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Characteristics of the hidden economy in Hungary before and after the regime change

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ABSTRACT

Lately, economists and policymakers have been paying even closer attention to the hidden economy. Indeed, it makes a difference to the economy how much money goes into the state coffers. In order to uncover the hidden economy however, it is necessary to be familiar with its nature and manifestations. In this paper, with the aid of previous research and literature we attempt to illustrate the characteristics of the hidden economy in Hungary before and after the regime change and to map out the steps that have been taken to uncover it. This publication was preceded by a systematic literature review on the definition, causes, and effects of the hidden economy, consisting of the collection of both data and literature related to the domestic hidden economy. The following summarize the results from the synthesis of literature: The Hungarian hidden economy existed even before the regime change and took a variety of different forms. These include tips, bribes, informal payments, unauthorized work and patchwork, moonlighting, unauthorized rental of real estate, use of social property for personal gain, gains from the infringement of customs and exchange law, tax fraud by craftsmen and retailers, theft of public property, and corruption. Since 1990, not only have the dynamics of the hidden economy strengthened, but its types of activities have changed significantly as well. These include, but are not limited to: omitting a portion of revenue from the register; recognizing non-incurred material production costs among expenditures; including an excessive portion of personal household maintenance costs among production costs; organizing business and study trips abroad; finder's fee; end-of-year depreciation or 'transfer' of inventories; wages of registered employees paid out of pocket; employment of unreported employees; parallel company formation; economic activity of unincorporated individuals and the income generated thereby. The following are among the concrete steps taken in recent years to uncover the Hungarian hidden economy: the temporary employment booklet; the simplified entrepreneurial tax; the Electronic Trade and Transport Control System; online cash registers; the connection of vending machines to the tax office.

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1. INTRODUCTION

Hassan and Schneider (2016) studied 157 countries around the world and gave a very diverse picture regarding the development of the hidden economy. There are examples for each case, some of which we have highlighted here (Figure 1). We find countries where the hidden economy has significantly declined, some countries where it remains stagnant, and others where it has greatly increased between 1999 and 2013. There are countries where the hidden economy barely reaches 10%,

such as Switzerland, Austria and the United States. There are others where it surpasses 70%, such as Bolivia, Honduras and Guatemala.

The author's twofold objective is to fill a very large gap in determining the “true” size of the hidden economy, since so far both static and dynamic comparisons have had multiple sources of error. For example, just consider the ever-changing definitions of hidden economy or the various measurement methods applied in different countries.

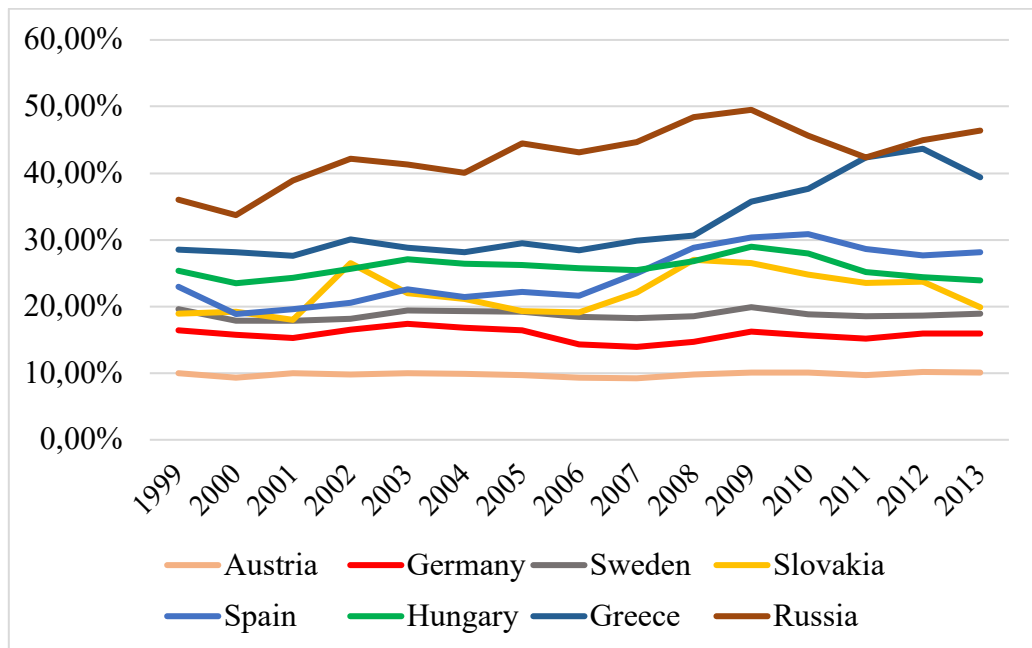


Figure 1. The size of the hidden economy as a percentage of the GDP (1999-2013) Source: Edited by authors based on Hassan and Schneider (2016)

This topic first came up in the 20th century and has inspired many researchers to this day. Even during the initial phase, many people were interested in mapping out the hidden economy. For example, we can find observations of the underground economy in Helfferich's 1914 work. However, research on the subject increased significantly during the 1980s. First, the academic sphere began addressing this issue in the late 1970s. Feige (1979) blamed inaccurate statistical information for the fact that macroeconomics was unable to make adequate economic policy proposals. A decade later, measuring the hidden economy began to occupy the statistical offices of many countries. At this point, clarifying various concepts became a truly central objective.

2. MATERIALS AND METHODS

Literature reviews are needed in most of disciplines as volume of scientific publication has been increasing significantly. Due to the mass of publication, researchers could not have always opportunity to examine in detail the literature of a given topic.

There are several advantages of processing literature: They could be useful for those who are researching the topics, as they can find the information, which are emphasized in different studies, in one place without spending a lot of time for quest of relevant literatures. They provide unbiased information about studies in a given discipline for the readers. Beyond that, they can help to determine the scope of further studies.

This publication was preceded by a systematic literature review on the definition, causes, and effects of the hidden economy, consisting of the collection of both data and literature related to the domestic hidden economy. While exploring the relevant literature verifiable scientific value and thus the restriction of place of publication of the selected works played a primary role. The following databases were utilized during our searches: Web of Science, MATARKA, Google Scholar and the ARCANUM database.

3. DEFINITION OF HIDDEN ECONOMY

There are many difficulties facing conceptual clarification. Among other things, publishers on the subject refer to the hidden economy using numerous expressions (unofficial, underground, unregistered, second, irregular, etc) (Table 1).

Table 1. Most of the terminology available in the literature

Black	Cash-in-hand	Peripheral	Concealed
Hidden	Everyday	Submerged	Marginal
Second	Off-the-books	Irregular	Occult
Grey	Non-observed	Unobserved	Clandestine
Shadow	Subterranean	Parallel	Untaxed
Dual	Non-official	Unrecorded	Precarious
Ghetto	Unregulated	Underground	Twilight
Moonlight	Unofficial	Unorganised	Invisible
Other	Unexposed	Underwater	

Source: Edited by authors based on Williams (2004)

There are different names that cover more or less the same content, but there are also cases when multiple definitions are all headed by a single name. For example, there are authors who believe that hidden economy includes only informal activities (households and their production, unregistered companies) and underground activities (such as tax evasion, not respecting minimum wages, failing to meet health and safety standards). (Sík and Tóth, 1998; Dell'Anno, 2003; Belyó, 2008; Lackó et al., 2009) Others believe that in addition to these, the hidden economy also includes illegal activities, meaning the production, sale or possession of goods and services prohibited by law. (Schneider and

Enste, 2004; Balogh, 2014; Csomós and Kreiszné, 2015; Bejaković, 2015) To give an example of different names referring to similar content, we would point out ‘unobserved economy’ as defined by Lackó et al. (2009) and ‘irregular economy’ of Feige (1979). These names further include barter transactions, activities performed under the guise of cooperative volunteer work, and services performed within households.

A uniform definition of hidden economy has other limitations as well. According to Belyó (2012, p. 28), "The difficulty of defining is due, among other things, to the dynamic nature of the licit economy and, as a result, to the dynamic nature of definitions related to the licit economy. The economy evolves over time, adapting to "de facto" changes in national economies (eg government regulation, general social attitudes and changes in the SNA)."

Due to the issues mentioned above, most of the concepts remain in the form of a general description. One of the early definitions comes from Feige (1979), according to which the hidden economy includes economic activities that are unreported or cannot be measured using current measurement techniques. Another broad definition is that the hidden economy consists of all unregistered economic activities that contribute to the officially calculated GDP. (Schneider and Enste, 2004)

There are authors who try to describe the hidden economy from various aspects. For example, Fekete and co-authors (Fekete et al., 2008) have approached the definition of hidden economy from several aspects (legal, ethical, statistical, political economy, or taxation).

From legal aspect the hidden economy means wrongdoer economical activities or pursue legal economical activities in illegal way.

From ethical (public perception) aspect the black can turn into grey, or moreover into white in some case based on the social justice, fairness or usefulness, contrarily, the activities of wangers, who follow the words of law but act against public interest, can be ranged to black.

From statistical aspect it is hidden part of national economy production which can be only estimated with indirect methods in most cases.

Political economy evaluates it based on its hurtful effects to economy. Accordingly, all elements of statistically unobserved economy, such as food production of households for their own consumption, are not included, on the other hand certain economical activities – like avoiding tax and customs payment – which are not considered as production are included.

According to taxation approach, the hidden economy means economical activities with tax evasion. Such activities could be include into this which are not productions and so they do not make added value but tax should be paid after it. On the other hand, illegal activities, like illegal drug trafficking which are seemed production in statistics, are not included.

4. THE HIDDEN ECONOMY IN HUNGARY

The hidden economy can only be examined in its dynamics, as its components are constantly changing. This is especially true of the former socialist countries, since their components changed significantly before and after the regime change.

According to Kereszty (1996), there are 3 main stages in the development of the hidden, as he denotes it, "black economy."

1. The first stage is the period of formation, which dates back to the 1970s. It was characterized as being of a local nature, varying by region and by industry, and not of a significant size. The participants were motivated by the need to obtain a private benefit from state-owned companies and cooperatives, which served to meet their personal needs.
2. From the 1980s to the regime change. The methods remained unchanged, but the liberalization of the economy made it possible to accumulate significant wealth, mainly cash and currency, to build flats, homes, and resorts, and to purchase high-value Western brand cars. This period is considered the beginning of the initial capital accumulation.
3. From the early 1990s, holders of various illicit funds sought to take maximum advantage of the opportunities offered by the transformation of the economic system. In addition, the adventure capital arriving from beyond our borders and the often irresponsible lending practices of domestic financial institutions put billions into private hands without collateral or remuneration.

In the following, we divide the description of the hidden economy's characteristics into just two groups: before and after the regime change.

5. THE HIDDEN ECONOMY BEFORE THE REGIME CHANGE IN HUNGARY

The second economy (the hidden economy) derives from the structural deficiencies of the socialist planned system and from the cultural and historical development of certain Eastern European countries. Ironically, the second economies of these countries correspond with the counterparts the primary economies of capitalist countries. (Sampson, 1987)

There was no personal income tax in the countries of Central and Eastern Europe before the regime change, and salaries were determined in such a way that they did not have to cover various taxes or social benefits. At that time, the basic needs of the majority of society could be met from full-time earnings, and the main purpose of second-economy activities was "merely" to provide additional income. (Enyedi and Tamási, 1995)

Thus, socialist countries, where the hidden economy was intrinsically linked to the shortage economy, began to address this issue at a time when the problems of the state-owned economic system were becoming more prominent. (Lackó, 1995)

In the early 1980s, Hungary was the first country in the then European Socialist region to begin researching the hidden economy. The aim was primarily to estimate the size of the income generated

by the hidden economy, as there was a contradiction between statistically reported income and level of well-being experienced. (Ékes, 1995)

For the study of the 1980s, the Economic Research Institute drew a line between transactions which do and do not involve the transfer of a sum of money. This includes economic crimes (fraud, embezzlement, corruption) and business theft, estimates of which were also attempted. The types of income recognized as invisible income at that time were tips, bribes, gratuities related to health and legal services, unauthorized work and patchwork, unauthorized rental of real estate, use of social property for personal gain (i.e., unauthorized work making use of company equipment), gains from the infringement of customs and exchange law, tax fraud by craftsmen and retailers, gains from consumer harm, real estate speculation, theft of public property, corruption, fraud, and embezzlement. Research at the time left out activities that are commonly referred to as "moonlighting" today. As there was no extensive income tax, no tax was paid on these special forms of income. Their untaxed sums were not illegal and their extent, in turn, was unknown. In addition, underground trading and the interest on lending between households was left out of estimates. This was later estimated for the first time in the Consumer Price Index. (Ékes, 1995)

6. THE HIDDEN ECONOMY AFTER THE REGIME CHANGE IN HUNGARY

In post-socialist countries, where the shortage economy gradually became a market economy, analysing and quantifying the hidden economy became an important task on the one hand because of the growing budget deficit and on the other hand because official statistics revealed large-scale production declines that were difficult to accept without estimates of the hidden economy's size. (Lackó, 1995)

The growth of the hidden economy during this period is essentially attributable to the following. (Ékes, 1995)

1. Transitioning a country's economy from one type of regulatory system to another is a formidable task. To do so, a new legal environment must be established that conflicts with the policies, regulations, and laws of the past. As a result, the entire period of transition is fraught with conflicting legislation and filled with situations that are not legally covered, meaning the existence of many loopholes.
2. Another circumstance that contributed to the expansion of the hidden economy was the spread of the private sphere. One of the fundamental conditions for the growth of the hidden economy is the possibility to conceal income. The more direct the buyer-seller or employer-employee relationships are, the easier this is. The proliferation of small organizations helps this process. In an organization consisting of a few individuals, all forms of income concealment are much simpler than in a large one; where the owner is the manager and the chief accountant as well as the cashier, the necessary controls are not in place.

3. Finally, there is a strange duality that prevails in the income distribution system, which also contributes to the spread of the hidden economy. With the exception of certain sectors - banking, some businesses, etc - wages based on the consensus of socialism are still common in the economy to this day. Meanwhile, other forms of distribution are seeking to become market-economy conforming (taxation, elimination of consumer price supports, introduction of principles regarding Social Security benefits, etc). The end result is widespread poverty, which contributes to hidden economic activity.

Semjén and Tóth (Semjén and Tóth, 2004) explained the growing importance of the hidden economy in the first phase of the economic transition at a time of transformation crisis as follows: a major economic downturn, limited resources for tax auditing and the initially low effectiveness of the auditing, the underdevelopment of market institutions, and the breakdown of contractual relationships.

After the regime change, the most typical forms, methods, and techniques used by economic agents in order to maximize their entrepreneurial income and employee compensation while at the same time minimizing tax, social security, and other obligations incumbent on them include: omitting a portion of revenue from the register; recognizing non-incurred material production costs among expenditures; including an excessive portion of personal household maintenance costs among production costs; the use or purchase of vehicles; organizing business and study trips abroad; allowances charged to representation and advertising expenses; finder's fee; purchase discounts; extra benefits for foreign businesses; end-of-year depreciation or 'transfer' of inventories; wages of registered employees paid out of pocket; employment of unreported employees; barter transactions for products or services that are not of equal value; parallel company formation; economic activity of unincorporated individuals and the income generated thereby. (Belyó, 1995)

In the years following the transformational downturn of the economic transition however, economic recovery fundamentally changed the behaviour of economic agents (government, businesses, households). Former incentives to participate in the hidden economy weakened and became obsolete, and at the same time, the tax audits became more effective as well. Accordingly, the behaviour of entrepreneurs and households in relation to the hidden economy changed, the importance of the hidden economy began to decline, and breaches of contractual obligations and violations of tax and financial discipline reduced in the Hungarian corporate sector (Semjén and Tóth, 2004).

In the years following the crisis of 2008, the problem of the shadow economy became once again more acute, especially for countries in transition, which still to this day face many structural imbalances inherited from the period of the planned economy. After all, the shadow economy reduces the amount of budgetary resources available to implement anti-crisis measures. (Fedajev and Arsić, 2017)

Most sources estimate the size of the Hungarian hidden economy at 20-25%. According to the study mentioned in the introduction, the hidden economy amounted to between 22% and 25% of Hungary's GDP between 2003 and 2013. (Schneider, 2016) It is not entirely comparable with the

above, but it is important from a statistical economics point of view that the HCSO also uses estimates in its GDP calculations for activities and incomes that are declared below their true value or not registered at all. According to the estimation of the HCSO, they amounted to 15.3 percent of GDP in 2002 and 14.9 percent of GDP in 2005. (Balogh, 2014)

Belyó's 2016 research also fits in with the data below (Table 2). According to this, in Hungary, the proportion of the hidden economy in relation to the GDP did not change between 2010 and 2016. However, this does not mean that the size of the hidden economy is stagnant. While official GDP continued to grow between 2010 and 2019, the size of the hidden economy declined in the first years of 2010 and then started to grow strongly from 2014 onwards. This also means that the hidden economy is a decisive component of GDP growth during this period.

Table 2. The size of the official GDP and the hidden economy (2017 estimate)

Year	Official GDP (millions HUF)	Estimated value of hidden economic activities (millions HUF)	Growth of the hidden economy (2010 = 100%)	Proportion of the hidden economy in relation to the official GDP (%)
2010	27 051 695	4 057 754		15
2011	28 133 826	3 938 736	-2.93	14
2012	28 627 889	4 007 904	-1.23	14
2013	30 065 005	3 908 451	-3.68	13
2014	32 179 666	4 183 357	3.10	13
2015	33 712 000	4 382 560	8.00	13
2016	35 194 000	4 575 220	12.75	13
2017	37 299 000	4 848 870	19.50	13

Source: Edited by authors based on Belyó, 2016

7. ACTIONS TAKEN TO UNCOVER THE HIDDEN ECONOMY IN HUNGARY

The legalization of the hidden economy requires the implementation of complex instruments of economic policy. However, a successful package of measures cannot be conceived without a clear political will since for each measure infringing upon the interests of a particular group, the lobbyists of said group are able to repeatedly prevent the technically justified actions. It is important that only enforceable rules are introduced. Restrictive measures alone cannot succeed unless at the same time measures that shape the economic environment are taken and are clearly welcomed by honest businesses. (Belyó, 1995)

The changes proposed by Belyó (1995) prior to the turn of the millennium have been implemented almost one after another ever since: the system of the average tax institution; regulation

of entrepreneurial cash flow; legalization of the declaration of assets; auditing of certain international financial operations; introduction of a company register; modification of the tax burden; adjusting the amount of the Social Security contribution; limiting the scope for black market trade.

According to the research of Eco-Vista (2016), several measures and initiatives have taken place in Hungary to promote the legal economy. This includes, for example, the establishment of the Hungarian Unified Labour Database (EMMA) after the country's accession to the EU. Labor inspections, which have already had quantifiable results, especially in the construction industry, have significantly increased. As of January 2008, illegal use of Social Security services is being sifted out. The Hungarian tax authority (today known as NAV in Hungarian) launched a campaign against VAT fraud, which is widespread in a variety of forms. A similar campaign had previously been launched against so-called bogus contracts as well. The modernization of administrative regulations has also begun, e.g. only legitimate companies can participate in public tenders.

Government actions combating the hidden economy can be divided into three groups. (Eco-Vista, 2016)

The first group measures that indirectly influence economic agents' decisions in relation to the hidden economy. These are steps to improve the security of business relationships. They include: predictable taxation, striving for tax rule transparency; establishing and operating efficient, verifiable, inexpensive, and easily accessible company information systems.

Second group of measures includes those taken directly to suppress the hidden economy. These include increasing the frequency of tax audits and the budget of audit apparatuses. Further, this includes increasing the effectiveness of audits but also rendering penalties more severe and determining optimal tax rates.

The third group may be formed from the measures that strengthen tax compliance and increase the moral costs related to tax evasion. Auditing, or the possibility thereof, and penalties are strong deterrents helping to reduce participation in the hidden economy. This is the reason why it is worth creating and maintaining a tax collection and auditing system with a modern infrastructure that is predictable and transparent. However, the maintenance of the control apparatus, the imposition of sanctions and their related penalties related to sanctions entails significant costs for taxpayers. These costs cannot be increased arbitrarily: after reaching a certain level within the hidden economy, it is no longer worth pumping more money into the auditing and sanctioning apparatus because the marginal yield of increasing activity will be negative.

8. THE ACTIONS INTRODUCED IN HUNGARY IN RECENT YEARS AND THEIR EFFECT ON UNCOVERING THE HIDDEN ECONOMY

- The temporary employment booklet (AM booklet)

A 2008 study looked at the impact of introducing the temporary employment booklet to uncover and suppress certain forms of unreported employment and the impact of introducing the simplified

entrepreneurial tax (EVA) to improve the tax discipline of small businesses. According to the results of the research, the vast majority of AM booklet users (79%) committed fraud to some extent in their use of the booklet. The most typical way to do this is not to register part of one's working day and affix a smaller denomination stamp (generally the smallest, 400 HUF). Hidden employment through such fraudulence was most characteristic of the construction industry, with a slightly better result in the hospitality and trade sectors. However, it was generally found that in all sectors the AM booklet was working towards promoting the legal economy; typically, entirely illegal employment became semi-legal. (Fazekas and Semjén, 2008)

- *The simplified entrepreneurial tax (EVA)*

With the introduction of the simplified entrepreneurial tax (EVA) on January 1, 2003, the government was aiming to reduce the administrative and tax burden on micro and small businesses, thereby increasing their economic activity and reducing their competitive disadvantage compared to larger enterprises. On the fiscal side, the aim was to improve tax compliance, increase revenues and make tax policy more transparent. According to one study, the clear effect of EVA is that it has reduced the amount of tax evasion among those who converted to it and the so-called "exaggerated expense deduction" and "invoice production / purchase" have been practically eliminated among entrepreneurs who have switched to EVA. (Fazekas and Semjén, 2008)

- *Online cash registers*

The introduction of online cash registers also served to promote the legal economy. Research in this area found that the retail sector saw a 20-25 percent increase in revenue for the smallest companies as a result of connecting to online cash registers and a 4-6 percent increase for medium-sized companies. Within this, the largest growth was in the consolidated accommodation and hospitality sector, with reported sales having increased by about 32-37 percent. (Lovics, et al., 2019)

- *Electronic Trade and Transport Control System (EKÁÉR)*

EKÁÉR is a technical system for monitoring, controlling and registering the movement of goods, created and operated by the Hungarian National Tax and Customs Board. Its primary objective is to reduce the amount of abuses related to the transport of goods as well as VAT fraud. The system covers transactions between Member States as well as movements of goods for sale to the first domestic, non-final user. It also includes prior electronic filing with tax authorities of these statutory data and the reporting of delivery. This can indirectly lead to the elimination of the hidden economy, since by knowing the actual movement of the goods, the legal fate of the products supplied can also be verified by the combined use of NAV and HU-GO (a traffic monitoring camera system installed on the Hungarian road system, which tracks the movement of road toll vehicles and compiles a database of the information obtained since 2013). These two digital systems make it possible to significantly reduce the volume of goods traded without being taxed, as the only goods that can legally reach the market by road transport are those which have been duly reported in advance. This instrument indirectly protects honest market players and customers acting in good faith, improves equality of

public burden sharing, and helps to substantiate government statistics and ensure sound economic policy planning. (Szilovics, 2019)

- *The connection of vending machines to the tax office*

By the end of August 2019, all vending machines had to be connected to the tax office. The Ministry of Finance estimates that the current registration requirement may have a positive impact on tax compliance. In fact, NAV risk analysts can even compare this year's entrepreneurial income data with the traffic data that will arrive online at the tax office, and in the event of a large discrepancy, risk analysts pass the data collected to the auditors for further investigation.

9. CONCLUSIONS

Examining the hidden economy is a complex task from several aspects. The precise definition of the concept of the hidden economy also created a general specialized literature. The characteristics of the hidden economy in Hungary are worth examining before and after the change of regime. The scale of the tax system was not particularly prominent in the earlier period. Later, in the second section several factors influenced the processes. Privatization, liberalization, trans nationalization and the EU-accession also affected the state of the hidden economy. Today, uncovering (whitening) the economy is the dominant trend of the economic policy. The general attitude of society towards economic issues and economic development is also decisive factor to deal with in the future. At this point, the problem is also linked to the field of new institutional economics.

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Corporate Governance Guideline Relevance To Maltese Family Public Interest Companies A Small State Perspective¹

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ABSTRACT

The objectives of this paper are to investigate the relevance of guidelines on good corporate governance (CG) to family public interest companies (PICs) within the small state of Malta and to recommend how existing guidelines may be improved and tailored for such companies. An explanatory mixed-methods empirical approach is adopted with a structured questionnaire being first administered to 17 respondents in 12 PICs owned by different families. This was then followed by semi-structured interviews with the representatives of 11 of these PICs. Findings indicate that there is a need for the existing guidelines to be improved for them to become more in line with the needs of PICs which are characterised by dominant family interests. In this respect, this paper recommends possible principles and guidelines that may be used by the relevant authorities either to improve the existing PIC guidelines or to issue a new set of guidelines aimed specifically for family PICs. Given the peculiarities of such companies, it is clear that the guidelines have to contain elements that address the CG structure, such as the need to formally document a family governance plan. Clearer guidance is needed on the appointment and composition of the Board of Directors, on the employment, conduct, compensation and performance evaluation of managers, as well as on the composition of the ownership of family PICs. Additionally, the paper concludes that a relevant factor for family PICs in carrying out improvements to their CG is that they continue to place more importance than other PICs to their continued existence.

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1. INTRODUCTION

Family businesses in Malta form the vast majority of the local business community (Farrugia, 2010; Zahra, 2017). Moreover, while studying family businesses may conjure up thoughts of “father and son” firms, some of the largest companies in Malta are family-run businesses (Farrugia, 2010).

The objectives of this paper are to investigate the relevance of the guidelines on good corporate governance (CG) to family public interest companies (PICs) in Malta and to recommend how

existing guidelines may be improved and tailored to such family PICs. The study is conducted in Malta, a small island state in the European Union.

1.1 DEFINITION OF ‘CORPORATE GOVERNANCE’

The Cadbury Committee (1992) defined CG as the “*the system by which companies are directed and controlled*” (Para. 2.5). According to Muscat (2007) and Farrugia (2010), this definition was later adopted by the Maltese Working Group on CG which was set up by the Malta Stock Exchange (MSE) in 2001. The definition was adopted because it was deemed to be concise and sufficiently wide in scope (Working Group on CG, 2001). In the same year, the Malta Financial Services Authority (MFSA) issued The Code of Principles of Good CG for Listed Entities (“the Code”).

1.2 THE CORPORATE GOVERNANCE FRAMEWORK IN MALTA

There are four authoritative sources that crystallise the concept of CG in Malta. The root source is the law. According to Muscat (2007), recommendations for good CG often stem from existing principles of law. Moreover, the concept of CG tends to find its way in every aspect of company law (ibid.).

The other three sources that encapsulate CG were issued by the MFSA. These are the Manual for Directors of Investment Companies and Collective Investment Schemes (CISs) (“the Manual”), the Guidelines for Public Interest Companies (PIC) (“the Guidelines”), and the Code of Principles for Listed Entities. Each one targets specific types of companies. The Manual targets investment companies and CISs, the Guidelines target public interest companies, and the Code targets listed entities. Figure 1 illustrates the four sources of CG in Malta.

The three documents issued by MFSA constitute a framework for the promulgation of good governance practices in companies where the public interest is especially at stake. The documents issued for each category indicate the regulator’s cognisance of the different CG needs of each entity, depending largely on whether entities have securities issued to the public or whether they are regulated.

1.3 A FOCUS ON CORPORATE GOVERNANCE GUIDELINES

The Manual and the Code are two very specific documents that target particular types of public interest entities. The Manual is geared towards addressing the technical setup of investment companies (MFSA, 2014) whilst the Code targets listed entities (MFSA, 2001).

On the other hand, the Guidelines take a wider view. While steering away from the “comply or
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explain” principle in the Code (MFSA, 2001), the Guidelines target entities that are not necessarily listed. These include insurance companies, banks and other companies having publicly issued debt securities

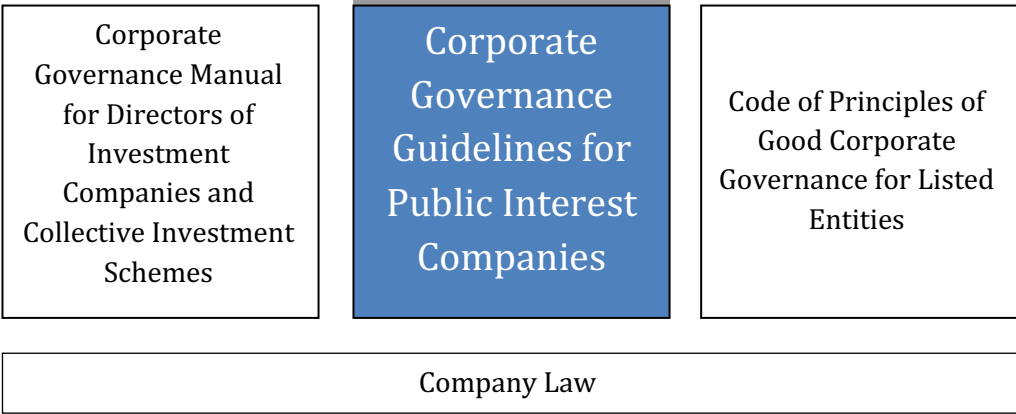


Figure 1 – The Corporate Governance Sources for Maltese PICs

This study focuses on the relevance of CG guidelines to family public interest companies in Malta.

1.4 DEFINITION OF ‘FAMILY COMPANY’

One of the difficulties is to define a family business, especially in the Maltese context. In the absence of an internationally recognised, legally binding definition of what constitutes a ‘family business’ (Kraiczy, 2013; Zahra, 2017), defining what constitutes a family company for the purposes of the study is important because it will impact the interpretation of the results.

Family involvement in a company is the first condition necessary for a firm to be a family business (Chrisman, J. J. & Holt, D. T., 2016, cited in Chrisman J. J. *et al*, 2018). In fact, Hnilica and Maecek (2015) argue that there are three elements that constitute the making of a family business: *ownership representation* which refers to the percentage of ownership held by one family, *management representation* which refers to the degree to which family members occupy senior management positions, and *board representation* which refers to the degree to which family members occupy the Board.

All three elements measure the degree to which an interconnected group of individuals can influence the decision-making process of a business. Ownership of the majority voting rights gives effect to the

full power of influence, that is, control. On the other hand, where the family holds a minority share of the ownership and the remaining portion is dispersed, influence can manifest itself to a lesser degree through board and management representation. In larger firms, it is possible for family members to own less than a majority of the shares and elect a board of directors that supports their interests (Tagiuri & Davis, 1996).

For the purposes of this study, a family-controlled company is defined as one having more than 25% of the share capital held by the founding family or next generation families, with two or more family directors. A family-influenced company is defined as having less than 25% of the share capital held by the family and two or more family directors (Baldacchino *et al*, 2019).

1.5 DEFINITION OF ‘PUBLIC INTEREST COMPANY’

The Guidelines define a PIC as: (i) a regulated company excluding investment companies and CISs, or (ii) a company that has issued debt securities to the public and whose securities are not admitted to listing on a recognised investment exchange, or (iii) a government-owned entity established as a limited liability company. Whilst the definition in the Guidelines includes government-owned companies, it excludes companies whose securities are listed, ostensibly because listed companies are expected to adhere to the Code on good CG. Considering that listed entities form an integral part of the definition of a PIC whilst government-owned companies are not family-owned, a working definition of a PIC shall include any of the following three types of companies:

- (i) Companies whose transferable debt or equity securities are listed on a regulated stock exchange;
- (ii) Credit institutions, whether listed or not;
- (iii) Insurance undertakings, whether listed or not.

1.6 NEED FOR THE STUDY

If family businesses form the majority of the local business community (*ibid.*) and the governance of a family company is more complex than the governance of a company with no family involvement (Cadbury, 2000), the Guidelines currently in place may be taking a one-size-fits-all approach that does not recognise the peculiar needs of family companies. There may be a gap which the current CG framework is not addressing.

A preliminary review of foreign literature pointed towards the codification of a set of principles of CG that are specific to family businesses. For example, one of the first initiatives was taken jointly by a group of German organisations - INTES Family Business Academy by PwC, the Family

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Business Network, and Die Familien Unternehmer. These entities co-jointly issued a Governance Code for Family Businesses in 2004 which is still being updated periodically. (INTES, FBN & Die Familien Unternehmer - ASU, 2004).

A similar initiative was undertaken by the European Confederation of Directors' Associations which issued a set of CG Guidance and Principles for unlisted companies in Europe (ecoDa, 2010). Similarly, in 2011, the International Finance Corporation (IFC) published a Governance Handbook meant specifically for family businesses. In 2015, Riinvest Institute continued this trend and published a Governance Guide for Family-Owned Businesses.

Some of the principles in these guides address issues in family-controlled entities such as the relationship between family shareholders and minority shareholders, unfair prejudice, controlling interests *versus* the achievement of performance, barriers to entry, and family governance initiatives (Cadbury, 2000; Farrugia, 2010; IFC, 2011). These issues are expected to feature in the CG reality of family PICs in Malta.

2. THE DISTINCTIVE ATTRIBUTES OF FAMILY COMPANIES

Cadbury (2000) claimed that it is necessary to recognise that the governance of family companies is more complex than the governance of companies with dispersed ownership. This is because of the distinctive features of family companies.

2.1 CONCENTRATION OF POWER

Tagiuri and Davis (1996) identified various attributes of the family company. One of the most distinctive features is that individuals in a family organisation can take on simultaneous roles in three spheres of interest: as family members they take an interest in the welfare of the family; as owners they are primarily interested in a return on investment; as managers they are focused on the day-to-day running of the business.

This characteristic often results in individuals taking on multiple, overlapping roles in a family business (Hirsch, n.d.). The upside is rapid and effective business decision-taking because the overlapping roles tend to centralise decision-making (Tagiuri & Davis, 1996). A dominant leader may also instil healthy growth and business continuity which may be beneficial both to family interests and the public at large. In this context, evidence from Norway also suggested that ownership concentration positively affects a company's growth and profitability (Mishra, Randoy, & Jensen, 2001). This was later confirmed by Chen (2012).

Nonetheless, the concentration of power may also result in conflicts of interest when family members pursue family interests rather than business interests (Daspit, *et al.* 2017; Tagiuri and Davis, 1996). Baldacchino *et al* (2019) argued that measures should be established to promote beneficial motives and eliminate detrimental, non- financial drivers that result in conflicts of interest. Concentration of power and overlapping roles often result in permanence of office (*ibid.*). There is also a tendency for family members to stick to their chair or executive role for an extended period (*ibid.*). For example, a characteristic of founding family owners is precisely the reluctance to accept professional managers capable of addressing new challenges (Mishra, Randoy, & Jenssen, 2001).

2.2 EMOTIONAL TIES

Emotions often surface more easily between family members than between non- related individuals. This is because family members share a common history and the perceptions or impressions between them are unconscious and well ingrained (Tagiuri & Davis, 1996). This leaves more possibility for stronger emotions to be displayed among family members. These complex, deep-rooted ties may facilitate or complicate working relationships between family members (*ibid.*).

2.3 COVERT COMMUNICATION LINES

Due to the emotional ties and shared experiences, family members can exchange information more efficiently and with greater privacy (*ibid.*). The interaction in the family system does not typically follow an overt protocol and needs to be understood from the behaviour and attitudes of the family members (Hirsch, 2013). Family members may use special phrases, expressions and non-verbal language (Kepner (1983) cited in Hirsch (2013); Tagiuri & Davis, 1996). Covert lines of communication may lead to quicker decisions and may also act as an efficient dispute resolution tool (Taguri & Davis, 1996).

2.4 ILLIQUIDITY OF SHARES

Mustakallio (2002) noted that the shares in a family business are generally illiquid. Similarly, Baldacchino *et al* (2019) explained that founding families are unlikely to dispose of their ownership. Share transfers in a family business setting are not the norm and tend to be triggered by exceptional events such as an injection of capital, inheritance, and family disputes (Mustakallio, 2002).

2.5 PROPENSITY TO DISTRIBUTE DIVIDENDS

Thomas (2001) as cited by Mustakallio (2002) noted that in large, publicly-traded companies, the shareholders' return on investment comes from a combination of share price gains and dividends. Notwithstanding, in the case of family companies where there is no active market for shares, the

financial return to the owners comes largely from dividends. In the absence of an active market, different interests may place pressures on scarce financial resources through dividend distributions that may not always be appropriate in the circumstances.

For instance, family shareholders may have different objectives depending on the type of position they hold. A family shareholder who also holds a managerial position with a regular salary would naturally be inclined to resist the distribution of dividends to the detriment of other minority shareholders (Riinvest Institute, 2015). On the other hand, family and non-family shareholders not involved in the management of the company will naturally push for the distribution of dividends (ibid.).

2.6 WEAKNESSES IN FAMILY COMPANIES

The inherent characteristics of family companies give rise to certain defects that are only apparent in family companies. These weaknesses include suppressed corporate growth, agency

problems between shareholders, disparities between family and non-family members and conflict.

Suppressed Growth

The overlap of executive and non-executive roles and the permanence of family members indicate a predisposition towards family interests as opposed to value creation (Le-Breton-Miller & Miller, 2009). This is because the retention of family control may take precedence over corporate growth. The consequential effects of the overlapping roles were also echoed by Baldacchino *et al* (2019) who identified the pursuit of control and non-economic goals as a characteristic of Maltese family companies.

Similarly, the illiquidity of family shares, the absence of a share transfer mechanism, and the family's reluctance to release its equity harms business operations and growth prospects when additional capital is required (Baldacchino *et al*, 2019). Mustakallio (2002) similarly explained that there is a trade-off between the need for the company to increase its capital in pursuance of a healthy growth strategy and the family's interest to retain control. The latter comes at the expense of the former (Jain & Shao, 2015).

The Principal-Principal Agency Problem

Several researchers argued that the most important agency problem in large companies is not the Berle and Means (1932) agency conflict between outside investors and managers, but the conflict

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between non-controlling investors and controlling family shareholders that can dominate managers (Cacciotti & Ucbasaran, 2017; Morck & Yeung, 2003; Shleifer & Vishny, 1997; Yeh, Lee, & Woitdke, 2001). This is likely to result in the family taking advantage of the company's resources for its personal interest at the expense of non-controlling interests.

Disparity among Family and non-Family Members

Family companies have a reputation for exhibiting favoritism toward family members (IFC, 2011; Lee, 2006 cited in Daspit *et al.*, 2018). In a setting where the family company seeks to recruit human resources for its expansion, family members may be primarily interested in securing jobs for their relatives rather than attracting talent on a meritocratic basis (Debicki, 2017). This creates a disparity between the corporate needs of the company and the family interest.

The unequal treatment of family and non-family members may also be displayed post-recruitment. Daspit *et al.* (2018) noted that as the family company grows and hires non-family members, there is often a clear and pronounced distinction between family and non-family members in the organisation. This may lead to the unequal treatment of the two groups (IFC, 2011; OECD, 2015), also conceptually known as bifurcation bias (Verbeke & Kano, 2012). The desired outcome is to lock in family control (Morck & Yeung, 2004).

In this respect, Baldacchino *et al.* (2019) explained that, for the sake of good governance, family members seeking to occupy roles within a family company should not be given an unfair advantage over non-family individuals. By the same token, there should be no prejudice against family members owing to their family interest (*ibid.*).

Disputes and Family Conflict

Several researchers have claimed that there is fertile ground for disputes in family companies. Family relations and emotional ties may lead to disputes at some point in time (Baldacchino *et al.*, 2019; Morck & Yeung, 2004; Sarbah & Xiao, 2015). A situation where non-family employees, managers, and directors are not privy to the communication lines of family members is likely to result in uninformed decisions that undermine accountability and good governance (Tagiuri & Davis, 1996).

Moreover, different factions within the family may also be present. In this context, Cacciotti and Ucbasaran (2017) noted that the participation of an increased number of family members in the

company's ownership results in greater diversity and reduces the ability of the family to exert a unified drive. The increased complexity in family ownership is most notably attributed to the decomposition of the founder family across subsequent generations over time (Zellweger & Kammerlander, 2015).

There is also a greater risk of conflict between family shareholders and minority shareholders (KPMG, 2010). Conflicts over investment, capital, pay-out decisions, and share transfers are also common in family businesses (Mustakallio, 2002). Therefore, there is a high probability that conflict, in some form or another, will dent good CG in family companies.

2.7 GOVERNANCE IN FAMILY COMPANIES

Composition of the Board

Baldacchino *et al.* (2019) claimed that a suitable proportion of non-family independent directors is likely to contribute towards transparency and accountability in Maltese family businesses. Participants in their study mostly agreed that there is a positive correlation between the Board's independence and financial performance. The contribution of independent directors is also highlighted in the Principles of CG published by the Organisation for Economic Cooperation and Development (OECD, 2015). Similarly, the Governance Guide for Family-Owned Businesses published by Riinvest Institute (2015) recommends that "for a company to be successful in the long run, it should establish a strong and independent board" (p.14). Excessive family involvement at board level restricts the Board's ability to function effectively (Baldacchino *et al.*, 2019; Goh, Rasli & Khan, 2014).

Despite these observations, Baldacchino *et al.* (2019) also noted that in the Maltese context, blood is thicker than water. Family companies in Malta are not likely to appoint anyone who is resistant to family influence. This may lead to favouritism towards family members (Debicki *et al.*, 2017; Lee, 2006 cited in Daspit *et al.*, 2018) and a principal-principal agency problem (Cacciotti & Ucbasaran, 2017; Morck & Yeung, 2003; Shleifer & Vishny, 1997; Yeh, Lee, & Woidtke, 2001) where family interests run counter to the company's and other stakeholders' interests.

The importance of non-family directors is perhaps clearer in a family dispute, where independent directors may act as mediators. This is, however, not always possible, and conflicts may have to be resolved at other junctures (Baldacchino *et al.*, 2018).

The Chief Executive Officer

When a family company is run by the first generation of family members, it is most likely that the

post of CEO will be occupied by the most senior family member. In this circumstance, there tends to be a concentration of power in one family member (Farrugia, 2010). In the case of family companies who are no longer led by a dominant figure but are instead being directed by the second or third generation of family members, Farrugia (2010) also noted that bringing in a non-family CEO would help to professionalise the company's senior management.

In much the same vein, Baldacchino *et al.* (2019) found that in the Maltese context the post of CEO needs to be independent from the family, especially if a chairperson is a family member. The main argument is that conflicting interests are more likely to arise when the two roles overlap, echoing the arguments of Daspit *et al.* (2017) and Tagiuri and Davis (1996). Baldacchino *et al.* (2019) also points out that it is common to have a chairperson's role occupied by a family member since the role is non-executive.

Baldacchino *et al.* (2019) highlighted that having a family CEO is likely to put the Board in an uncomfortable position if performance is not satisfactory, especially if the CEO has a direct relationship with the members of the Board. Moreover, the CEO is likely to display a lenient attitude towards family-related management team members (Baldacchino *et al.*, 2018).

It is acknowledged that certain senior management positions require skills which the controlling family might not have. Professional education and qualifications are necessary to ensure that competent individuals are appointed in senior management roles (*ibid.*).

This might not be easily recognised by the family members who will most likely try to fill in such posts as a means of entitlement towards the business. There is a trade-off between the family's entitlement to the business and the creation of value for the company (Farrugia, 2010) because conflicts may arise between the family's interest and the business' interest (Lansberg, 1983). There is also a trade-off between the family's interest and the public interest (Baldacchino *et al.*, 2019).

Notwithstanding these observations, evidence provided by Braun and Sharma (2007) shows that the duality of the chair and CEO positions does not affect a company's performance. More specifically, it is noted that the relationship between duality and performance is contingent on the family's degree of ownership in the company. The lower the family's ownership stake, the more benefits are derived from separating the two roles (*ibid.*).

Whether or not the chair or CEO positions are occupied by family members, the values that these members can bring to the business cannot be ignored. The loyalty, enthusiasm (Donnelley, 1988),

and firm-specific knowledge (Farrugia, 2010) of family members are unlikely to be matched by independent individuals.

The Family Constitution

The family constitution, also known as the ‘family charter’ or ‘protocol’, is a collective agreement which contains the rights and duties of those interested in the family’s wealth. The family constitution lays down the company’s family mission and outlines how the family goes about adhering to its mission and values in its business operations (IFC, 2011). The family constitution defines the roles, responsibilities, relationships, composition, and powers of decision-making bodies (Taylor Wessing, 2014). The constitution would typically contain the following elements: mission statement, values and vision; family-constituted bodies; board of directors; senior management; relationships between the family bodies, the Board and senior management; and policies regarding family issues including employment, share transfers, and succession planning (Nixha *et al*, 2015).

The objective of the family constitution is to document how to maintain a good relationship between the family members and the family-constituted bodies around the company (Taylor Wessing, 2014). It might be opportune to ratify the family constitution at a time when there is stability within the company, probably when the founding family is still at the helm (KPMG, 2010).

Even though small companies may find it more convenient to work with an unwritten set of procedures, formally documenting the family constitution might become essential to the performance of the company as it grows larger (IFC, 2011). There is no blueprint for properly designing a family constitution that is applicable to all family companies (*ibid.*). Regardless, a properly formulated family constitution is expected to deal with subjects such as the family’s vision for the future, the family’s mission statement, the functioning of family bodies, family members’ employment policies, and share transfers, amongst others (Taylor Wessing, 2014).

Family-Constituted Bodies

Members of the family can meet and discuss family matters in a structured way. Family members often express themselves in family meetings (Weiste, 2013). The need for family members to meet and discuss depends on the size of the company. Meetings may take place informally when there are a limited number of family members. As the family members increase, the need to formalise meetings might arise. In this context, Mustakallio, Autio and Zahra (2002) noted that family meetings tend to be more effective in large family companies. There are different types of bodies that families can establish to formalise family meetings, including the Family Assembly, the Family Council, and the Family Office.

Family Assembly

A family assembly is a meeting where family members discuss matters which concern them as owners (Neubauer & Lank, 1998). Family assemblies deal with issues such as approving the vision and values of the family, family employment, compensation and the election of family members to participate in other governance bodies (Farrugia, 2010).

A family assembly is established when the family business becomes more complex and should be composed of both managing and non-managing family members (ibid.). The meetings are usually chaired by the most senior person in the family (IFC, 2011). Family assemblies are deemed to be very important to prevent and remediate conflicts between family members, especially during an inter-generational change of hands (Farrugia, 2010). In this context, family assemblies can also enable the process of ‘transgenerational entrepreneurship’ which a family undertakes to develop entrepreneurial mindsets across subsequent generations (Habbershon *et al.*, 2010 cited in Zellweger, Nason, & Nordqvist, 2011).

Family Council

A family council is a governing body that links the family with the company’s governance organs and senior management (IFC, 2011). The members of a family council are elected from the family assembly (ibid.). The functions of a family council include nominating members for representation in the Board, maintaining the family constitution and documenting the vision and values of the family (ibid.). Following an election process, the council should be composed of the most senior family representatives with the relevant qualifications and experience, whether or not they are directly linked to the family company (Farrugia, 2010).

A family council should be chaired by an individual with the necessary experience. A record of the council’s meetings should also be kept (ibid.). Similarly to family assemblies, family councils can serve to prevent and resolve family conflicts (Brenes, Madrigal & Requena, 2011). It can also serve as an ideal venue for training the next generation of family directors and senior managers (Weiste, 2013).

Family Office

A family office is a separate body which is distinct from the family and the business. A family office is usually composed of independent professional managers who are tasked to provide advice on technical issues such as financial planning, wealth management and compliance (IFC, 2011). A family office is usually overseen by the family council (ibid.). Several wealthy families are likely to request the services of a family office: in this respect, family offices are mostly applicable to very

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wealthy families and therefore not necessarily relevant in the Maltese context. (Baldacchino *et al*, 2019)

3. METHODOLOGY

3.1 RESEARCH TOOL

A mixed methodology was selected for the study because it is a means to achieve the benefits of two different methodologies. Creswell and Piano Clark (2011) highlight that in a mixed research methodology, both quantitative and qualitative data are collected, analysed separately, and then integrated, either concurrently or sequentially, to address the research questions. This aims to address the deficiencies in both quantitative and qualitative methodologies (Creswell, 2015).

A structured questionnaire was used that contained close-ended questions in the form of a Likert scale ranging from 1 to 5. The close-ended questionnaire was designed on CG principles for family companies emanating from the literature review. A semi- structured interview schedule that contained open-ended questions was also used. The open-ended questions in the interview schedule were designed on the Guidelines issued by the MFSA.

3.2 SAMPLE POPULATION

A purposive sampling technique was used to reach the research objectives. This technique requires a researcher to apply judgement to select the appropriate research participants. In this respect, experts in the field of CG ('Experts') and company secretaries ('Cosec's) of family PICs were selected as the target population for this study. Twenty-six potential Experts and Cosecs were identified.

Experts consisted of representatives from regulatory authorities, government bodies, academics, lawyers, and ex-company secretaries. Relevant contacts were sourced from publicly available information.

Cosecs consisted of company secretaries acting for family PICs. A list of companies was extracted from the MSE publicly traded list, including MSE Prospects. A list of insurance undertakings and credit institutions was also extracted from the MFSA- authorised list of service providers.

Cosecs were identified through a search performed on the database of the Malta Business Registry. Relevant details were also available on the MSE's website, the Maltese Council of Notaries' website, and corporate websites

3.3 DATA ANALYSES

Quantitative data generated from the Likert scale questions of the questionnaire were analysed using IBM SPSS Statistics. The rating scores ranged from 1 to 5, where 1 corresponded to ‘Strongly Disagree’ and 5 corresponded to ‘Strongly Agree’. Therefore, higher rating scores indicated a higher level of agreement with a particular statement. The mean score, median score, and standard deviation were calculated for each statement of the two groups of respondents. The ratings of the two groups were analysed in descending order of average Expert agreement.

Qualitative data was primarily collected through open-ended questions in the interview schedule. Additionally, qualitative data was collected through a ‘comments’ section inserted in the Likert scale questionnaire. Additional feedback on the Likert scale questions was also requested during the face-to-face interviews. The data was analysed by evaluating the transcribed data and identifying key themes and concepts.

3.4 RESEARCH LIMITATIONS

Seventeen participants responded to the questionnaire, of which six were unwilling to be interviewed or did not respond to the invitation. Obtaining the contact details of some respondents proved to be difficult and some company representatives cited the General Data Protection Regulation as restricting them from providing the necessary details.

Cosecs were sub-categorised into three groups for the purpose of explaining the limitations of the research. The following are the sub-categories:

- (i) Lawyers working as sole practitioners;
- (ii) Lawyers employed with law firms; and
- (iii) Company secretaries employed with family companies (most of whom were also lawyers).

Sole practitioners and professionals employed with a law firm gave more candid replies and therefore seemed less biased than family-employed Cosecs. In this respect, some family-employed Cosecs were very defensive in their replies. The replies given by family-employed Cosecs were, in some instances, a recital of the company’s CG formula and a reflection of the company’s system.

4. FINDINGS AND DISCUSSION

4.1 THE FAMILY GOVERNANCE PLAN

Documenting the family's vision, mission, future share transfer plans, and working relationships *vis-à-vis* the continued growth of the family's wealth through a family governance plan would serve to improve the stability and continuity of the company (KPMG, 2010). It is also seen as a positive measure to enhance the CG of a PIC owned by family interests because having a documented plan of action is a source of stability.

In fact, the second measure most agreed-to related to documenting the family's principles, vision, and mission in a formal and transparent manner. Experts and Cosecs agreed that formally documenting the family's vision and mission with respect to the business would enhance CG.

The time at which the document is formulated is crucial. The document needs to be formulated at the time when the family and the company are most stable. This is likely to be the case when the company is still being run by the first generation (*ibid.*) because conflicts and disagreements start to arise from the second generation onwards. In this respect, it is also a tool that might prevent family company weaknesses from developing at a later stage.

In particular, interviewees noted that CG guidelines should require a '*continuity plan*', or a '*governance plan*' in terms of where the family wishes to position itself in the medium to long-term. One Expert recalled a case when a family director introduced a family governance code to remediate the disputes that were taking place among the second and third generation family members. The '*code of family business*' dealt with subjects such as the composition of the Board, education, and family share transfers, amongst others. Although the other family members resisted the implementation of the code by the family director, the Expert noted that "*looking back, everyone acknowledged its beneficial effect*".

4.2 FAMILY FORA

Documents including a family constitution are usually maintained by the family council (IFC, 2011). Nonetheless, since family assemblies are also responsible for formulating the mission and vision of the family (Farrugia, 2010), the family governance plan could also be maintained by the family assembly in the absence of a family council. Dialogue could therefore take place in a family assembly or a family council, where family members meet and discuss important family documents and information in relation to the business. This would contribute positively to good CG in family PICs.

In fact, the measure most agreed-to related to the establishment of a *forum* where family members can meet to provide and receive information in relation to the business. Both Experts and Cosecs agreed that establishing a governance body specifically for family members to meet and discuss would contribute to good CG. In this context, interviewees confirmed that the measure made sense in

principle, although to their knowledge this was not being practised in Malta.

4.3 THE CHIEF EXECUTIVE OFFICER

Experts generally agreed that allowing family members to form part of the senior management team would amount to good CG although Cosecs displayed a relatively neutral stance on this measure.

Respondents were generally neutral as to whether a family member should be allowed to act as CEO. In this context, interviewees noted that in principle “*being a family member should not inherently disqualify anyone from being involved on the board or in senior management - the real issue is achieving the right balance.*” The question on whether the role of CEO should be occupied by a family member remains a contentious one. Although Baldacchino *et al* (2019) noted that a family CEO might put the Board in an uncomfortable position, one cannot preclude a family member from occupying this position simply because of an affiliation with the family.

The possibility for family members to occupy the role of CEO should therefore remain. As a counterbalance to the appointment of a family CEO, the Board should ensure that its assessment of the CEO is not influenced by the affiliation with the family. One could perhaps propose a system where a family CEO is counterbalanced by an independent, non-family chairperson leading the Board.

Leaving the possibility of combining the roles of a chairperson and CEO was not perceived as ideal in the context of a family PIC. In this respect, findings indicated that the two roles should be divided in a clear manner. Nevertheless, this also depends on the company’s ownership structure. As evidenced by Braun & Sharma (2007), the separation of the two roles tends to lose its desired effect on CG with a higher concentration of family ownership. This may suggest that separating the two roles in a founder family-owned company may not necessarily be beneficial. This argument gains even more weight when considering the positive association between founding family control and firm value (Mishra, Randoy, & Jenssen, 2001).

4.4 COMPOSITION OF THE BOARD

The Boards of family PICs should not be composed of a majority of family members. As argued by Baldacchino *et al.* (2019), a suitable proportion of non-family independent directors is likely to contribute towards more transparency and accountability. Independence would be lost if the Board was composed of a majority of family members.

Findings indicate that there is a mixed feeling amongst participants on whether a family member

should act as chairperson of the Board. Several interviewees were close to the territory favouring the appointment of an independent, non-family chairperson. The main reason given was that, because the chairperson is usually a strong founder member, there may be a higher risk of appointing ‘yes’ men with the aim of accommodating that dominant figure. This is also likely to happen because, as noted by Baldacchino *et al* (2019), family members tend to pursue the family’s interest first. It is therefore acknowledged that a strong, dominant figure needs to be counterbalanced with independent individuals of sufficient calibre. On the other hand, it is acknowledged that the family cannot simply be side-lined, as noted by one Cosec:

“Having independent minded, non-executive directors that think outside the box and challenge the status quo is very important. But you cannot expect the one who gave birth to the ‘baby’ to just step aside.”

This is totally understandable when considering that the family is the major shareholder and the driving force of the business. Therefore, a balance needs to be found on how the Board should be composed to ensure good governance.

Another consideration worth noting is the inter-generational effect on the CG system of a company. The CG system of a family PIC which is still being directed by the founding family does not have the same governance needs of a company being led by the second or third generations. Therefore, there may be a case for distinguishing between companies directed by a single family, most likely being the founder family, and companies directed by more than one inter-related families.

CG guidelines should recognise that a family PIC directed by the founding family is more likely to be in a stable position because the founder usually holds a firm grip on the direction of the company, as noted by Daspit *et al.* (2017) and Tagiuri and Davis (1996). In this respect, it was also noted that a concentration of power tends to positively affect a company’s performance (Chen, 2012; Mishra, Randoy, & Jenssen, 2001). Therefore, undermining a dominant figure by separating the roles of CEO and chairman may lose the desired effect the higher the concentration of family ownership (Braun & Sharma, 2007). In this context, CG guidelines should expect a counterbalance to a dominant person that does not undermine their effectiveness.

On the other hand, a family company which is being taken over by the second or third generations is in a much more vulnerable position. The vulnerability can be attributed to several reasons. It may stem from a *vacuum* caused by the departure of a dominant figure. It may be the cause of emotional ties (*ibid.*) and the different backgrounds of family members that may be hard to reconcile in the board room. Thus, it was noted that the independent, non-family directors become extremely

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important when “*the second or third generations take over from the first generation*”. This is because in a family setting, “*the emotions and egos are so strong that every business consideration becomes secondary*”, to the detriment of the company. In this respect, CG guidelines should expect a counterbalance which may only be achieved through the involvement of a non-family individual who takes on a leading and reconciliatory capacity.

This could be implemented by appointing an independent, non-family chairperson who may re-instil order and authority. By virtue of the chairperson’s independence and his or her appointment by *consensus*, it would be hard for a family member or a family-appointed director to argue that a chairperson is acting in favour of one particular party. An independent chairperson would help to nullify any blinding emotions and prevent or help to resolve family disputes. This role would also introduce a sense of organisation and professionalism when the Board is mired with family clashes.

4.5 TENURE OF FAMILY APPOINTMENTS

Research participants generally agreed with prescribing the retirement age of family directors to enhance CG in family PICs. In this context, three Experts explained that this was very important because “*there comes a time when you have to go*” and give way to the next generations, especially when the first generation of family directors reach a certain age.

There might be several negative connotations associated with permanence of office. For instance, as noted by Baldacchino *et al* (2019), having top positions occupied indefinitely might lead to a culture that resists innovation. This mentality could be eradicated by defining the number of years a family CEO ought to remain in office.

Defining the retirement age of directors could also contribute to a more balanced composition of the Board. In this respect, although family directors are more likely to stay on beyond a certain age, distinguishing between family and non-family members might create more problems. This is also true for the post of CEO. Therefore, a system that inhibits long tenures and that is equally applicable to family and non-family members should be consistently applied across the board.

4.6 FAMILY COMPETENCIES

Research participants agreed to formally requiring a minimum level of education and work experience for family members intending to take on a directorship role. Indeed, it may be hard to reconcile the views of family directors having different educational backgrounds. The probability of disagreements owing to the different backgrounds was highlighted:

“Some family directors have a professional educational background, while others have been working in the family company since they were teenagers. The clash is inevitable.”

The different educational backgrounds of directors and managers breeds conflict, which is a distinctive weakness of family companies (KPMG, 2010; Mustakallio, 2002; Sarbah & Xiao, 2015). This is due to the fact that directors with a different level of education may find themselves speaking two completely different languages. Sometimes, there is also a sense of superiority which two sorts of family directors seem to be entitled to: one for the academic and professional experience achieved and the other for the hands-on work experience gained on home ground – the family business. That is the extent to which *“family ties blind any form of logic and professionalism”*.

Prescribing a minimum level of competencies required from directors is beneficial to CG. As pointed out by Baldacchino *et al* (2019), professional education and qualifications are necessary to ensure that competent individuals are appointed. This requirement would also help to identify any training needs. Nonetheless, it is extremely difficult to find a balance in a family company setting. For instance, it would be hard to prove that a family member is not fit for purpose unless there are formal procedures for assessing competence. On the other hand, it would be counterproductive to over-regulate the appointment of directors because ultimately the appointees must be trusted by the family.

Therefore, although most participants agreed with prescribing a minimum level of education and experience for family directors, a more moderate approach could be to require a mentoring or training programme for all appointed directors (whether family or non-family) who do not have a minimum level of competency. This would give an opportunity for young family members to expand their business experience and qualifications without compromising the competence of the Board. Training programmes are likely to be effective from an early stage before directors are appointed to the Board. For instance, family-constituted bodies such as a family council provide an ideal place to mandate a training programme for potential board members as noted by Weiste (2013). The training programmes should be adequately documented to ensure transparency and accountability.

4.7 CONDUCT

Instilling a culture that requires some form of continuous professional education for family directors is seen as a favourable measure contributing towards better CG. In this respect, the Guidelines should widen the scope to include specific adequate training for directors and not only for managers and employees. This measure is likely to be effective because it may help less experienced directors whilst bridging the gap with other directors having a professional background. This may also go

some way to addressing the conflicts arising from this gap.

Although laying down grounds for termination for family management and family directors was supported by most respondents, it is to be noted that a system that distinguishes between the conduct of family and non-family members across all levels of the organisation will tend to create more challenges. In much the same vein, defining penalties for non-compliance should be equally applicable to family and non-family members. Moreover, the system should be consistently applied consistent and enforced across the board by independent directors.

4.8 FAMILY REMUNERATION

The validation of remuneration levels in line with market benchmarks by external consultants would contribute to more transparency and better CG of family PICs that are not expected to have a remuneration committee. This would also help to prevent the unequal treatment of family and non-family members, which is a recurring feature in family-owned companies (Daspit *et al*, 2018; Debicki, 2017; Verbeke & Kano, 2012). Documenting these processes would also improve transparency and accountability towards all relevant stakeholders.

4.9 PERFORMANCE EVALUATION

In a family setting, it is acknowledged that the principle that all directors should regularly review the performance of senior management might not be happening in reality. This is also very much related to the reality that the Board might work around the requirement to appoint ‘independent’ directors. The counterbalance provided by an independent, non-family chairperson heading the Board is equally relevant to counterbalance other senior executives and not only the CEO. This would also help to counter the disparate performance evaluation of family and non-family members, a weakness which was highlighted by various researchers. Performance reviews should also extend to all board directors irrespective of whether they are affiliated with the family.

4.10 THE NEUTRAL SANCTITY OF THE FAMILY PIC

The portrayal of a company’s interest as seemingly distinct from, or misaligned to, the interests of its shareholders may be somewhat hard to imagine. This is because the company is a creation of *its* shareholders aimed, first and foremost, for *their* benefit.

It is therefore ironic (and equally curious) that a significant number of participants have

distinguished between the protection afforded to the interest of the ‘company’ and its ‘shareholders’ as though these could be ranked in order of priority, hence allowing for a clearer distinction of the two interests. More specifically, some respondents believed that the long-term interests of the company should be placed before the short-term interests of a dominant group of shareholders such as a family.

Considering the fundamental and most basic tenet that a company is supposed to act in the interest of its shareholders, why did interviewees distinguish between the interest of a company and its shareholders? In the context of a dominant group of family shareholders a plausible reason for this distinction could be that, for the purposes of this study, a company is not simply a family company, but also a public interest company. In other words, the public dimension of a family company may render the distinction between the interests of a company and its shareholders more apparent.

This is not to say that the interest of shareholders should not be paramount, but that in the context of the peculiarities displayed by family companies, the going concern of a family company with a public interest dimension places foremost in formulating CG guidelines. The distinctive attributes of family companies, such as concentration of power (Daspit, *et al.* 2017; Tagiuri & Davis, 1996), weaknesses such as suppressed growth (Baldacchino *et al.*, 2019; Le-Breton-Miller & Miller, 2009;), and a high probability of conflict (KPMG, 2010; Mustakallio, 2002; Sarbah & Xiao, 2015) render the family PIC a more fragile creature compared to its non-family peers. Using Grech’s frame of thought (2014) in the context of the research findings, one can argue that the inherent characteristics of a family firm in a public dimension sanctify the company. In other words, the company’s interests in terms of its business continuity should be given more weight in view of the family and public interest dynamics.

While recognising this concept would protect the interests of family shareholders because they stand to gain most from business continuity, it would also protect the public interest from short-termism, bad management, and conflicts of interest. Therefore, at some point, the interests of the family and the public converge for the proper continuation of the company. Figure 2 illustrates the intersection of these interests.

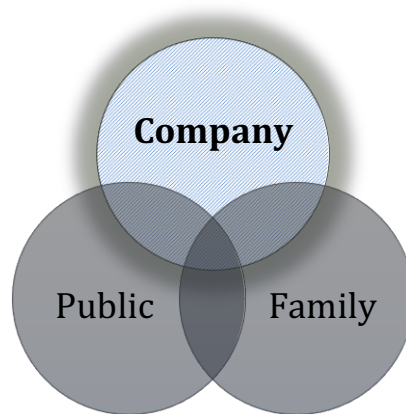


Figure 2– The Neutral Sanctity of the Family PIC

Several interviewees believed that CG guidelines should place the interests of outside stakeholders before the interests of shareholders especially in the case of family PICs. A guiding principle needs to spell out the importance of other stakeholders' interests, especially in the case of companies dominated by families. The argument may be relevant when considering that controlling shareholders can defend their interests in the board room, whilst other stakeholders cannot.

4.11 SHARE TRANSFERS

As highlighted by Mustakallio (2002), most interviewees noted that shares in a family business are generally illiquid. The ownership of family businesses does not change hand very frequently and is most likely triggered by extraordinary events such as the demise of a family member or family disputes. A share transfer plan that is triggered immediately after the occurrence of extraordinary events ensures certainty and business continuity. Moreover, a share transfer plan that does not necessarily target family members is a very important element in order to preserve the continuity of the company.

In this respect, pre-emption rights that are reserved exclusively to family members might bring a 'deadlock' situation. This is because family members not interested in the company and seeking to liquidate their share might not want to cede their portion to the other family simply because emotions override any other consideration. A more efficient system can only be achieved if there is an all-encompassing strategy of where the family wants to position itself *vis-à-vis* the business. This could be achieved by formally documenting the family's plan. A family *forum* where members can discuss these plans would also be ideal.

If a family wants to remain in control, a share transfer plan intended to expedite share transfers among family members in extraordinary times would ensure continuity of business. In the case where the family wants to exit the business, a share transfer plan that ropes in other minority shareholders or third parties would be relevant for the continued existence of the company. Respondents were generally in agreement with principles such as establishing a pre-determined process for buying out family shareholders and giving the right of first refusal to the minority owners of the company. It was therefore acknowledged that these could have a positive impact on the company's continuity.

4.12 THE CONSERVATION OF CAPITAL

The conservation of capital reserves in a family PIC is of utmost importance to ensure the continued financial viability of the company and to avoid short-termism. Guidelines ought to highlight this aspect specifically by introducing the concept of a minimum maintenance level which would be determined on a company-by-company basis. This measure could help to reconcile the different family interests by creating a balance between those seeking a dividend return and other families whose primary source of income is the family business. Moreover, this would help to preserve the continuation of the company.

5. CONCLUSIONS

The authors conclude that the Guidelines for PICs adopt a one-size-fits-all approach which in most cases is not relevant to the needs of family PICs in Malta. Guidelines should reflect the family companies' need to formally institute family meetings to improve the communication among members of the same family, between different families, and most importantly between the family and the company's structures. There is a need for family members to formally document a family governance plan including a family constitution. Moreover, there needs to be clearer guidance on the composition of the Board given the peculiarities of family PICs and the changeover from one generation to the next.

Clearer guidance should be provided on the process of appointing independent directors and engaging senior managers in the context of dominant family interests. In particular, the required competencies of directors should be highlighted. Guidance should be provided on how to determine compensation levels and monitor conduct and performance in a more transparent way. Family PICs should properly document the selection criteria and the Board's assessment for appointing independent directors and CEOs. A family PIC should document the basis for concluding that a director or a CEO is an independent, non-family person. This should increase accountability and make the processes more transparent.

This study also concludes that the Board should endeavour to appoint an independent, non-family chairperson when the power is distributed amongst multiple families. This may be the case when the Board is represented by second and third generation family directors. The Board should establish and set out in writing a clear division of roles and responsibilities between the running of the Board and the executive responsibility for the running of the company particularly in the case of dispersed family shareholding structures (second and third generations).

The competencies required from directors to be appointed on the Board may vary from one company to another. Nonetheless, this study concludes that determining a minimum level based on company-specific criteria such as experience and qualifications would serve to identify any gaps required for the positions. The Board should address any gaps identified. For example, it could require a hand-holding period for prospective directors especially in the case of junior family directors. Examples of good practices include mandatory training or assistance from external consultants during the transition period. This should start from an early stage, possibly at the level of the family assembly or family council. Furthermore, the Board should ensure that there is adequate ongoing training for directors and not just for management and employees.

The authors also conclude that the continued existence of a family company is more important in the context of public interest companies. Because of the family and public dimensions, the company *per se* takes on a more distinct autonomy (and sanctity) that transcends its existence as a mere legal identity. Guidelines should also help family PICs to balance the duties owed to shareholders and the public in an equitable manner such that the dominant influence of family interests does not unfairly step on those of other stakeholders.

It is recognised that the concentrated shareholding patterns in family companies allow more control and oversight over management. But this cannot happen at the expense of other interests. Most importantly, it cannot happen at the expense of the communal interest in the case of family public interest companies.

This study focuses exclusively on Maltese family public interest companies. Although every effort has been made to conduct a comprehensive study on the subject matter, it remains that the study is subject to a number of limitations. All participants in the study were Maltese and the findings of the study are therefore limited to Malta. It is inevitable that the views expressed are influenced by the culture, regulations and systems within the country, particularly in a small state such as Malta. The study is also subject to the limitations that are inherently associated with the research methods that were adopted for the purpose of this study.

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Volatility of the Dow Jones Pharmaceuticals and Biotechnology Index in the context of the Coronavirus crisis

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ABSTRACT

This paper's analysis was triggered by the outbreak of the new virus COVID-19. In December 2019, the Chinese officials alerted the World Health Organization (WHO) of the existence of an unknown deadly virus. Coronavirus has rapidly spread across the world - to Europe, Middle East and the USA, forcing the World Health Organization to declare COVID-19 a global pandemic. Its spread has generated major concerns for the health and economic sectors. Meanwhile, all countries hope for the development of a vaccine. Using as a research method the EGARCH model, this paper investigates if it can be applied to model the trend of volatility of the pharmaceuticals and biotechnology markets, especially during the health crisis. More specifically, this paper tries to identify whether different specifications of univariate GARCH models can usefully anticipate volatility in the stock indices market. The study uses estimates from both a symmetric and an asymmetric GARCH models, namely GARCH (1, 1) and EGARCH models, for the Dow Jones Pharmaceuticals and Biotechnology index (DJUSPN). The dataset is extracted from "Investing.com" and covers the period September 2019 - August 2020, resulting in a total of approximately 252 daily closing prices. The data focuses on the response of the highest capitalized pharmaceutical and biotechnology companies from the US to combat the outbreak of the coronavirus. This study concludes that the EGARCH model is better than the unconditional volatility and the conditional GARCH (1, 1) volatility and it is best suited for modelling and forecasting the fluctuations of the stock indexes.

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1. INTRODUCTION

Volatility forecasting is vital in assessing the riskiness of an investment within the financial markets as its price significantly fluctuates according to the evaluation of volatility. The measurement of volatility becomes also critical in portfolio management. Therefore, portfolio managers and option traders find the assessment of volatility extremely valuable as it assists them in making profits while minimizing the risk of an investment. Volatility always exists in financial time series. However, there are periods with

high volatility and low volatility. It has been observed that volatility tends to significantly rise during critical economic events such as financial crisis, recessions and oil crisis (Cheteni, 2016).

According to Poon (2005), volatility is described as the spread of the likely result of an uncertain variable. Essentially, volatility is associated with risk of the investment. Levine (1991) detailed that economic development could be achieved through the elimination of firm's impulsive liquidation of capital. Chan et al., (1997) identified that over decades, the stock markets have been strongly associated with the national economies through foreign direct investments, capital flows, international trade and technological progress.

Black (1976) laid down the theoretical grounding of the volatility of stock returns which states that the leverage effect is the main cause for stock return volatility. In other words, an increase in a company's equity holding lowers its debt/equity ratio. The same rationality applies if a company's equity holding falls and its debt/equity rises. Thus, the inverse relationship between the two indicators becomes evident. However, the absence of conclusiveness in the returns of the stock market has led to the foundation of numerous models evaluating the leverage effect such as the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models.

Raju and Ghosh (2004) identified that the stock market volatility represents a cause of interest to policy makers as the stock market uncertainty influences growth prospects and acts as a barrier for investments. For instance, the 1997 stock market crash in the United States led to a decrease in consumer spending. Therefore, volatility is regarded as an impediment through its effects on business and consumer expenditure. As a result, constant volatility shows underlying economic difficulties. The more variable the prices are, the worse and less efficient would be the pricing of securities leading to an inefficient distribution of resources.

Financial stock markets are the key drivers to development and most importantly, economic growth. Therefore, over the last three decades, modelling and forecasting stock markets volatility has become a significant setback and has drew attention to the practitioners and academics. Financial data has indicated that the conditional distribution of high-frequency returns encompasses numerous features including temporal persistence, excess kurtosis and negative skewness in conditional movements. In order to accommodate these issues, academics and econometricians have developed modelling and forecasting volatility models.

Crucial contributions to advance financial econometrics were made in 1982 by Engle with the introduction of Autoregressive Conditional Heteroskedasticity (ARCH) model and in 1986 by Bollerslev with the Generalized ARCH (GARCH). These two models became very popular due to their

ability to efficiently capture volatility clustering. According to Frances and Van Dijk (1996), the GARCH models eliminates the setback of long-term time varying volatility. A number of research papers attempted to test whether the efficient market hypothesis holds. More specifically, several researchers assessed whether excessive stock price fluctuations are due to changes in fundamentals or other factors such as incomplete information and speculative bubbles. However, one important research paper to note was the paper of Chen, Roll, and Ross (1986) which identified that stock returns are determined by economic factors and much less than changes to stock fundamentals.

The coronavirus was firstly discovered in Wuhan, where numerous cases of unusual pneumonia appeared. On 31st December 2019, the Chinese officials alerted the World Health Organization (WHO) of the existence of an unknown deadly virus. Coronavirus has rapidly spread across the world - to Europe, Middle East and the United States of America, forcing the World Health Organization to declare COVID-19 a global pandemic (CNBC, 2020).

Its spread has generated major concerns for the health and economic sectors and has left businesses and several industries worldwide in collapse. Thus, since the announcement of the new virus by the Chinese officials, the Nikkei, FTSE and Dow Jones Industrial Average have all massively plummeted. Similarly, the oil price is at its lowest level since 2001 and even the value of a safer investment, gold, has greatly decreased. Furthermore, due to travel restrictions, the tourism industry has enormously suffered with airlines, hotels and restaurants taking the biggest hit. Each country around the world has taken distinctive measures in an attempt to protect their national economy during the health crisis (BBC, 2020). Meanwhile, all the countries hope for the development of a vaccine against the new virus. Thus, the main focus has now been put on the drug companies since heavy investments were made, especially by the US government, in order to combat the virus. Thus, the President of the United States hosted executives from Pfizer, Johnson & Johnson and several other drug companies to discuss efforts to create a vaccine and therapeutics against the new deadly virus (CNBC, 2020).

As of July 2020, the US economy suffered a bit hit and appears to be in deep trouble due to the coronavirus. Restaurants reservations are decreasing, the foot traffic at stores is dropping and the rebound of the air travel seems to have stabilized to the new reduced demand. Therefore, there is mounting evidence that the economic recovery in the United States is already stalling as the number of deaths and infections due to the coronavirus is dramatically rising. Unemployment claims remain elevated. Real-time economic indicators bottomed out in May 2020 as stay-at-home directives were lifted and many American citizens felt safe enough to return to their normal routine such as visiting restaurants, shopping centers and even airports. That gave hope prematurely as the number of coronavirus cases rapidly increased and caused the growth in the economy to slow (BBC, 2020).

However, on the vaccine front, real progress is being made highlighted by a \$1.95 billion deal for Pfizer to produce millions of Covid-19 vaccine doses for the US government (CNN Business, 2020).

This paper analyses the fluctuations of the Dow Jones Pharmaceuticals and Biotechnology index (DJUSPN) from September 2019 to August 2020. The study uses estimates from both a symmetric and an asymmetric GARCH models, namely GARCH (1, 1) and EGARCH models, for the Dow Jones Pharmaceuticals and Biotechnology index in order to see the behaviour of volatility of the mentioned index during the major pandemic across the United States. In other words, the objective is to verify to what extent the trend calculated by the GARCH (1, 1) and EGARCH model matches with the events during the mentioned period and which of the two models provides the best fit to the chosen sample.

2. METHODOLOGY AND DATA

In this section the GARCH models are described both from a statistical and financial perspective, based on Tache and Darie (2019a and 2019b). Both the leverage effect and volatility clustering are components of the GARCH methodology by adding to the model of linear regression the conditional equation. Below, we present both the symmetric and the asymmetric GARCH models that help to investigate the main features of volatility. As stressed in our preceding papers (Tache and Darie, 2019a and 2019b), the estimation using the maximum likelihood approach highlights the stability of the GARCH models, the choice of data period and the way it affects long-term volatility.

As Alexander (2001) points out, in a generalized autoregressive conditional heteroscedasticity model, returns are considered to be generated by a stochastic process with volatility depending on the time interval; instead of modelling the data after having been collapsed in a single unconditional distribution, a GARCH model takes into account more detailed assumptions regarding the conditional distributions. As conditional variance is an autoregressive process, the conditional distributions change in time in an auto-correlated way.

Our research uses both the symmetric and the asymmetric GARCH models, namely the GARCH (1, 1) and the EGARCH models. This paper presents the advantages of the EGARCH model as compared with the symmetric GARCH (1, 1) model: a) allowing asymmetries for capturing the leverage effect and b) using log returns for obtaining a positive conditional variance, even with negative parameters. Unlike the symmetric GARCH model in which a symmetric response of volatility to both positive and negative shocks will be produced when a shock appears, the asymmetric GARCH models involve asymmetric responses, illustrating that positive shocks will engage a lower volatility than negative ones. Among the various mathematical alternatives of the GARCH (1, 1) and the EGARCH models, we decided to use Alexander's version (2001).

This paper works with the following exponential GARCH equation:

$$\ln(\sigma_t^2) = \omega + g(z_{t-1}) + \beta \ln \sigma_{t-1}^2$$

$$g(z_t) = \theta z_t + \gamma \left(|z_t| - \sqrt{\frac{2}{\pi}} \right)$$

$$z_t = \frac{u_t}{\sigma_t}$$

Where σ_t represents the conditional variance as an asymmetric function of lagged disturbances; u_{t-1} , $g(z_t)$ is a linear asymmetric response function in z_t with slope coefficient $\theta+1$ in case z_t is positive while $g(z_t)$ is linear with z_t with slope coefficient $\theta-1$ in case z_t is negative. As a result, large innovations increase the conditional variance in case $|z_t| - E|z_t| > 0$ and decrease the conditional variance in case $|z_t| - E|z_t| < 0$ only while $\theta=0$. On the other hand, the innovation in variance $g(z_t)$ is positive in case the innovations z_t are less than $\frac{(\frac{2}{\pi})^{1/2}}{\theta-1}$. Thus, the negative returns u_{t-1} cause the innovation to the conditional variance to be positive in case θ is much less than 1 (Tache and Darie, 2019a and b)

This paper works with the following GARCH (1, 1) equation:

$$\sigma_t^2 = \omega + \alpha u_{t-1}^2 + \beta \sigma_{t-1}^2$$

$$\omega > 0; \alpha, \beta \geq 0$$

Where ω is the constant, α is the GARCH error coefficient, β is the GARCH lag coefficient and σ_t^2 is the conditional variance since any past information considered to be relevant is included in the one period ahead estimation of calculated variance. While the unconditional variance of the GARCH model is constant and concerned with long-term behaviour of time series, the conditional variance relies on the past information (Tache and Darie, 2019a and b).

The formula for unconditional variance of the GARCH (1, 1) model is presented below:

$$Var(u_t) = \frac{\omega}{1-(\alpha_1+\beta)}$$

The coefficient measures the degree to which today's volatility shock is encompassed within the volatility of the next period; in other words, it relates to the long-term volatility. The unconditional variance remains constant for as long as $\alpha_1 + \beta$ is strictly lower than 1 (Tache and Darie, 2019a and b).

As Alexander (2001) explains, GARCH models are often estimated on intraday and daily data in order to capture volatility clustering effects in the returns of financial assets. These effects disappear with returns observed during long term periods. The GARCH parameters will be estimated by maximizing the value of the log likelihood function – using time varying mean and variance.

The following maximizing problem is to be solved when trying to maximize the GARCH (1, 1) likelihood:

$$\ln L(\theta) = -\frac{1}{2} \sum_{t=1}^T (\ln(\sigma_t^2) + \frac{u_t^2}{\sigma_t^2})$$

Few convergence problems will be met when maximizing the log likelihood function for univariate GARCH models. Changes of data may induce changes in the coefficient estimates, but if there are not real structural breaks in the data generation process, the estimates of the parameter do not significantly change with the new data introduction.

A proper definition of the log likelihood function involves a certain minimum quantity of data. Sometimes, an adequate convergence of the model needs many years of daily data. However, the data within this study covers only a short period of time, namely from September 2019 to August 2020, resulting in a total of 252 daily observations. This period was specifically chosen to reflect the behaviour of volatility before and during the coronavirus pandemic.

3. EMPIRICAL RESULTS AND ANALYSIS

The early evidence for supporting the use of the ARCH/GARCH models is autocorrelation. In order to identify the existence of autocorrelation within the dataset, we used the Box-Pierce or Q test, according to Alexander (2001). The Box-Pierce test helps to determine whether a time series consists simply of random values (white noise). This test was made for the residuals of the time series, after fitting to the data an ARCH (p, q) model. The formula presented below was used for identifying the autocorrelation:

$$Q = n \sum_{k=1}^h r_k^2$$

Where Q represents the Box-Pierce statistic, n represents the total number of observations, m is the number of parameters and h represents the maximum lag considered.

The Box-Pierce test indicates either H0: Prices do not have any significant historic dependence, or H1: Prices do have significant historic dependence. In general, the Q test statistic shows that if residuals are

white noise, the Q statistic will have a χ^2 distribution with (h-m) degrees of freedom. If each r_k value is close to zero, the Q statistic will be very low; but if some r_k values are large, the Q test statistic will be high. So, a comparison between the Q statistic with χ^2 distribution becomes necessary.

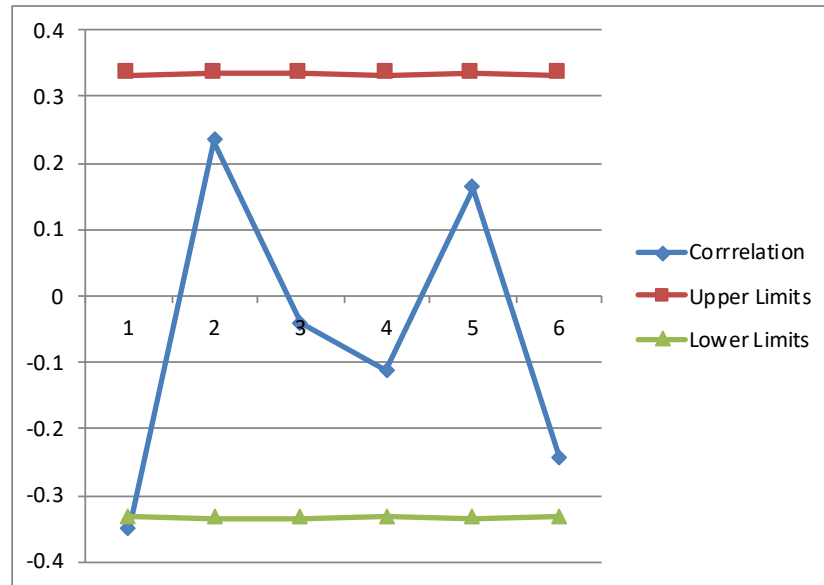


Figure 1. DJUSPN Autocorrelation for the period September 2019 to August 2020 (elaborated by the authors)

Figure 1 presented above shows that autocorrelation in returns does exist for the Dow Jones Pharmaceuticals and Biotechnology index for the period September 2019 to August 2020. More specifically, figure 1 displays the autocorrelation line within the calculated confidence interval of 95%. Therefore, the confidence interval can be interpreted as the range within which the true value is likely to lie with 95% confidence.

However, in order to test for autocorrelation, the application of the Q test or Box-Pierce test is also made. More specifically, only the first six lags will be highlighted within this paper and therefore, focus on the r_k values for only the first six observations. Accordingly, the Box-Pierce process for the DJUSPN Index between September 2019 and August 2020 is presented below:

$$Q = 252 \sum_{k=1}^6 r_k^2 = 70.15$$

As presented above, the Box-Pierce test for the specified time period is paralleled with the critical value of the Chi-squared of 12.5 for a 5% significance level. Since the Box-Pierce test result shows a value higher than 12.5, H_1 is the accepted hypothesis as returns do have significant historic dependence.

Table 1 and Table 2 illustrate the manner in which the maximum likelihood function was estimated using Excel Solver.

Table 1

Table 2

DJUSPN	GARCH (1, 1)	DJUSPN	EGARCH
ω	1.21E-04	ω	-0.22497
α	0.3545	γ	0.09610
β	0.6455	θ	-0.23913
$\alpha+\beta$	1.0000	β	0.97522
LT Vol	12073664.02%	LT Vol	16.90%
LogL	941.1996	LogL	1013.02
Unconditional Vol	27.57%	Unconditional Vol	26.90%

More precisely, table 1 and table 2 show the estimated values of the parameters presented in the GARCH (1,1) and EGARCH models that contribute to the calculation of the maximum value of the log likelihood and the long-term volatility for the DJUSPN Index between September 2019 and August 2020. Note the difference between the traditional model which uses unconditional volatility estimated by equally weighted average of all squared returns of 26.90% and the long-term volatility of 16.90% provided by the EGARCH approach. On the other hand, the GARCH (1, 1) approach provides a massive value for the long-term volatility of 12073664.02% as any past information is reflected in the one period ahead estimation of calculated variance. In other words, GARCH (1, 1) estimated volatility recorded substantial spikes of approximately 140% compared to the EGARCH estimated volatility of approximately 80%. Due to the assimilated massive spikes during the mentioned period, the long-term volatility provided by the GARCH (1, 1) model records such a high percentage.

All the parameters encompassed within the EGARCH and the GARCH (1, 1) models are optimally calculated utilizing the maximum likelihood approach. Due to the COVID-19 pandemic, the value of the coefficient β indicates that there is a high persistence in volatility for the EGARCH model whereas the coefficient β shows only a moderate persistence in volatility for the GARCH (1, 1) model. Contrary to the traditional approach where the volatility forecasts are constant, the GARCH (1, 1) and the EGARCH models provide volatility forecasts with the estimated parameters changing as new data arrives. Furthermore, both the GARCH (1, 1) and the EGARCH approaches offers a higher intensity when any major event is occurring, but the term structure of the estimated volatility will mean-revert to the long-term average (Alexander, 2001).

According to Alexander (2001), the parameters encompassed in the both of the models are very sensitive to the dataset particularly the constant, $\hat{\omega}$. On this occasion, the dataset covers nearly one year during which a major health crisis occurred in not only the United States but worldwide. The estimate of the constant ($\hat{\omega}$) is not extremely high for both of the models to show any disturbances in the dataset that was used. Also, the long-term volatility provided by the EGARCH calculation appears to be far lower than the value of the unconditional volatility and the GARCH (1, 1) estimated volatility. As stated above, the reason for such a major discrepancy in the value of long-term volatility and unconditional volatility is the fact that the long-term volatility provided by the GARCH models is not constant over a period of time and shows the unexpected market shock at a higher intensity until the effects produced by the market shock disappears. Moreover, any major shock regardless the industry could threaten any stable market. In order for the estimated parameters to be stable, there is a trade-off between having enough data and too much data so that the long-term volatility provided by the GARCH estimates to reflect as good as possible.

The γ parameter measures the asymmetry or the leverage effect. Such a parameter is vital to the analysts who use the EGARCH model. Since γ shows a value greater than 0, more specifically 0.09610, then positive shocks (good news) generate much more volatility than negative shocks (bad news) (Brooks, 2014). Therefore, any good news regarding a vaccine or treatment from the US Pharmaceutical and Biotechnology companies for the COVID-19 pandemic would make a greater impact than any other negative news.

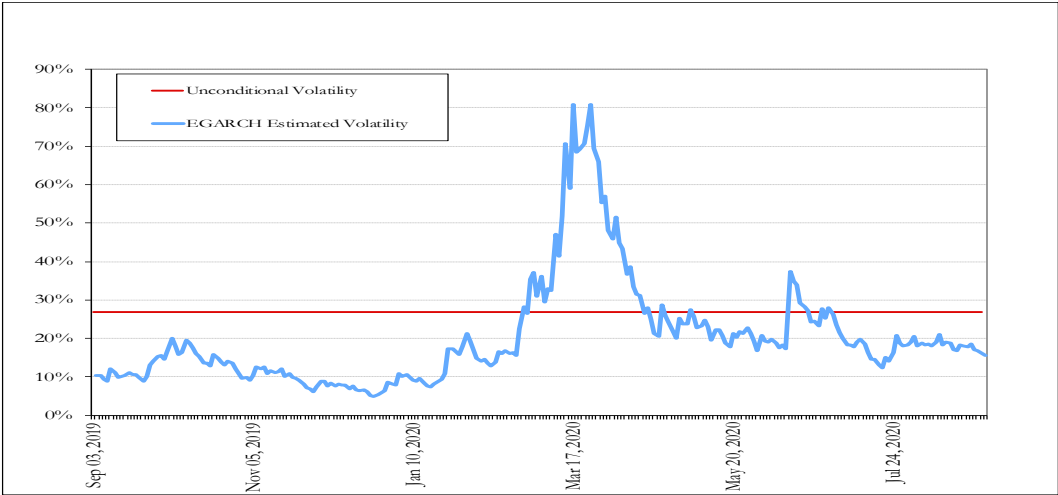


Figure 2. Comparison between EGARCH Estimated Volatility versus Unconditional Volatility for the DJUSPN Index from September 2019 to August 2020 (elaborated by the authors)

Figure 2 presents that the i.i.d unconditional volatility estimate of 26.90% is higher than the unconditional EGARCH volatility of 16.90% whereas figure 3 presents that the conditional GARCH (1, 1) estimated volatility of 12073664.02% is much higher than the i.i.d unconditional volatility.

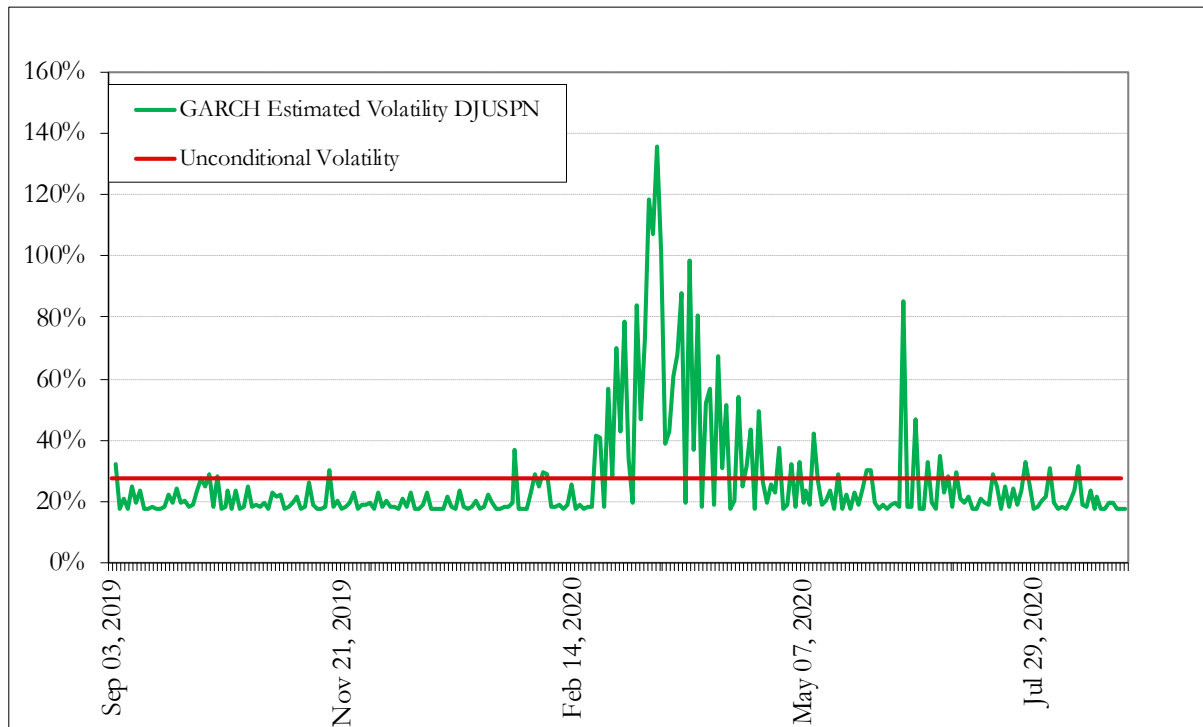


Figure 3 Comparison between GARCH (1, 1) Estimated Volatility versus Unconditional Volatility for the DJUSPN Index from September 2019 to August 2020 (elaborated by the authors)

Both of the presented GARCH models efficiently capture the trend of volatility. However, the conditional GARCH (1, 1) approach overestimates the negative shocks compared to the unconditional EGARCH approach which provides much more reliable forecasts as it efficiently captures the negative shocks. However, it is not unusual to find differences between the i.i.d volatility and the long-term GARCH volatility models since both of the models does not assume that returns are i.i.d. Furthermore, until February 2019, the fluctuations in the volatility of Dow Jones Pharmaceutical and Biotechnology Index does not raise concerns regarding any uncommon behaviour. However, in March 2019, the volatility of the Dow Jones Pharmaceutical and Biotechnology Index spikes dramatically as the World Health Organization declares the outbreak of coronavirus a pandemic. Furthermore, the President of the United States declares national emergency to unlock \$50 billion in federal resources to combat the coronavirus and signs into law a coronavirus relief package (CNN, 2020).

As of April 2020, the volatility of the Dow Jones Pharmaceutical and Biotechnology Index gradually decreases due to safety economic measures taken by the US federal government to provide funding for some of the workforce obliged to stay-at-home. Furthermore, during May 2020, the volatility of the DJUSPN Index seems to decrease even more as the US and his administration expands the coronavirus testing capabilities by sending \$11 billion to states. However, a much lower spike in the volatility of the DJUSPN Index is recorded as the administration of the United States notifies Congress and the UN that the US if formally withdrawing from the World Health Organization (CNN, 2020). Until 31st August,

there has been no other major spike in the volatility of the DJUSPN Index as a vaccine is being developed highlighted by a \$1.9 billion deal for Pfizer to produce millions of Covid-19 vaccine doses for the US government (CNN Business, 2020). As of 31st August, the US holds the first position regarding the total number of deaths worldwide (The Guardian, 2020). Therefore, having signed a deal for the vaccine is crucial for the American population as it provides some relief during this health crisis. It must be mentioned that Pfizer is part of the Dow Jones Pharmaceutical and Biotechnology Index.

4. CONCLUSION

After the World Health Organization declared a global coronavirus pandemic, the volatility of the Dow Jones Pharmaceutical and Biotechnology Index drastically increased as the US holds the first position regarding the total number of deaths worldwide. However, the coronavirus pandemic in the US has been taken very seriously with the US government having prepared relief packages for the working force and substantial stimulus for the US economy. Furthermore, the signing of a deal for the coronavirus vaccine offers some relief for the US citizens. Since the events presented in this paper matched with the volatility trend provided by the EGARCH model, it must be mentioned that the GARCH (1, 1) and the EGARCH models accurately capture the volatility trend of the Dow Jones Pharmaceutical and Biotechnology. Furthermore, this paper highlights the significant difference between using the volatility provided by the GARCH (1, 1) and the EGARCH model against the unconditional volatility. However, the conditional GARCH (1, 1) approach overestimates the negative shocks as compared with the unconditional EGARCH, the latter providing much more reliable forecasts as it efficiently captures the negative shocks. In conclusion, having as a case study the health industry, the EGARCH model represents the best model of the three models which forecast the volatility of the DJUSPN index as it precisely captures the trend of the volatility without overestimating the results.

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The compliance of the Romanian listed companies with the principles and provisions of the Corporate Governance Code

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ABSTRACT

Starting from the research assumption that the Corporate Governance Code issued by Bucharest Stock Exchange (BSE) aims at building an internationally attractive capital market in Romania, based on best practices, transparency and trust that encourages companies to build a strong relationship with their shareholders and other stakeholders, communicate effectively and transparently and show openness towards all potential investors, in this paper we would like to present the degree of compliance of the companies listed on the Bucharest Stock Exchange with the principles and provisions of the Corporate Governance Code. The aim of this paper is achieved by presenting and commenting on the principles issued by the BSE regarding the corporate governance and by analysing the Corporate Governance Reports of the companies, presenting at the same time the compliance of the listed companies with these principles and provisions, by using the data issued in 2018 by the entities included in our study, namely the listed companies on the main market of the Bucharest Stock Exchange. Our analysis reflects that, although the provisions and principles of the Corporate Governance Code are not mandatory for the listed companies, they are largely implemented in the activity of companies because an efficient corporate governance system can represent a competitive advantage for any economic entity in the context of globalisation.

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1. INTRODUCTION

Corporate governance is defined in the international literature (OECD, 2015) as the set of relationships between a company's management and its stakeholders. The first definition of the concept dates back to 1992 and presents corporate governance as the set of rules by which companies are directed and controlled (Cadbury Report, 1992), trying to provide an answer to the question how shareholders are getting a return on their investment (La Porta et al., 2000).

The Organisation for Economic Cooperation and Development (OECD) is one of the organisations that have been particularly involved in the implementation of certain provisions, structures and mechanisms of corporate governance, the developed principles being guidelines, rules

of good practice for the organisation of companies and their way of reporting relationships with third parties (O. Jula, 2017). An essential feature of the Corporate Governance Codes is that they are implemented on the basis of the “Comply or Explain” principle which discloses to the market clear, accurate and up-to-date information regarding the compliance of the listed companies with the corporate governance rules, avoiding the “one size fits all” framework (Seidl et al., 2013).

In other words, a good corporate governance can be translated through efficient rules, policies and procedures of business management, administration and control. It is essential for companies that want to reduce operational and financial risks, increase performance, open towards new markets and add more value to the relationship with their current and potential investors (Fulop. M, *et al.*2015).

In Romania, the concept of corporate governance appeared at the beginning of the 2000s, being initially governed by the Code of Management and Administration of the Bucharest Stock Exchange. (Apostol C.,2015).

According to BSE (2015), the purpose of the Corporate Governance Code is to create in Romania an internationally attractive capital market, based on best practices, transparency and trust. To achieve these goals, listed entities must comply to a great extent with the principles and provisions elaborated by the Bucharest Stock Exchange.

Researchers such as Vintilă G. and Moscu R. (2014) studied the level of compliance for 55 entities listed on the BSE in 2013 and found that the degree of compliance with the Code of Corporate Governance of BSE is achieved at a rate of 70.6%, the lowest score is based on a result of 21.1% and the highest is 92.3%. Rose C. (2016) investigates the degree of Danish firm adherence to the Danish Code of Corporate Governance and analyzes whether a higher degree of comply or explain disclosure is related to firm performance. His analysis shows that there is a positive link between Return on Equity / Return on Assets and Danish firm total corporate governance comply or explain disclosure scores. In their study Madanoglua M *et al.* (2018) defends the view that the adoption of corporate governance provisions should not be seen as a detriment to firms' financial performance. Using a set-theoretic method, such as the Qualitative Comparative Analysis (QCA), his findings revealed that there are three configurations of governance provisions that lead to superior financial performance.

The purpose of this study is to present the results of an analysis carried out on the companies listed on the main market of the Bucharest Stock Exchange in order to measure their degree of compliance with the principles and provisions of the Corporate Governance Code developed by the BSE in relation to the aspects regarding the responsibilities of the Board of Directors in the case of the individually managed companies or of the Supervisory Board / Directorate in the dualistic system, the risk management system and the internal control, the fair reward and motivation of the members of these boards and the value added through the relationship with the current and potential investors.

2. MATERIALS AND METHODS

In this paper we aim to measure the degree to which the companies listed on the Bucharest Stock Exchange (BSE) comply with the provisions and principles of the Corporate Governance Code developed by the BSE with regard to the responsibilities of the management, the risk management system and the internal control, the fair reward and motivation of the members of the Board of Directors or the Supervisory Board and the added value created through the relationship with the current and potential investors.

By means of the corporate governance statement, included in the Annual Report in a separate section, the listed companies perform a self-assessment of how “the provisions to be observed” are met and outline the measures taken to comply with the aspects that are not fully met. The research methodology used, the observation, was based mainly on *the analysis of the Annual Reports* and of the *Comply or Explain* Statement published by the entities analysed in 2018. Out of the 87 companies included in the Monthly Bulletin drawn up by the BSE in December 2018, a document presenting the main stock market indicators of the listed companies, we excluded from our analysis the companies that incurred losses in 2018 and those that did not draw up the Comply or explain statement (the main source of our data), thus keeping a number of 61 companies.

According to the Corporate Governance Code (BSE, 2015), the provisions and principles to be observed by the listed companies are structured in four sections, as follows:

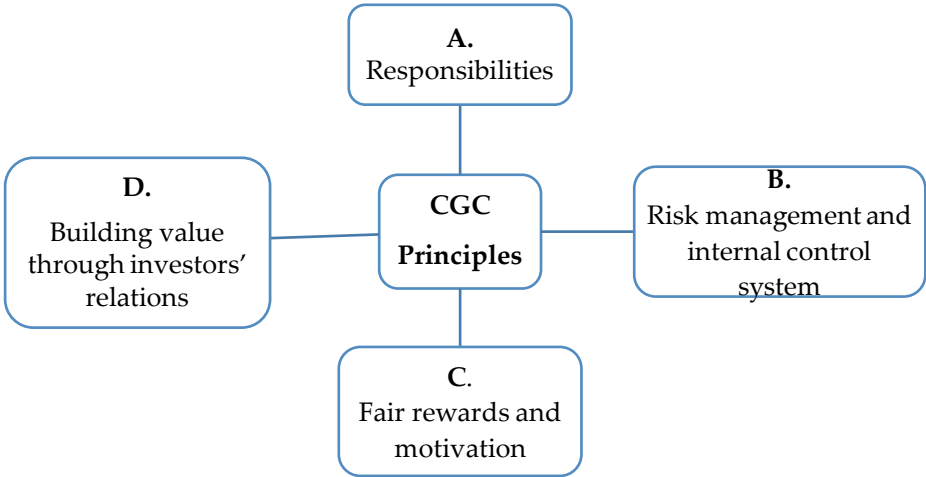


Figure 1. Sections of Corporate Governance Code
Source: own projection after BSE

Table 1. Corporate Governance principles and provisions	
<i>Section A – Responsibilities</i>	
A.1.	All companies should have internal regulation of the Board which includes terms of reference/responsibilities for Board and key management functions of the company, applying,

among others, the General Principles of Section A.

A.2. Provisions for the management of conflict of interest should be included in Board regulation.

A.3. The Board of Directors or the Supervisory Board should have at least five members.

A.4. The majority of the members of the Board of Directors should be non-executive. At least one member of the Board of Directors or Supervisory Board should be independent, in the case of Standard Tier companies. Not less than two non-executive members of the Board of Directors or Supervisory Board should be independent, in the case of Premium Tier Companies.

A.5. A Board member's other relatively permanent professional commitments and engagements, including executive and non-executive Board positions in companies and not-for-profit institutions, should be disclosed to shareholders and to potential investors before appointment and during his/her mandate.

A.6. Any member of the Board should submit to the Board, information on any relationship with a shareholder who holds directly or indirectly, shares representing more than 5% of all voting rights. This obligation concerns any kind of relationship which may affect the position of the member on issues decided by the Board.

A.7. The company should appoint a Board secretary responsible for supporting the work of the Board.

A.8. The corporate governance statement should inform on whether an evaluation of the Board has taken place under the leadership of the chairman or the nomination committee and, if it has, summarize key action points and changes resulting from it. The company should have a policy/guidance regarding the evaluation of the Board containing the purpose, criteria and frequency of the evaluation process.

A.9. The corporate governance statement should contain information on the number of meetings of the Board and the committees during the past year, attendance by directors (in person and in absentia) and a report of the Board and committees on their activities.

A.10. The corporate governance statement should contain information on the precise number of the independent members of the Board of Directors or of the Supervisory Board.

Section B - Risk management and internal control system

B.1. The Board should set up an audit committee, and at least one member should be an independent non-executive. The majority of members, including the chairman, should have proven an adequate qualification relevant to the functions and responsibilities of the committee. At least one member of the audit committee should have proven and adequate auditing or accounting experience. In the case of Premium Tier companies, the audit committee should be composed of at least three members and the majority of the audit committee should be independent.

B.2.	The audit committee should be chaired by an independent non-executive member.
B.3.	Among its responsibilities, the audit committee should undertake an annual assessment of the system of internal control.
B.4.	The assessment should consider the effectiveness and scope of the internal audit function, the adequacy of risk management and internal control reports to the audit committee of the Board, management’s responsiveness and effectiveness in dealing with identified internal control failings or weaknesses and their submission of relevant reports to the Board.
B.5.	The audit committee should review conflicts of interests in transactions of the company and its subsidiaries with related parties.
B.6.	The audit committee should evaluate the efficiency of the internal control system and risk management system.
B.7.	The audit committee should monitor the application of statutory and generally accepted standards of internal auditing. The audit committee should receive and evaluate the reports of the internal audit team.
B.8.	Whenever the Code mentions reviews or analysis to be exercised by the Audit Committee, these should be followed by cyclical (at least annual), or ad-hoc reports to be submitted to the Board afterwards.
B.9.	No shareholder may be given undue preference over other shareholders with regard to transactions and agreements made by the company with shareholders and their related parties.
B.10.	The Board should adopt a policy ensuring that any transaction of the company with any of the companies with which it has close relations, that is equal to or more than 5% of the net assets of the company (as stated in the latest financial report), should be approved by the Board following an obligatory opinion of the Board’s audit committee, and fairly disclosed to the shareholders and potential investors, to the extent that such transactions fall under the category of events subject to disclosure requirements.
B.11.	The internal audits should be carried out by a separate structural division (internal audit department) within the company or by retaining an independent third-party entity.
B.12.	To ensure the fulfillment of the core functions of the internal audit department, it should report functionally to the Board via the audit committee. For administrative purposes and in the scope related to the obligations of the management to monitor and mitigate risks, it should report directly to the chief executive officer.
<i>Section C - Fair rewards and motivation</i>	
C.1	The company should publish a remuneration policy on its website and include in its annual report a remuneration statement on the implementation of this policy during the annual period under review.
<i>Section D - Building value through investors’ relations</i>	

D.1. The company should have an Investor Relations function - indicated, by person (s) responsible or an organizational unit, to the general public. In addition to information required by legal provisions, the company should include on its corporate website a dedicated Investor Relations section, both in Romanian and English, with all relevant information of interest for investors

D.2. A company should have an annual cash distribution or dividend policy, proposed by the CEO or the Management Board and adopted by the Board, as a set of directions the company intends to follow regarding the distribution of net profit. The annual cash distribution or dividend policy principles should be published on the corporate website.

D.3. A company should have adopted a policy with respect to forecasts, whether they are distributed or not. Forecasts means the quantified conclusions of studies aimed at determining the total impact of a list of factors related to a future period (so called assumptions): by nature such a task is based upon a high level of uncertainty, with results sometimes significantly differing from forecasts initially presented. The policy should provide for the frequency, period envisaged, and content of forecasts. Forecasts, if published, may only be part of annual, semi-annual or quarterly reports. The forecast policy should be published on the corporate website

D.4. The rules of general meetings of shareholders should not restrict the participation of shareholders in general meetings and the exercising of their rights. Amendments of the rules should take effect, at the earliest, as of the next general meeting of shareholders.

D.5. The external auditors should attend the shareholders' meetings when their reports are presented there.

D.6. The Board should present to the annual general meeting of shareholders a brief assessment of the internal controls and significant risk management system, as well as opinions on issues subject to resolution at the general meeting.

D.7. Any professional, consultant, expert or financial analyst may participate in the shareholders' meeting upon prior invitation from the Chairman of the Board. Accredited journalists may also participate in the general meeting of shareholders, unless the Chairman of the Board decides otherwise

D.8. The quarterly and semi-annual financial reports should include information in both Romanian and English regarding the key drivers influencing the change in sales, operating profit, net profit and other relevant financial indicators, both on quarter-on-quarter and year-on-year terms.

D.9. A company should organize at least two meetings/conference calls with analysts and investors each year. The information presented on these occasions should be published in the IR section of the company website at the time of the meetings/ conference calls.

D.10. If a company supports various forms of artistic and cultural expression, sport activities, educational or scientific activities, and considers the resulting impact on the innovativeness and

competitiveness of the company part of its business mission and development strategy, it should publish the policy guiding its activity in this area.

Source: BSE Corporate Governance Code

For the entities included in our study we used a scoring system that reflects the extent to which they comply with the provisions and principles presented above, thus transforming the enunciative data into numerical, quantitative data, in order to measure the companies' ability in implementing "good" corporate governance practices (Udo Braendle, 2019). Taking into account the fact that in the Comply or explain statement the companies have three options through a self-assessment that reflects the full compliance, partial compliance or non-compliance, the following table reflects the scoring system used according to the response published by the studied companies:

Table 2. Conformity marks

Conformity mark	Significance
3	Full compliance with the principles and provisions
1	Partial compliance
0	Non-compliance

Source: author's own projection

Considering the 4 sections of the Code and the proposed scoring system, for section A a company can obtain a maximum of 30 points, for section B a maximum of 36 points, for section C, 3 points and for section D a maximum of 30 points. In total, a company can sum up 99 points, which reflects total compliance in all sections of the Corporate Governance Code. For the studied companies, the maximum score that can be reached is 6,039 points.

3. RESULTS AND DISCUSSIONS

The analysis of the Comply or explain statement made for each of the 61 entities studied in accordance with the scoring system, highlights the following level of conformity with the Code's provisions and principles:

Table 3. Level of conformity with the Code s provisions

Category	Maxim um score	Obtain results	Comply assessment (%*maximum score)
Total CGC score	6.039	4.706	78%
Section A score	1.830	1.487	81%
Section B score	2.196	1.690	77%

Section C score	183	100	55%
Section D score	1.830	1.429	78%

Source: author's own projection

From the analysis carried out we can see that the studied entities comply to a great extent with the provisions of the Corporate Governance Code. The lowest result was obtained in section C, which refers to the remuneration policy which must be based on the fair reward and motivation for the members of the Council and for the CEO or the members of the Directorate. 45% of the studied entities do not publish the remuneration policy on the companies website and do not include information on its implementation in the Annual report.

The section analysis of the level of compliance with the provisions and principles of the Code reflects the following:

Table 4. Descriptive statistics for section A	
<i>Section A – conformity score</i>	
Mean	24.3770
Standard Error	0.8772
Median	27
Mode	30
Standard Deviation	6.8511
Sample Variance	46.9387
Kurtosis	1.2300
Skewness	-1.4614
Range	27
Minimum	3
Maximum	30
Sum	1487
Count	61

Source: own projection

The mean of the scores obtained in section A is 24.38, with the median 27 and the mode 30. The lowest score obtained is 3, which reveals that out of the 61 companies under study some do not comply with the provisions of the Governance Code in terms of the existence of an internal operating regulation for the specialised committees or the composition, the independence and the quality of non-executive members of the Board of Directors is not compliant with the requirements of the Code, there being no clear distinction between executive and non-executive members of the Board of Directors. The highest score and the maximum of the section, the value 30, is obtained by companies that fully

comply with the provisions of the code in terms of the responsibilities of the Board. Within this section, the model's amplitude is 27 and it reflects the difference between the maximum and the minimum score obtained by the companies under study.

Graphically, the results obtained by the studied entities regarding the level of compliance with the provisions of section A are reflected as follows:

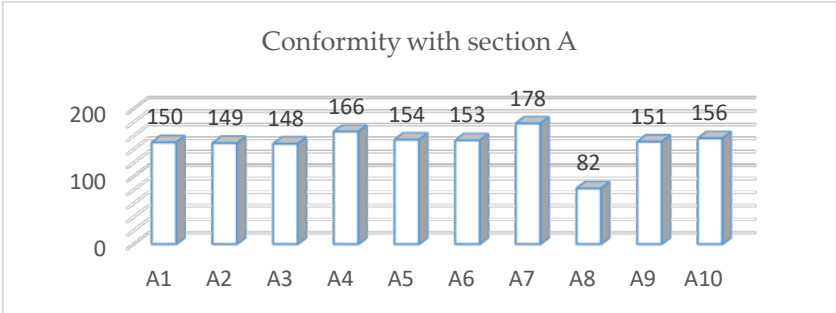


Figure 2. Conformity with section A

Source: own projection

From the previous figure we can see that out of the total of 183 points per section (full compliance of all the entities/section), the studied companies are approaching to this value, which means a satisfactory level of compliance with the provisions of the code. In a single section, A8, the results are below average, because most of the companies do not have a policy to evaluate the Council that reflects the purpose, the criteria and the frequency of the evaluation process.

Table 5. Descriptive statistics for section B

<i>Section B – conformity score</i>	
Mean	27.7049
Standard Error	1.4597
Median	33
Mode	36
Standard Deviation	11.4007
Sample Variance	129.9781
Kurtosis	-0.0523
Skewness	-1.2091
Range	36
Minimum	0
Maximum	36
Sum	1690
Count	61

Source: own projection

The mean of the scores obtained in section B is 27.70, with the median 33 and the mode 36. The lowest score obtained is 0 which reveals that out of the 61 companies under study some do not comply with the provisions of the Governance Code in terms of establishing the Audit Committee to periodically examine the efficiency of the financial reporting, of the internal control and of the risk management system. Moreover, the companies neither comply with the principles of governance in terms of the independence and the non-executive independent member status for at least one person within the structure. The highest score and the maximum of the section, the value 36, is obtained by companies that fully comply with the provisions of the code. Within this section, the model's amplitude is 36 and it reflects the difference between the maximum and the minimum score obtained by the companies under study.

Graphically, the results obtained by the studied entities regarding the level of compliance with the provisions of section B are reflected as follows:

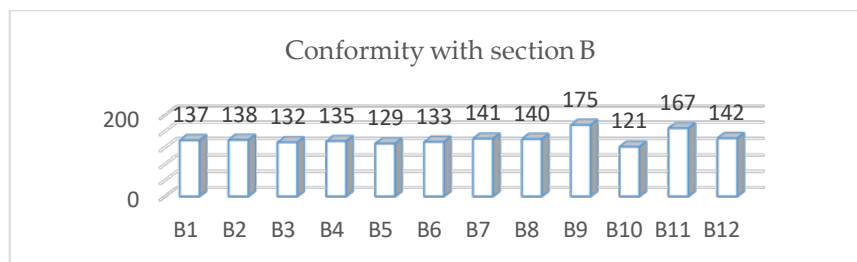


Figure 3. Conformity with section B

Source: own projection

From the previous figure we can see that out of the total of 183 points per section (full compliance of all the entities/section), most entities obtain a score above average, which means a satisfactory level of compliance with the provisions of the code.

Table 6. Descriptive statistics for section C

<i>Section C – conformity score</i>	
Mean	1.6393
Standard Error	0.1734
Median	1
Mode	3
Standard Deviation	1.3544
Sample Variance	1.8344
Kurtosis	-1.8489

Skewness	-0.0974
Range	3
Minimum	0
Maximum	3
Sum	100
Count	61

Source: own projection

The mean of the scores obtained in section C is 1.63, with the median 1 and the mode 3. The lowest score obtained is 0 which reveals that out of the 61 companies under study some do not comply with the provisions of the Governance Code regarding the publication of the principles and arguments underlying the remuneration policy of the members of the Board of Directors or of the members of the Directorate. The highest score and the maximum of the section, the value 3, is obtained by companies that fully comply with the provisions of the code. Within this section, the model's amplitude is 3 and it reflects the difference between the maximum and the minimum score obtained by the companies under study.

Graphically, the results obtained by the studied entities regarding the level of compliance with the provisions of section C are reflected as follows:

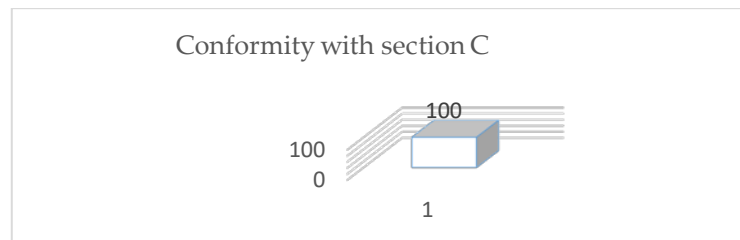


Figure 4. Conformity with section C

Source: own projection

In section C there is only one provision that must be respected by the listed entities which refers to the fair reward and motivation regarding the remuneration policy of the members of the Council and of the CEO, as well as of the members of the Directorate in the dualistic system. The results obtained reflect the above average compliance of the entities with the provisions of the code.

Table 7. Descriptive statistics for section D

Section D – conformity score

Mean	23.4262
Standard Error	0.7601

Median	24
Mode	30
Standard Deviation	5.9370
Sample Variance	35.2486
Kurtosis	0.9501
Skewness	-0.9955
Range	25
Minimum	5
Maximum	30
Sum	1429
Count	61

Source: own projection

The mean of the scores obtained in section D is 23.43, with the median 24 and the mode 30. The lowest score obtained is 5 which reveals that out of the 61 companies under study some do not comply with the provisions of the Governance Code regarding the organization of the investor relations service, the annual dividend distribution policy, forecasts, the participation of external auditors at the General Shareholders' Meetings when their reports appear on the agenda of the meetings, key factors influencing the development as well as publishing on the company's website the information presented during the annual meetings with analysts and investors. The highest score and the maximum of the section, the value 30, is obtained by companies that fully comply with the provisions of the code. Within this section, the model's amplitude is 25 and it reflects the difference between the maximum and the minimum score obtained by the companies under study.

Graphically, the results obtained by the studied entities regarding the level of compliance with the provisions of section D are reflected as follows:

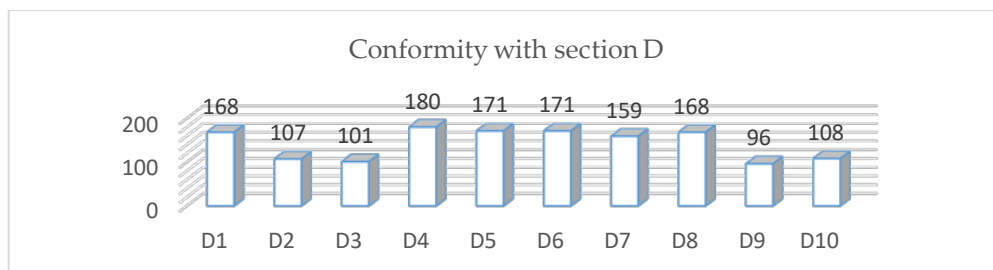


Figure 5. Conformity with section D

Source: own projection

From the previous figure we can see that out of the total of 183 points per section (full compliance of all the entities/section), most entities score above average, which means a satisfactory

level of compliance with the provisions of the code. Only one provision, D9, records a lower score, respectively the one that states that a company should organize at least two meetings/conference calls with analysts and investors each year and the information presented on these occasions should be published in the IR section of the company website.

From a global perspective, the level of compliance with the provisions and principles of the code of the 61 studied entities is presented as follows:

Table 8. Descriptive statistics for total Corporate Governance score	
<i>Total CGC score</i>	
Mean	77.1475
Standard Error	2.9027
Median	86
Mode	93
Standard Deviation	22.6714
Sample Variance	513.9945
Kurtosis	0.5692
Skewness	-1.2484
Range	87
Minimum	12
Maximum	99
Sum	4706
Count	61

Source: own projection

The total mean of the scores obtained is 77.14 points out of a total of 99 points / entity with the median 86 and the mode 93. The lowest score obtained is 12 which reveals that out of the 61 companies under study there are entities that comply to a very low extent with the provisions of the Governance Code on the 4 sections, respectively regarding the responsibilities of the management, the risk management system and the internal control, the just reward and motivation of the members of the Board of Directors or Supervision and the added value created through the relationship with current and potential investors. The highest score, the maximum, the value 99, is obtained by companies that fully comply with the provisions of the code. Within this section, the model's amplitude is 87 and it reflects the difference between the maximum and the minimum score obtained by the companies under study.

In a general approach, we can state that the scores obtained by the companies included in the research reflect a high degree of compliance with the principles of corporate governance.

4. CONCLUSIONS

This study has focused on the compliance of the listed entities on Main Market of the Bucharest Stock Exchange with the Corporate Governance Code principles and provisions.

After processing and analysing the data collected from the Comply or Explain Statement published by the listed entities included in the study, we can outline the following aspects regarding the degree of compliance with the principles of corporate governance:

- the Comply or Explain statement reflects the extent to which the corporate governance rules are observed by the listed entities through a self-assessment that reflects the full compliance, partial compliance or non-compliance with the provisions of the Code. The statement can be included in the Annual Report or can be presented separately;
- the implementation of the provisions and principles of the governance code ensures transparency, trust for both current and potential investors, as well as the fair treatment of shareholders in relation to the access to information because the statement describes the aspects regarding the administration and the control of the company;
- we may notice the companies' favourable perception on the need to adopt the principles of corporate governance;
- as a consequence, we consider that the companies under study show a high degree of compliance with the principles of corporate governance developed by the BSE, thus understanding that good corporate governance can ensure the sustainable development of the company.

The contribution of the current study is to provide information regarding Corporate governance in Romania and the degree of compliance with the principles and provisions of the listed entities. Our main research tool, the corporate governance index, calculated after a framework proposed by the authors for 61 listed entities in Romania reflects a high degree of compliance. We believe that the ease of access to additional funds, the increase of transparency in reporting, the sustainable development in the context of globalisation and the increase of the market value of the company are the benefits of an efficient corporate governance system that can represent a competitive advantage to any economic entity.

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The Effects of Macroeconomic Factors on Bank Loan Interest Rates in Turkey

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ABSTRACT

The purpose of the study to reveal how interest rates on loans offered to consumers by banks in Turkey are affected by macroeconomic factors. For this purpose, the personal loan interest rate is considered as the consumer loan interest rate, mortgage loan interest rate and vehicle loan interest rate. Macroeconomic factors, inflation, gold, exchange rate and money supply are included in the analysis. Three models have been established using monthly data for the period January 2009-June 2020. Firstly, cointegration test was applied to the models and it was determined that there is at least one cointegration relationship in each model. Long-term estimation results for the models are obtained by using the FMOLS method. In general, it was observed that the increase in the exchange rate tended to increase the bank loan interest rates, while the increase in the money supply lowered the bank loan interest rates. As a result of the causality analysis, bidirectional causality relationship from consumer loan interest rate to money supply and inflation, unidirectional causality from interest rate to gold price, unidirectional causality relationship from exchange rate to interest rate was determined. Unidirectional causality relationship from mortgage loan interest rate to money supply, unidirectional causality from exchange rate to interest rate was found. While it was determined that there is a bidirectional causality relationship between vehicle loan interest rate and money supply, gold price and inflation. It is expected that these results may guide banks and policymakers to determine interest rate policies.

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1. INTRODUCTION

Banks are organizations that aim for profit and have an important place in the financial system. Any positive or negative fluctuations in the banking sector, which is an important part of the economic system, rapidly affect both the market and the sector. While banks, as commercial enterprises, continue their activities for profit, there are many functions they undertake as part of the economic system. These functions can be ordered as financial intermediation, creating liquidity, evaluating and monitoring credit demanders, solving asymmetric information problems, increasing the effectiveness of monetary policies, affecting economic stability, benefiting from economies of scale and scope, increasing the efficiency of payment systems, funding foreign trade and encouraging exports (Yağcılar Göçmen, 2011).

Personal loans offered by banks have an important role in satisfying the needs of individuals in society immediately. At this point, while people are taking loans from banks, if the other conditions are the same, the low-interest rate is preferred. From the perspective of banks, it is to increase the number of people using loans by lowering interest rates (Ibicioglu and Karan, 2009). Changes in personal interest rates will increase the consumption expenditures of individuals, and this will have a positive effect on economic growth. In addition, as the change in interest rates affects the economic balances, it is an important tool that can be used in eliminating the recession in the market in line with the purpose of monetary policies.

Based on the importance of the banking sector in the economy, the aim of the study is to establish three different models for personal loan interest rates, which are classified as consumer loans, mortgage loans, and vehicle loans, to observe how interest rates are affected by economic data and to make comparisons of models. The results to be obtained here about inflation, exchange rate, gold and money supply forecasts will be useful for banks' loan interest policies and decisions. On the other hand, it has been observed that most of the studies in the literature have been studied with a limited number of variables, especially for loan interest rates in banks. Very few of these studies have been researched by classifying personal loans. The large number of variables used distinguishes the study from other studies in the literature, and it is considered to add innovation to the literature.

In the first part of the study, information about the studies in the literature is given. In the second part, the methods used are explained and in the third part the data set is introduced. In the fourth chapter, the results obtained with the applications are presented in tables. In the last part of the study, findings and interpretation of the results, suggestions for the development of the study are included.

2. LITERATURE REVIEW

There are various interest rates in the economic structure. There are many studies in the literature that research on interest rates. However, in line with the purpose of the study, in this section, studies that use interest rates in the banking sector and are specific to the banking sector are compiled.

In most of these studies, the answer to the question of what kind of relationship exists between bank loans and economic growth has been sought. Some studies using data from Turkey as follows; Kar and Pentecost (2000), Güven (2002), Yılmaz et al. (2007), Altunç (2008), Ceylan and Durkaya (2010), Tuna and Bektaş (2013), Mercan (2013), Vurur and Özen (2013), Sever and Han (2015), Turgut and Ertay (2016), Torun and Karanfil (2016), Pehlivan et al. (2017), Apaydın (2018). According to the results obtained from these studies, it is noteworthy that there is no consensus on the relationship between bank loans and economic growth. On the other hand, the relationship between bank loans and economic growth has also been a matter of concern for different countries with different development levels. Studies examining this relationship in a wide geography are Levine and Zervos (1998), Beck and Levine

(2004), Mccaig and Stengos (2005), Pagano and Pica (2012), Duican and Pop (2015), Fufa and Kim (2017).

Another factor that is curious about its relationship with bank loans is inflation. Some of the studies examining the relationship between bank loans and inflation are Arslan and Yapraklı (2008), Akçacı and Method (2011), Peker and Canbazoğlu (2011), Korkmaz (2015), Kılıç and Torun (2018).

In studies involving various interest rates and macroeconomic variables applied by banks, it was generally carried out to examine the relationship between interest rate and inflation, exchange rate and money supply.

Ibicioglu and Karan (2009) investigated the effects of interest rates on personal loans in their studies covering the period 2004-2009. In the study, personal loans are the dependent variables, interest rate, ISE national index and consumer confidence index as independent variables. According to the causality analysis results of the study, unidirectional causality relationships from personal loan interest rate and ISE index to loan volume were found. In the regression model applied, it was seen that only the lagged values of interest rates on personal loans are significant.

Aytaç ve Sağlam (2014), examined the relationship between public deficits in Turkey, public debt, inflation, growth rate, and deposit interest rates with the VAR approach and causality using data from the 1980-2012 period. Accordingly, it has been concluded that interest rates affect public deficits through inflation. It has also been determined that the interest rate is the Granger cause of inflation.

Tanrıöver and Yamak's (2015) study carried out to test the Gibson paradox for Turkey's economy, have used the consumer price index and nominal interest rate as the variable. As a result of the application made with the cointegration analysis based on the ARDL Bound Test approach, the existence of a long-term relationship from the general price level to the nominal interest rate and the existence of Gibson paradox are accepted.

Another study examining the nominal interest rate and consumer price index was conducted by Tunalı and Erönel (2016). Studies using data in period 2003-2014 in Turkey relationship between two variables is demonstrated by taking into account the structural break Gregory Hansen test. According to the findings, there is a long-term relationship between nominal interest rate and inflation. The validity of the Fisher hypothesis is stated in the relevant period for Turkey.

In the study, the non-parametric regression method is used to investigate the impact of inflation on the weighted average exchange rate using Turkey's 2010-2015 period data. The findings reveal the existence of a positive and statistically significant relationship deposit interest rate with and exchange rate and inflation (Ekinci et.al, 2016).

Obeng and Sakyi (2017) examined the relationship between the interest rate spread and macroeconomic variables in Ghana in the period 1980-2013 using the ARDL boundary test approach and the Vector Error Correction model. As a result of the study, it was seen that the volatility of the exchange rate, fiscal deficit, economic growth, and commercial bank public borrowing increased the interest rate margin in the long and short term.

In their study, Akıncı and Yılmaz (2016) determined the relationship between the deposit interest rate and six different variables with Dynamic Least Squares (DOLS) analysis. Using the data for the period 1980-2012, it has been determined that inflation, current account balance, foreign debt service, money supply, exchange rate and economic growth are statistically significant on the interest rate. While the effect of money supply on the interest rate is negative, other variables have a positive effect.

Kartal (2019) aimed to identify the factors affecting the commercial loan interest rates in Turkey. The effects of 8 different variables were observed using quarterly data for the period 2006-2018 and the Multivariate Adaptive Regression Splines (MARS) method. Deposit interest, foreign trade balance, central bank reserve, dollar rate, M2 and inflation variables are effective on the interest rate.

The purpose of the study, in which commercial bank loan interest rate and producer price index, consumer price index, exchange rate and CBRT overnight interest rates are used, is to determine which of the interest rate and exchange rate is more effective on inflation. For this purpose, cointegration and causality analysis was conducted in the study, in which monthly data from July 2016-June 2019 were used. FMOLS results show that the change in the exchange rate is more than the producer price index on bank interest rates. Also, a relationship between the consumer price index and interest rates couldn't be determined (Ozen et al., 2020).

When the literature is examined, the bank loan interest rate has been used as the deposit interest rate, common the personal loan interest rate or the commercial loan interest rate in most of the studies. This situation in the study will contribute to the issue from a sectoral perspective.

3. METHODOLOGY

The analysis will be carried out using three methods. First, the long-term relationship between variables will be determined using the cointegration test. Afterward, the direction and size of long-term relationships of variables will be tested by the FMOLS method. Finally, the causality relationship between variables will be studied by the causality test. The methods to be used in the study are briefly explained below.

3.1 Co-Integration

Cointegration techniques are argued to be suitable for analyzing long-term relationship among the variables. There are some cointegration techniques in literature and Johansen cointegration test is one of them. This approach estimates the association between non-stationary series in the long-term by employing maximum probability procedure forecasting the numbers and parameters of cointegration relationship (Asteriou and Hall, 2011). Johansen (1988) and Johansen and Juselius (1990) developed the test method. This cointegration test follow the VAR approach to examine the long-term relationship among variables. To use Johansen's method, we need to turn the VAR of the form;

$$y_t = \beta_1 y_{t-1} + \beta_2 y_{t-2} + \dots + \beta_k y_{t-k} + u_t \quad (1)$$

into a VECM, which can be written as

$$\Delta y_t = \Pi y_{t-k} + \Gamma_1 \Delta y_{t-1} + \Gamma_2 \Delta y_{t-2} + \dots + \Gamma_{k-1} \Delta y_{t-(k-1)} + u_t \quad (2)$$

Π is long run coefficient matrix since all the $\Delta y_{t-i} = 0$. The test for cointegration between the y 's is calculated by looking at the rank of the Π matrix via its eigenvalues. The number of cointegrating vectors (r) is determined according to trace and maximum eigenvalue test statistics. The test statistics for cointegration are formulated as

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^g \ln(1 - \hat{\lambda}_i) \quad (3)$$

and

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^g \ln(1 - \hat{\lambda}_i) \quad (4)$$

where $\hat{\lambda}_i$ is the estimated value for the i th ordered eigenvalue from the Π matrix (Brooks, 2002).

3.2 Long Run Coefficient with FMOLS

Fully Modified Ordinary Least Square (FMOLS) estimator, proposed by Phillips and Hansen (1990), uses the preliminary estimates of symmetric and one-sided long-run covariance matrices of residuals. FMOLS estimator eliminate diagnostic problems in standard estimators. FMOLS models are categories of multiple time series models that directly estimate the long run effect of the independent variables on the dependent variables after correcting for the endogeneity problem in the time series. If FMOLS method developed by Phillips and Hansen (1990) is expressed as an $n + 1$ dimensional time series vector;

$$Y_t = X_t' \beta + D_{1t}' \gamma_1 + u_{1t} \quad (5)$$

where $D_t = (D_{1t}', D_{2t}')'$ denotes deterministic trend variables. After the long-term covariance matrices calculated from residuals and a series of operations are made, the FMOLS estimator as follows,

$$\hat{\theta}_{FMOLS} = \begin{bmatrix} \hat{\beta} \\ \hat{\gamma}_1 \end{bmatrix} = \left(\sum_{t=2}^T Z_t Z_t' \right)^{-1} \left(\sum_{t=2}^T Z_t y_t^* - T \begin{bmatrix} \hat{\lambda}_{12}^* \\ 0 \end{bmatrix} \right) \quad (6)$$

where $Z_t = (X_t', D_t')'$. The Fully Modified Ordinary Least Square estimator in Equation (6) is asymptotically unbiased and efficient.

3.3 Causality

Granger (1969) developed a relatively simple test that describes causality between variables. According to Granger, if the prediction of Y is more successful when the past values of X are used than when the

past values of X are not used (other terms are not changed), X is the Granger cause of Y. The following two models are used to perform the test.

$$Y_i = \beta_0 + \sum_{n=1}^i \beta_n Y_{t-i} + \sum_{n=1}^i \gamma_n X_{t-i} + \varepsilon \quad (7)$$

$$X_i = \beta_0 + \sum_{n=1}^i \beta_n X_{t-i} + \sum_{n=1}^i \gamma_n Y_{t-i} + \varepsilon \quad (8)$$

Here i indicates lag length and β_i and γ_i are predicted parameters. The Granger test is based on comparing the F statistics of the models by using two different models to explain the Y variable. Equation (7) indicates the causality from X to Y, Equation (8) indicates the causality from Y to X.

4. DATA

The aim of the study is to reveal how the interest rates on loans offered to consumers by banks are affected by macroeconomic data. In the study, consumer loan interest rate, mortgage loan interest rate, and vehicle loan interest rate were used as dependent variables. Consumer Price Index, exchange rate, gold price and money supply were included in the study as independent variables. Monthly data for the period January 2009-June 2020 were used in the analyzes. All of the data was obtained from the CBRT database and analyzes were carried out by taking the natural logarithm of all variables. The variables used in the study and their abbreviations are expressed in Table 1.

Table 1: Variables

Variable	Abbreviation
Interest rate of consumer credits	rate _{consumer}
Interest rate of mortgage credits	rate _{mortgage}
Interest rate of vehicle credits	rate _{vehicle}
Consumer price index	cpi
Gold price	gold
Exchange rate	usd
Money supply	M2

The stationarity levels of the series used in econometric applications are very important in terms of both determining the method to be used and obtaining appropriate results. For this purpose, the Augmented Dickey-Fuller Unit Root Test (ADF) (Dickey and Fuller, 1979) and Phillips-Perron Unit Root Test (PP) (Phillips and Perron, 1988) were used to perform stationarity analysis of the series.

Table 2: Unit root test results

Series	Level	Augmented Dickey-Fuller (ADF) Test		Phillips-Perron (PP) Test		Stationary Level
		Intercept	Trend+ Intercept	Intercept	Trend+ Intercept	
rate _{consumer}	Level	-2.542490 (0.1078)	-2.880198 (0.1723)	-2.191921 (0.2102)	-2.410835 (0.3723)	I(1)
	Difference	-6.370017 (0.0000)	-6.337326 (0.0000)	-7.058171 (0.0000)	-7.024845 (0.0000)	
	Level	-2.814540	-2.923970	-2.403508	-2.529910	

rate _{mortgage}		(0.0589)	(0.1583)	(0.1427)	(0.3134)	I(1)
	Difference	-6.737619 (0.0000)	-6.696372 (0.0000)	-6.418531 (0.0000)	-6.373356 (0.0000)	
rate _{vehicle}	Level	-2.137681 (0.2304)	-2.560611 (0.2991)	-2.071067 (0.2567)	-2.538436 (0.3094)	I(1)
	Difference	-7.613555 (0.0000)	-7.576543 (0.0000)	-7.650351 (0.0000)	-7.614070 (0.0000)	
usd	Level	1.305430 (0.9986)	-2.905101 (0.1643)	1.139190 (0.9977)	-2.335854 (0.4116)	I(1)
	Difference	-8.666025 (0.0000)	-9.030514 (0.0000)	-7.836896 (0.0000)	-7.872256 (0.0000)	
cpi	Level	2.443518 (1.0000)	-0.477718 (0.9835)	2.497147 (1.0000)	-0.780828 (0.9641)	I(1)
	Difference	-6.624796 (0.0000)	-7.229525 (0.0000)	-8.801683 (0.0000)	-9.077803 (0.0000)	
gold	Level	0.850704 (0.9946)	-0.611220 (0.9766)	0.869588 (0.9949)	-0.708674 (0.9699)	I(1)
	Difference	-10.06504 (0.0000)	-10.18566 (0.0000)	-10.01092 (0.0000)	-10.13692 (0.0000)	
M2	Level	1.785424 (0.9997)	-0.866205 (0.9559)	2.078941 (0.9999)	-0.843233 (0.9582)	I(1)
	Difference	-11.67457 (0.0000)	-11.95874 (0.0000)	-11.67458 (0.0000)	-12.00539 (0.0000)	

Note: The first of the numerical expressions written opposite the level and difference values shows the test statistics. The value in brackets shows the probability values according to the Schwarz statistical information criterion for ADF and according to the kernel method "Barlettkernel" and bandwidth "Newey West bandwidth" method for PP.

When the unit root test results in Table 2 are examined, it is seen that the series have unit root in level for both unit root tests. That is, the level values of the series are not stable. On the other hand, when the first difference of the series is taken, the null hypothesis, which expresses the presence of unit root for all variables, was rejected at the 1% significance level in unit root tests. Based on these results, the econometric analysis will be carried out by considering the I (1) case of the series being stationary at the first difference.

5. ANALYSIS RESULTS

The Johansen Cointegration Test was conducted to investigate the existence of a long-term relationship among the variables that are stationary in difference during the application phase. In order to reveal how consumer loan interest rate, mortgage loan interest rate, and vehicle loan interest rate offered by banks are affected by macroeconomic data, three different models have been defined in the study. In these models, the interest rate of each loan is the dependent variable and macroeconomic variables are independent variables. The models used in the study are as follows.

$$\text{Model-1: } rate_{consumer} = cpi + usd + gold + M2 + \varepsilon$$

$$\text{Model-2: } rate_{mortgage} = cpi + usd + gold + M2 + \varepsilon$$

$$\text{Model-3: } rate_{vehicle} = cpi + usd + gold + M2 + \varepsilon$$

5.1 Co-integration Relationship Results

First of all, in order to see whether there is a long-term relationship between variables, the cointegration method developed by Johansen (1988) and Johansen & Juselius (1990) was used for cases where all variables are stationary at the same level. All variables included in the analysis are stationary in I (1). Before applying the cointegration test, VAR models were created for each model, then the appropriate lag length was determined according to the Akaike (AIC) information criterion. Accordingly, the most suitable lag lengths were determined as 2 for Model-1, 3 for Model-2, and 2 for Model-3. The results of Johansen (1988) and Johansen & Juselius (1990) cointegration test performed with determined lag lengths are given in Table 3.

Table 3: Johansen co-integration results

Model-1						
Hypothes	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
r =0*	101.5807	88.80380	0.0044	45.99165	38.33101	0.0055
r ≤ 1	55.58901	63.87610	0.2042	21.46753	32.11832	0.5352
r ≤ 2	34.12148	42.91525	0.2829	18.05075	25.82321	0.3733
r ≤ 3	16.07073	25.87211	0.4869	9.831059	19.38704	0.6369
r ≤ 4	6.239675	12.51798	0.4305	6.239675	12.51798	0.4305
Model-2						
Hypothes	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
r =0*	84.88747	69.81889	0.0020	39.92232	33.87687	0.0084
r ≤ 1	44.96516	47.85613	0.0911	24.10236	27.58434	0.1312
r ≤ 2	20.86280	29.79707	0.3663	14.11481	21.13162	0.3557
r ≤ 3	6.747991	15.49471	0.6071	4.527957	14.26460	0.7998
Model-3						
Hypothes	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
r =0*	74.25218	69.81889	0.0212	35.91222	33.87687	0.0282
r ≤ 1	38.33996	47.85613	0.2874	21.17042	27.58434	0.2660
r ≤ 2	17.16953	29.79707	0.6275	10.17830	21.13162	0.7277
r ≤ 3	6.991229	15.49471	0.5787	6.092740	14.26460	0.6013

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

As a result of the comparison of the obtained maximum eigenvalue and trace statistics with the critical values, it is seen that there is at least 1 cointegration vector at 5% significance level in all three models. According to these results, it is possible to mention that a long-term equilibrium relationship between variables is valid during the analysis period.

5.2 FMOLS Results

After determining that there was at least one cointegration relationship between variables for all three models, Fully Modified Least Squares Regression (FMOLS) was used to obtain information about the direction and size of the long-term relationship between dependent variables and independent variables.

The results of the FMOLS regression are given in Table 4 for three models in which bank loan interest rates are the dependent variable, inflation, gold, exchange rate, and money supply as independent variables.

Table 4: FMOLS regression results

Dependent Variable rate_{consumer}			
FMOLS			
Variables	Coefficients	t-statistics	Prob.
C	25.96401	5.254928	0.0000
cpi	1.035588	1.076700	0.2836
usd	1.255147	4.344250	0.0000
gold	-0.114258	-0.641146	0.5225
M2	-1.422990	-3.398446	0.0009
R ² = 0.538595		Adj. R ² = 0.524613	
Dependent Variable rate_{mortgage}			
FMOLS			
Variables	Coefficients	t-statistics	Prob.
C	27.04429	5.787268	0.0000
cpi	0.970869	1.067263	0.2878
usd	1.427407	5.223616	0.0000
gold	-0.234914	-1.393743	0.1657
M2	-1.451961	-3.66370	0.0004
R ² = 0.596628		Adj. R ² = 0.584404	
Dependent Variable rate_{vehicle}			
FMOLS			
Variables	Coefficients	t-statistics	Prob.
C	27.76616	6.254569	0.0000
cpi	1.091769	1.263355	0.2087
usd	1.703857	6.563569	0.0000
gold	-0.414303	-2.587474	0.0108
M2	-1.484857	-3.946840	0.0001
R ² = 0.727888		Adj. R ² = 0.719642	

In each model, the determination coefficient (R²) expressing how much percentage of the dependent variable explains by the independent variables in the model was found to be 54% for Model-1, 60% for Model-2, and 73% for Model-3, respectively.

In Model-1, it is seen that the coefficients of the variables of the exchange rate and money supply are statistically significant, the increase in the exchange rate affects the consumer loan interest rate positively and the increase in the money supply negatively. In the 1% increase in the money supply, the consumer loan interest rate decreases by 1.42%. On the other hand, it is seen that the 1% increase in the exchange rate increased the consumer loan interest rate by 1.26%. The coefficients for gold and inflation in the model are not statistically significant.

Model-2 produced similar results to Model-1. 1% increase in the exchange rate increases the mortgage loan interest rate by 1.43%, and a 1% increase in the money supply decreases the loan interest rate by 1.45%, the coefficient of both variables is statistically significant. As in Model-1, the coefficients of inflation and gold price variables are not statistically significant.

In Model-3, where vehicle loan interest rate is the dependent variable, it was observed that the coefficients of the variables of the exchange rate, gold price, and money supply were statistically

significant. In the model, if the exchange rate increases by 1%, the vehicle loan interest rate will increase by 1.7%. And 1% increases in gold and money supply will decrease the vehicle loan interest rate by 0.41% and 1.48%, respectively. The coefficient of the inflation variable is not statistically significant.

5.3 Causality Analysis Results

In the final stage of the study, it was investigated whether there is a causality relationship between variables. For this purpose, Granger Causality Test was used. Table 5 shows the Granger causality test results for Model-1.

Table 5: Causality test results for Model-1

Hypothesis	X ² Statistic	Probability	Direction of Causality
M2 does not Granger cause rate _{consumer}	7.414382	0.0245	rate _{consumer} ↔ M2
rate _{consumer} does not Granger cause M2	11.07139	0.0039	
gold does not Granger cause rate _{consumer}	1.783849	0.4099	
rate _{consumer} does not Granger cause gold	5.942787	0.0512	rate _{consumer} → gold
cpi does not Granger cause rate _{consumer}	8.636556	0.0133	rate _{consumer} ↔ cpi
rate _{consumer} does not Granger cause cpi	7.352660	0.0253	
usd does not Granger cause rate _{consumer}	5.309210	0.0703	rate _{consumer} ← Inusd
rate _{consumer} does not Granger cause usd	1.630570	0.4425	

→ means unidirectional causality relationship.
 ↔ means bidirectional causality relationship.

According to the results of the causality test in Table 5, it is seen that the consumer loan interest rate and money supply variables have a bidirectional causality relationship at 1% and 5% significance levels. On the other hand, there is a bidirectional causality relationship between consumer loan interest rate and inflation variables at the 5% significance level. According to the results, the unidirectional causality relationship was determined from the consumer loan interest rate to the gold variable at the 10% significance level. The unidirectional causality relationship from the exchange rate variable to the consumer loan interest rate was determined at a 10% significance level. Table 6 shows the Granger causality test results for Model-2.

Table 6: Causality test results for Model-2

Hypothesis	X ² Statistic	Probability	Direction of Causality
M2 does not Granger cause rate _{mortgage}	0.306712	0.8578	
rate _{mortgage} does not Granger cause M2	11.13541	0.0038	rate _{mortgage} → M2
gold does not Granger cause rate _{mortgage}	2.828155	0.2431	rate _{mortgage} / gold
rate _{mortgage} does not Granger cause gold	2.612869	0.2708	
cpi does not Granger cause rate _{mortgage}	0.937156	0.6259	rate _{mortgage} / cpi
rate _{mortgage} does not Granger cause cpi	2.876794	0.2373	
usd does not Granger cause rate _{mortgage}	13.19501	0.0014	rate _{mortgage} ← usd

rate _{mortgage} does not Granger cause usd	0.209708	0.9005
→	means unidirectional causality relationship.	
—/—	means no causality relationship.	

According to the causality test results in Table 6, it is seen that there is a unidirectional relationship at the level of 1% significance from the mortgage loan interest rate to the money supply variable. There is a causality relationship at the 1% significance level from the exchange rate variable towards the mortgage loan interest rate. According to the results, no causality relationship was found between the mortgage loan interest rate with gold and inflation variables. Table 7 shows the Granger causality test results for Model-3.

Table 7: Causality test results for Model-3

Hypothesis	X ² Statistic	Probability	Direction of Causality
M2 does not Granger cause rate _{vehicle}	7.000012	0.0302	rate _{vehicle} ↔ M2
rate _{vehicle} does not Granger cause M2	4.705418	0.0951	
gold does not Granger cause rate _{vehicle}	8.243643	0.0162	rate _{vehicle} ↔ gold
rate _{vehicle} does not Granger cause gold	4.967909	0.0834	
cpi does not Granger cause rate _{vehicle}	4.985074	0.0827	rate _{vehicle} ↔ cpi
rate _{vehicle} does not Granger cause cpi	7.898394	0.0193	
usd does not Granger cause rate _{vehicle}	11.92646	0.0026	rate _{vehicle} ← usd
rate _{vehicle} does not Granger cause usd	1.487588	0.4753	
→	means unidirectional causality relationship.		
↔	means bidirectional causality relationship.		

According to the causality test results in Table 7, the bidirectional causality relationship between the vehicle loan interest rate variable and the money supply, gold, and inflation variables at 5% and 10% significance levels was determined. On the other hand, the unidirectional causality relationship from the exchange rate variable to the vehicle loan interest rate is seen at the 1% significance level.

6. CONCLUSION AND DISCUSSION

The study aimed to investigate the relationship between bank loan interest rates and economic indicators such as exchange rate, gold price, money supply and inflation, monthly data between 2009 and 2020 were included in the study. Bank loan interest rates are handled in three different models as consumer loan, mortgage loan and vehicle loan interest rates. In all three models established, loan interest rates took place as dependent variables and macroeconomic variables as independent variables.

The stationarities of the series included in the study were primarily examined by ADF and PP unit root tests, and it was concluded that all variables were stationary at the first difference. Johansen Cointegration Test was conducted to determine the long-term relationship between variables for three

different models established. The existence of at least one cointegration relationship between variables was observed in all three models.

FMOLS regression, which deals with the second-order asymptotic bias problem arising from serial correlation and endogeneity and which is asymptotically equivalent and effective, was used in order to be informed about the direction and size of long-term relationships of variables with cointegration relationship. In Model-1 and Model-2, where consumer loan interest rate and mortgage loan interest rates are dependent variables, the coefficients of the exchange rate and money supply variables were found to be statistically significant. While the exchange rate variable had a positive effect on bank loan rates, the money supply variable had a negative effect. In Model-3, where vehicle loan interest rate is the dependent variable, unlike other models, it is seen that the coefficient of the gold, as well as the variables of the exchange rate and money supply, is statistically significant.

According to these results, it is seen that the coefficient value of the statistically significant exchange rate variable in all three models is the highest in Model-3. This situation can be explained by the fact that the automotive sector is heavily dependent on foreign countries and imports are made depending on the exchange rate. Most of the studies examining the effect of exchange rate on interest rate in the literature have determined that exchange rate and interest rate are related. An important part of the studies argues that this relationship is positive, Ekinci et al. (2016), Akıncı and Yılmaz (2016), Kartal (2019), Vurur (2020) are just a few of them.

The fact that the coefficient of the money supply variable, which has a statistically significant coefficient in the models, turned out to be negative, coincides with the studies in the literature. Some studies concluding that the money supply affects the interest rate negatively; Akıncı and Yılmaz (2016), Kartal (2019).

Comparing the determination coefficient of the models, it is noteworthy that the R² value of the model in which the vehicle loan interest rate is used is higher than the others. This situation can be interpreted as the macroeconomic dimension of the automotive sector, which is one of the indicators of economic growth and welfare, is higher than other loans. The results are proof that interest rates should be carefully evaluated in terms of affecting investment and consumption expenditures within the economic structure and thus affecting various sectors. In this respect, it is important to follow the interest rate within the framework of economic policies and keep it as low as possible (Kartal, 2019).

The increase in inflation increases the interest rates of banks and so increases the costs of borrowers (Arslan ve Yapraklı, 2008). However, according to the results obtained from our study, the coefficient of the inflation variable in the model established for all three types of loan interest rates is not statistically significant. These findings obtained between the inflation variable and the bank loan interest rate support the Classical Interest Theory. These findings obtained between the inflation variable and the bank loan interest rate support the classical interest theory. The theory argues that money is neutral in the long run. This means that the real interest rate will be affected by the changes in the amount of money in the short term and will return to its previous level in the long term (Tanrıöver ve Yamak, 2015). On the other

hand, the results obtained are in contrast with the Fisher Hypothesis, which states that nominal interest rates and inflation have a positive relationship in the long run (Fisher, 1930). In some of the studies in the literature supports this hypothesis and some of them shows not valid for Turkey. Some of the studies supporting the hypothesis; Şimşek and Kadılar (2006), Alçam (2003) and some of the studies suggesting that it is not valid are Çakmak et al. (2001), Yılcı (2010).

In the last part of the study, Granger causality test was used to investigate causality relationships between variables. In the model in which the consumer loan interest rate is the dependent variable, it is determined that the interest rate and money supply and inflation affect each other mutually. It also appears that the interest rate is a reason for gold prices. In the model in which the mortgage loan interest rate is used, there is a causality relationship between the interest rate and the money supply. Another determination for this model is that gold price, inflation and interest rate do not interact. In the model where the vehicle loan interest rate is included, the interest rate has a mutual relationship with money supply, gold price, and inflation. The only factor that shows similarity in all three models is the relationship determined from exchange rate to interest rates.

The results obtained show that consumer loans, mortgage, and vehicle loans interest rates can be affected differently from economic data. In addition, the results are expected to guide policymakers in applying different interest rates for sectors that have a strong contribution to economic growth with high added value.

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