate governance and earnings management in family-controlled companies. Journal of Accounting, Auditing and Finance 26(2):199-227.
Roodman D (2007). A short note on the theme of too many instruments, Center for Global Development Working Paper, 125. Available at: http://citeseerx.ist.psu.edu/viewdoc/download?
Roychowdhury S (2006). Earnings management through real activities manipulation. Journal of Accounting and Economics 42(3):335-370.
Saleh N, Iskandar T, Rahmat M (2007). Audit committee characteristics and earnings management: evidence from Malaysia. The Asian Review of Accounting 15(2):147-163.
Sargan JD (1958). The estimation of economic relationships using instrumental variables. Econometrica Journal of the Econometric Society 26(3):393-415.
Sarkar J, Sarkar S, Sen K (2008). Board of directors and opportunistic earnings management: Evidence from India. Journal of Accounting, Auditing and Finance 23(4):517-551.
Sarkar JB (2018). The Effects of Implementing Enterprise Resource Planning Systems on Accounting Information: Bangladesh Perspective (Doctoral dissertation, University of Dhaka). Available at: http://repository.library.du.ac.bd:8080/xmlui/handle/123456789/1354
Sellami YM, Slimi I (2016). The effect of the mandatory adoption of IAS/IFRS on earnings management: Empirical evidence from South Africa. International Journal of Accounting and Economics Studies 4(2):87-95.
Snee R (1981). Origins of the Variance Inflation Factor as Recalled by Cuthbert Daniel (Technical report): Snee Associates.
Song J, Windram B (2004). Benchmarking audit committee effectiveness in financial reporting. International Journal of Auditing 8(3):195-205.
Siddiqui J (2010). Development of corporate governance regulations: the case of an emerging economy. Journal of Business Ethic 91(2):253-274.
Srinidhi BIN, Gul FA, Tsui J (2011). Female directors and earnings quality. Contemporary Accounting Research 28(5):1610-1644.
Sumantri FA, Kusnawan A, Anggraeni RD (2021). The Effect of Information Asymmetry, Company Size and Managerial Ownership On Income Management (Empirical Study on Manufacturing Companies Listed on the Indonesia Stock Exchange). Primanomics: Jurnal Ekonomi and Bisnis 19(1):76.
Sun J, Liu G (2016). Does analyst coverage constrain real earnings management? The Quarterly Review of Economics and Finance 59:131-140.
Talbi D, Omri MA, Guesmi K, Ftiti Z (2015). The role of board characteristics in mitigating management opportunism: The case of real earnings management. Journal of Applied Business Research 31(2):661-674.
Umer R, Nasir A, Hussain S, Naveed N (2020). Gender diversity and earnings management practices: Evidence from Pakistan. City University Research Journal 10(2):342-357.
Vafeas N (1999). Board meeting frequency and firm performance. Journal of Financial Economics 53(1):113-142
World Bank (2009). Bangladesh: corporate governance country assessment, Report on the Observance of Standards and Codes (ROSC), World Bank, Washington, DC.
Wu De-Min (1973). Alternative Tests of Independence between Stochastic Regressors and Disturbances. Econometrica 41(4):733-750.
Xie B, Davidson III WN, DaDalt PJ (2003). Earnings management and corporate governance: the role of the board and the audit committee. Journal of Corporate Finance 9(3):295-316.
Yeh YH, Woidtke T (2005). Commitment or entrenchment: Controlling shareholders and board composition. Journal of Banking and Finance 29(7):1857-1885.
Yermack D (1996). Higher market evaluation of companies with a small board of directors. Journal of Financial Economics 40(2):185-211.
Zang AY (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. The Accounting Review 87(2):675-703.
Zouari Z, Lakhal F, Nekhili M (2012). Do CEO's characteristics affect earnings management? Evidence from France. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2082009
Zhang Y, Uchida K, Dong L (2020). External financing and earnings management: Evidence from international data. Research in International Business and Finance 54:101275.

Appendix 1: Variable Definitions

Variable	Description
Accrual-based earnings management:	
AEM	The absolute value of discretionary accruals measured by The Caylor (2010)
Real-earnings management:	
R_CFO	Abnormal cash flow from operations (Dechow et al., 1998)
R_PROD	Abnormal production costs (Dechow et al., 1998)
R_DISC	Abnormal discretionary expenses (Dechow et al., 1998)
REM	We measure real earnings management by combining of R_CFO, R_PROD, and R_DISC (Roychowdhury, 2006)
Independent variable:	
BS (Board size)	The number of board members that are in the annual report at the end of each year (Peasnell et al., 2005)
IND (Independent director)	Number of independent director in the board at the end of each year (Sarkar et al., 2008)
FMLD (Female director)	Number of female director in the board at the end of each year (Peni & Vahamaa, 2010)
BDM (Board Meeting)	The number of annual meetings the board holds per annum (Obigbemi et al., 2016)
ACM(Audit Committee member)	The number of members on the committee (Saleh et al., 2007)
ACMT (Audit Committee Meeting)	The number of meeting hold by Audit committee (Xie et al., 2003)
Family dummy	A dummy variable equal to 1 if any member of the board occupied 10% or more shares, otherwise 0 (Kuan et al.,2011)
MNGO (Managerial Ownership)	The percentage of shares holds by directors of the board (Al-Fayoumi et al., 2010)
LD (Loss Dummy)	If companies incur loss in a year we denoted it by 1 and 0 otherwise (Zhang et al., 2020)
PMP (Product Market Power)	(Sales-Cost of goods sold- selling and administrative expenses)/ Sales (Datta et al.,2013)
LEV(Leverage)	The ratio of total shareholders' equity to total assets (Zouari et al., 2012)
ROA (Return on Asset)	We measure ROA by using the formula, such as, Net income / Total asset (Barua et al., 2010)
MBR(Market to Book Ratio)	Market value divided by the book value of shareholders equity (El-Guindy and Basuony, 2018)
EXTF(External financing)	Total long-term interest-bearing debt, current long-term debt, other short-term debt, and capital from common stocks divided by retained earnings (Zhang et al., 2020)
TQ (Tobin's Q)	Tobin's q is the market value of equity plus the book value of total debt divided by the book value of asset (Muttakin et al., 2017)
DSTR (Debt maturity structure)	Total current liabilities to total liabilities.(Lemma et al., 2018)
SIZE (Firm Size)	Firm Size is calculated by taking the natural log of total sales (Sellami and Slimi, 2016)
AOC (Average Operating Cycle)	We use the following formula $\left(\frac{\text{Average account receivable}}{\text{Sales}/360} + \frac{\text{Average Inventory}}{\text{Cost of Good sold}/360}\right) - \frac{\text{Average account Payable}}{\text{Purchase}/360}$ (Kordestani and Mohammadi, 2016)
LTAC (Lagged total Accruals)	Lagged total accruals (Muttakin et al., 2015)

Related Journals: