

**T.C.
ISTANBUL AYDIN UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES**



**SHADOW ECONOMY IN TURKEY
“RELATIONSHIP BETWEEN TAXES AND SHADOW ECONOMY”**

THESIS

Mouna ELKHARRAS

**Department of Business
Business Administration Program**

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December, 2019

T.C.
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LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ MÜDÜRLÜĞÜ



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*To my parents;
Who, far from me, cannot take part in this happy event,
God bless you for your patience to me,
I owe you the fruit of this work.*

DECLARATION

I hereby declare with respect that the study “Shadow Economy In Turkey: The Relationship Between Taxes And Shadow Economy”, which I submitted as a Master thesis, is written without any assistance in violation of scientific ethics and traditions in all the processes from the Project phase to the conclusion of the thesis and that the works I have benefited are from those shown in the Bibliography. (29/11/2019)

Candidate

Mouna ELKHARRAS

FOREWORD

This thesis is about the effect of taxes on the shadow economy in Turkey. Worked essentially on the data from OECD stats and analyzed using the statistics basics, correlation tests, unit roots tests and regression test in order to examine the effect.

First of all, I am thankful to ALLAH; I would like to thank my mother Hafida KADDOURI, my father Rahal ELKHARRAS, my sisters and my brother for their invaluable support in general , and moral support during the master courses and this research. My appreciations and warm thanks to my friends for their help in my studies and life in Turkey.

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Mouna ELKHARRAS

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ABBREVIATIONS

DYMIMIC	: Dynamic Multiple Indicators Multiple Causes
EC	: European Commission
FC	: Final Effective Consumption
GDP	: Gross Domestic Product
GFCF	: Gross Fixed Capital Formation
GNP	: Gross National Product
GOS	: Gross Operating Surplus
GVA	: Gross Value Added
ILO	: International Labor Organization
IMF	: International Monetary Fund
IRS	: Internal Revenue Service
LISREL	: Linear Independent Structural Relationship
MIMIC	: Multiple Indicators Multiple Causes
OECD	: Organization For Economic Cooperation And Development
OSP	: Other Subsidies On Production
OTP	: Other Taxes On Production
SE	: Shadow Economy
SP	: Subsidies On Products
TP	: Taxes On Products
VAT	: Value Added Tax
WB	: World Bank
WIEGO	: Women In Informal Employment Globalizing And Organizing
CIT	: Corporation Income Tax
PT	: Property tax
TTR	: Total Taxes Revenues
GST	: Goods and Services Taxes
LF	: Labor Force
CFTT	: Capital and Financial Tax
UNEMP	: Unemployment
TR	: Tax Revenue
IIT	: Individual Income Tax

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SHADOW ECONOMY IN TURKEY: THE RELATIONSHIP BETWEEN TAXES AND SHADOW ECONOMY

ABSTRACT

This work focuses on the understanding of what has been wrongly called the “informal economy”. The aim of this thesis is to show that this shadow economy is, in fact, a set of strategies implemented by socio-economic actors in need of filling a gap. This lack is expressed either through the search for additional income or new income, or through the creation of income never available before. Hence, in this study we made in light the concept of shadow economy, its types and activities and factors that could have an impact on it, we choose to study the relationship between all of unemployment rate, corporation income tax, interest rate, goods and services tax, value added tax, revenue tax, labor force participation rate, labor force ratio, property tax, individual income tax, capital and financial transactions tax, and total revenue taxes on the size of the shadow economy within developing countries, especially Turkey which is the subject of the study. The theoretical work is basically from the literature review about shadow economy, from previous studies and in points of view of dominant schools of thoughts and researchers, besides the evolution of this phenomenon, causes, classification. The research is basically done in quantitative methods, data collected from OECD about Turkey and Sweden and analyzed by utilizing basic statistics and transferred to SPSS and analyzed. Descriptive statistics and correlation tests in order to test the authenticity of hypothesis. The results indicate that there is an effect of taxes and the size of the shadow economy in different way. The regression results indicate that there is a significant strong relationship between individual income tax, capital and financial transactions tax, and property tax and the GDP growth, hence, by the end there is an effect of taxes on the shadow economy

Key Words: *Shadow economy, total revenue taxes, interest rate, OECD, Turkey.*

TÜRKİYE'DE VERGİLER VE KAYIT DIŐI EKONOMİ ARASINDAKİ İLİŐKI

ÖZET

Bu alıŐmanın amalarından biri “kayıt dıŐı ekonomi” olarak adlandırılan kavramın detaylı bir Őekilde anlaŐılmasını saėlamaktır. Bir aıdan gölge ekonomi olarak da adlandırılan bu kavramın aslında bir boŐluėu doldurmaya ihtiya duyan sosyo-ekonomik aktörler tarafından uygulanan bir dizi strateji olduėunu göstermektir. Bu nedenle bu alıŐmada bu kavramın eŐitlerini, yararlarını ve zararlarını araŐtırıp deėerlendirerek, bu kavramı etkileyen faktörleri veya bu kavramla iliŐkilendirilebilecek faktörleri belirlemeyi hedefledik. İŐsizlik oranı, kurum gelir vergisi, faiz oranı, mallar ve hizmet vergisi, katma deėer vergisi, gelir vergisi, iŐgücüne katılma oranı, iŐgücü oranı, emlak vergisi, bireysel gelir vergisi, sermaye ve finansal iŐlemler vergisi gibi deėiŐkenleri inceledik.

alıŐmanın teorik kısmında temel olarak kayıt dıŐı ekonomi hakkındaki literatür incelemesinden, önceki alıŐmalardan detaylı bir Őekilde bahsedilmiŐtir. alıŐmanın analiz kısmında ise OECD’ye üye olan İsve ve Türkiye detaylı bir Őekilde incelenmiŐtir. Hipotezlerin gerekliėini test etmek için tanımlayıcı istatistikler ve korelasyon testleri de uygulanmıŐtır. Analizlerden elde edilen bulgularda, vergilerin ve kayıt dıŐı ekonominin farklı bir Őekilde etkili olduėu gözlemlenmiŐtir. Regresyon sonuçları ise bireysel gelir vergisi, sermaye ve finansal iŐlemler vergisi ile emlak vergisi ve GSYİH büyümesi arasında önemli bir güçlü iliŐki olduėunu göstermektedir, bu nedenle vergilerin kayıt dıŐı ekonomisi üzerindeki etkisi olduėu gözlemlenmiŐtir.

Anahtar Kelimeler: *Kayıt dıŐı Ekonomi, Gelir Vergisi, Faiz Oranı, Türkiye.*

1. INTRODUCTION

The notion of shadow remains an invention reflecting the inability to define a sociocultural and economic reality. Its popularization by international institutions and organization by international institutions and organizations has been the basis of many programs and formalization projects, whose objective was the integration of the informal sector into the national development process of developing countries, including Turkey.

Today, as yesterday, formalization approaches have shown, not their weakness, but rather their incapacity and “illegitimacy”. The problem is the definition, that is to say, the very characterization of what is called, so to speak, erroneously informal economy or unregistered economy, illegal economy, parallel economy or shadow economy, etc... We must believe that this so called informal economy, illegal, unregistered, shadow, will continue to make its merry way, thus constituting this form of resistance to the other, which is reflected in the fight for the right to existence and refusal to be phagocytized by the other. My study thus shows that economies, still invisible, want to emerge through the apparent disorder. These economies would be more of survival strategies than a “shadow economy”, two very distinct concepts of each other.

The shadow economy or the underground, secondary, informal sector is a controversial term, which was first coined in 1972, in the International Labor Organization (ILO) report on Kenya, even that the subject has entered the academic debate after the world war II (*ILO 1972*). Throughout the academic literature, the term shadow economy has been used interchangeably with terms such as informal work, informal sector, and informal economic activity. While attempting to describe those economic activities that are not covered by formal arrangement, the literature itself presents a merging of the term as studies refer to the informal economy as follow: irregular economy (*Ferman, 1973*), subterranean economy (*Guttman, 1977*), the underground economy (*Simon and White 1982, Houston 1987*), The black

economy (*Dilnot and Morris 1981*), and the shadow economy (*Frey, Weck and Pomeerehne 1982, Cassel and Cichy 1986*).

Various terms refer to the phenomenon of the underground economy: the black economy, the informal economy, and so on. To these terms are associated several definitions. In theory, the ambiguity around this concept and the difficulty of quantifying it partly explain the attention it raises. At the community level, the underground economy also affects well-being. In fact, it is reflected in various ways (e.g., in terms of welfare and resource allocation) in labor markets, the currency, and in consumption and production. On the other hand, it is obvious that the underground economy involves fiscal losses for governments, but by which scale?

The current formal economy is governed by Western rules of operation and management, while the informal economy is endogenous. Thus, the success of most “microenterprises” in the so called informal sector yet struggling with a hostile environment and deprived of all state aid, is mainly due to the ability of entrepreneurs to reconcile socio-cultural values with the necessary economic efficiency.

Numerous studies have been conducted to measure the size of the underground economy and its tax impact in Turkey. Several researches provide relevant information to deepen knowledge on the state of the situation in Turkey. However, in 1996, with the help of a survey, Fortin et al., estimated a lower bound on the size of the underground economy. As a continuation of this research, it involves estimating its impact on the Turkish government’s tax revenues using tax rate data.

Since the 1980s, the World Bank (WB) and the International Monetary Fund (IMF), with reform programs, have put increasing pressure on governments to reduce state intervention in a number of activities. The privatization of state-owned enterprises has become a major issue, while the role of the state in these reformed economies is becoming precarious, which may result in the following: “*The one that failed yesterday, must lose some of his power*”. It was suggested that certain government functions that were considered administrative be delegated to non-governmental organizations. The rationale behind public sector reform is, as a rule, reflected in: “*Let others do it if they are more profitable*”.

As a result, the public sector reforms that accompanied the structural adjustment programs made the decision to reduce the size of public services by removing civil servants employed in the administration and by attempting to privatize public or semi-public businesses. The pressure to delegate certain administrative roles of the state to other institutions intensified.

On the other side, the small business economy plays a significant role in the rapidly changing world. Its flexibility has been the driving force behind the growing share of small businesses in for-profit activities, job creation, innovation activities, economic growth and other economic and social indicators of the economy. Nevertheless, small businesses are disproportionately exposed to strict regulation, high taxation, bureaucratic burdens and even corruption (*Aidis, 2008*), (*Bartlett et al., 1998*), (*Borozan et al., 2005*). It is therefore thought that it is a subject to leakage in the underground economy. On the other hand, the growing internationalization of the economy and the increasing competitive pressure on the market has fostered flexibility and innovation. But, along with the growth of small businesses, income inequality has worsened. In such a difficult global context, people have been forced to look for other sources of income. This has further encouraged and increased the activities of small businesses, but at the same time, many of the new businesses have been created in the shadow economy. High taxes and high bureaucratic transaction costs have increased this passage into the shadow economy.

European Commission (EC) (2004) and Organization for Economic Cooperation and Development (OECD) (2010) point to a direct causality between small firms, as indicated by the number of self-employed, and the underground economy. It is assumed that small businesses, being flexible and easy to conceal from the authorities, have more opportunities to work undetected in the underground economy. In addition, higher taxes and other regulations increase incentives to hide (*Johnson et al., 1997*). Although this link is reasonable, the entire correlation between small business and the underground economy cannot be attributed to this direct effect alone. Tax wedge, labor market regulation, administrative transaction costs, investment climate, income inequality, and other variables affect small businesses and the shadow economy (*Djankov et al., 2003*), (*OECD, 2010*), (*Schneider and Enste, 2002*), (*Mesnard, Ravallion, 2003*), (*Aidis, 2008*), (*Bartlett et al., 1998*). Finding the true link between the quantities and variables studied, namely

small business and the underground economy, it is critically important since small business is a desired quantity, besides that it promotes economic growth and development, what government is struggling with, since it involves a violation of government rules. Hence, this amount should be reduced to a minimum.

In this study, a group of variables will be selected to test the effect of taxes on the shadow economy, and a comparison between Turkey and another country with lower size of shadow economy will be made in order to check how much are the variables chosen the reasons behind the shadow economy, to do so, Sweden has been chosen.

Thus, the study is divided into two parts. The first one will discuss the theoretical framework of the study, the introduction to shadow economy, causes, evolution, measures and its types will be presented.

On the other hand, the second part will be addressed to practical study, the study tool and the methodology followed for data collection will be discussed, the research method used in this thesis, besides that the hypothesis test will be mentioned. The analysis will be based on the study of the relationship between the variables, and the nature of the impact of taxes on the shadow economy since it is the subject of the study of this research.

2. LITERATURE REVIEW

2.1 Introduction

The main objective of this study is to understand whether there is a relationship between shadow economy and taxes in Turkey. This thesis reviews existing academic and professional literature supporting the research problem, research question besides the significance of the study. Also, this chapter reviews theoretical foundations and backgrounds of key constructs, which is considered shadow economy and small business's development.

This chapter looks up to provide the theoretical and analytical foundations of this study. As it reviews the discussion of the literature surrounding the shadow economy, with highlighting definitions besides theoretical framework in the light of the literature to put in words the understanding of the shadow economy, which is the subject of this study, the evolution of shadow economy beside the types of this phenomenon and typology of activities operating in this sector, as well as, the causes of shadow economy. Furthermore, making points clear about state intervention in the underground economy with specific emphasis given to the role of active labor market programs and government service development. It also pins down the different reasons of shadow economy. Focusing on discussing the decent framework promoted by the ILO and its connection to the notion of working in the underground economy. Moreover, it will present an explanation of the gap in the management research as in the economics regarding the use of informal versus formal economies.

2.1.1 Shadow economy

The shadow designation involves an area of economic activity in which participants prefer to stay out of sight. (*Schneider, 2010*) go so far as to say that "Doing a research in this area can be considered as a scientific passion to know the unknown". In addition, the formal definition of the shadow economy is the subject of lengthy reports (*Schneider, 2011*). I contend that the shadow economy activity consists of a market activity deliberately undertaken in a manner that eludes detection by public

officials. While this definition potentially includes both illegal activity and what would be legal if not deliberately concealed. Hence, according to this definition, illegal drug traffickers and illegal black marketers both contribute to the shadow economy.

The so called shadow economy (SE) does not only present an economic reality. To study it is also not simply to try to understand a certain economy, which would be anti-capitalist, “irrational”. For the sociologist, on the contrary, the so called shadow economy presents a reality well beyond the economic one. It questions society and opens the way to a broader understanding of this society. The approach of a developing society through the informal activities can give rise to the study of a total social reality, the study of a reality which makes it possible to grasp, beyond the economy, society itself. It then makes it possible to link together economic, social, political and cultural issues by emphasizing each aspect as it should understand the society as it should be understood.

The existence of an important shadow economy is above all a sign of a serious dysfunction of the formal economy or public services of the state, a first critical issue related to the definition of the shadow economy. Since the mid-century, the shadow economy has become an important topic by the researchers (*Gouldner, 1954. Blau, 1957*), at the very beginning, the studies focused essentially on the informal economy in the developing countries (*e.g., Hart, 1973*). After that, the researchers focused on the developed countries to study the shadow economy (*Gerxhani, 2004*). The recent works have concentrated essentially on the conceptualization of the shadow economy besides its significance (*Harding and Jenkins, 1989. Hernando, 1990. Feige, 1990*). Therewith, the conflation of the exact definition of the term “shadow economy” have pushed the researchers to find different definitions of shadow economy relying on political, social and economic criteria, it might be defined as follow:

The European commission (EC) defines the shadow economy as follow: “The shadow economy groups together economic activities and the resulting revenues that circumvent or escape the regulatory or fiscal provisions of the public authorities”. It is largely undeclared (about two thirds), that is, income that workers and businesses do not declare to evade taxes or to avoid administrative burdens. The rest of the shadow economy is the actions of companies that only report a portion of their profits to avoid tax regulations.

The generic term of shadow economy encompasses a wide range of activities from illegal legal activities to illegal activities. Given this diversity, a census of underground activities is a prerequisite for any attempt to measure their importance in relation to the wealth produced annually within a country (*Barthélémy, 2018*).

Equally important, it could be defined as, the part of the economy based on clandestine work or illegal activities which are not taken into account in national statistics. It groups three different forms of activity: The shadow economy generated by dark work, the economy generated by economic crime and the economy generated by criminal or tortuous activities and their receiving.

Others pointed out that the shadow economy definition is “market-based production of goods and services, whether legal or illegal, that escapes detection in the official estimates of gross domestic product (GDP)” (*F. Schneider and C. Williams 2013*).

Equally important, shadow economy is a combination of both legal and illegal activities that go unreported by the government. There is a lack of consensus in the definitions of the term underground economy (*Öğünç and Yilmaz 2000*).

(*Schneider, 1986*) also stated that a shadow economy is simply all economic activities that should be included in value added and should be incorporated in the national income but have not been reported to the government. In contrast, (*Smith, 1994*) stated that the shadow economy is the total sum of the market basket of products and services, whether legal or illegal, that has not been added to the yearly registered GDP of a specific country. (*Enste and Schneider, 2000*) further emphasized that the shadow includes literally all activities that should be added to national income but have not been. Furthermore, (*Chye. 2011*) defined the shadow economy as all transactions, whether legal or illegal, that escape government observation, regulation, and taxation.

Another definition sites that, the shadow economy represents a situation in which informal institutions support business activity, while formal institutions view this activity as illegal and do not give any support to resources to that promote the growth due to the low quality of insecure institutions or absent institutions (institutional voids) (*Godfrey, 2011*). And by, as a consequence, business in areas with higher institutional voids occurs often in institutional environment which can be classified as informal institutional environments.

The Wikipedia definition mentions that, the shadow economy is a clandestine market or series of transactions that has aspects kind of illegality or is characterized by some form of noncompliant behavior with an institutional set of rules. If the rule defines the set of goods and services whose production and distribution are prohibited by law, non-compliance with that rule constitutes a market called black market where the transaction itself is illegal.

The term shadow economy has been defined also as, the diversified set of economic activities, enterprises, jobs, and workers that are not regulated or protected by the state. The concept originally applied to self-employment is small unregistered enterprises. It has been expanded to include wage employment in unprotected jobs (*WIEGO, 2018*).

(*Çiloğlu, 1998*), defined the shadow economy as : “ All of the economic activities used to obtain the GNP accounts and which are not estimated according to known statistical methods “. In the tax context, (*Altuğ, 1994*), mentioned: “Tax incentives or avoidance of tax incentives and activities of tax administration out of knowledge”. And according to (*Smith, 1994*), the shadow economy is defined as follow: “Market and market-based, legal or illegal, service production which is not included in official GDP estimates”. We consider the definition as well provided by (*Sarılı, 2002*), “All kind of economic transactions and activities outside of the control of public administrations”, besides (*Choi and Thum 2005*) definition: “Activities not included in official statistics”

As it should be noted that the shadow economy is context dependent, which is, what is illegal and legitimate in one country might be illegal in another country. For instance, alcohol trading is legal and legitimate in Turkey, while it is illegal and legitimate in some Gulf countries, and illegal and illegitimate in other countries.

2.1.2 The evolution of shadow economy

Since its discovery in the 1970s, the shadow economy and its role in economic development have been heatedly debated. From 1950s- 1960s, it was assumed that, modern economies and petty traders, small producers and many casual jobs would be absorbed into the formal economy with the right mix of economic policies and resources, low income traditional economies could be transformed into dynamic. By the mid-1960s, optimism about economic growth in developing countries has begun

to give way to concerns about widespread unemployment and persevering traditional economy. By the 1970s, British anthropologist Keith Hart coined the term “informal sector” during his study about economic activities among rural migrants in Accra on 1971, Ghana (*Hart, 1973*). Hart concluded that, despite external constraints besides capitalist domination, the overwhelming majority of migrants were engaged in informal activities that had “autonomous capacity for generating incomes”.

By the 1980s, the debate widely expanded to include changes occurring in developed capitalist economies, in which production was reorganized into small and more flexible economic units. These kinds of changes were associated with the informalization of employment. Standard jobs switched to non-standard jobs, where wages were hourly and the benefits were too weak, and the production was contracted on piece rate without any benefit to small units and industrial workers. On that phase, the informal economy turned into a permanent and dependent feature of capitalist development. Also, during the 1990s, globalization contributed to the informalization of the workforce in many countries.

More recently, there was a renewed interest in the informal economy over the globe. In fact, since the shadow economy has not only grown, but also emerged in new shapes and in unexpected area. Informal employment expanded conspicuously during this recession (*Horn 2009*). While interest in the informal economy was more focused, the concept was more emphasized to be useful to many policymakers and researchers. The informal economy is nowadays a field of study in its own right, covering scholars from many disciplines, including economics, gender, industrial relations, political science and sociology. Focusing on the size and composition of the shadow economy, what causes the informality, study the consequences in term of productivity and welfare.

2.2 Shadow Economy According to Dominant Schools of Thought

Besides defining the concept of shadow economy and its evolution since its appearance, it is necessary to pin down the important visions of the dominant schools of thought; some thinkers view the shadow economy in positive terms while others view it in negative terms. The most important schools of thought are in number of four which underlies different perspectives of shadow economy in developing countries:

- The voluntarist school sees the shadow economy as comprised of entrepreneurs, which choose to work and build their business informally in order to avoid paying taxes, avoiding the commercial regulations, electricity and rent fees, all that besides other costs of operating formally (*Maloney, 2004*).
- The structural school views the shadow economy as subordinated economic units (illegal business) and workers which seek to minimize input and labor costs of large capitalist firms, by the end increase their competitiveness (*Castells and Portes, 1989*).
- The legalist school sees the shadow economy as comprised of brave entrepreneurs that choose to operate in an informal way to avoid unnecessary and burdensome costs, time and effort of formal registration, and that need legal rights to turn up their assets into formal property (*De Soto, 1989-2000*).
- The dualist school mentions the shadow economy as comprised of marginal activities that are distinct from formal sector and that are not related to the formal sector and that provide the income for poor persons and a safety net in times of crisis (*Hart 1973, ILO 1972, Sethuraman 1976, Tokman 1978*).

Most of the systematic empirical study of shadow economy has found that, higher unit labor costs, tax burdens and unemployment contribute positively to the shadow economy size in Germany, in the time where stronger enforcement of tax rules and regulations minimize the shadow economy activities. Equally, (*Chaudhari et al. 2006*) analyzed the variables that could measure liberalization and found that greater liberalization reduces the growth in the Indian shadow economy. Similarly, (*Tolger et al. 2010*) evaluated the region of Switzerland and found that the low tax burdens and institutions in line with voters' preferences contribute to minimize the shadow economy.

The aspects characterizing the formal sector and the informal sector: In the formal sector, entry is difficult, resources are foreign, control is anonymous, activities are large scale, the technology is imported and capital intensive, the workforce is qualified but sometimes trained abroad, the markets are controlled and protected. In the informal sector, on the other hand, entry is easy, resources are local, control is domestic oriented, enterprises are small, technology is appropriate, activities absorb a

large workforce, they are less capital intensive, qualification is acquired outside the education system, markets are competitive and uncontrolled. The informal sector presents a transition to modern activities: it can be a place of creativity (e.g., toys made with recovery equipment), and show more dynamism than many public enterprises in bankruptcy, and that now are seeking to be privatized, furthermore, it provides jobs and on the job training of rural and urban labor to a variety of industry related skills.

2.3 The Shadow Economy in The World and In Turkey

Indeed, in developing countries, the shadow economy is the most important occupational outlet. In Turkey, informal activities are the source of income for a particular category of people, as well as, at the same time the informal sector is the source of most trades, even for those working in conventional structured markets. The underground economy thus provides a job and a financial benefit to each factor while freeing him from idleness and constitutes the essential factor of social regulation. In fact, the underground economy reduces social tensions, contributes indirectly to the maintenance of political powers, and strongly supports the formal economy through the relations that they maintain together.

Until a certain time, the shadow economy was manifested in China only in small market activities. Its real appearance is part of a very particular context of this country which was the seat of a process of economic, social and political changes. In the history, small market activities had been completely suppressing. They have been denounced as “anti-socialist”. According to the Leninist doctrine, small market activities engendered “capitalism and the bourgeoisie constantly, every day, every hour, in a spontaneous manner and in large proportions”.

The causes and effects of the shadow economy also vary between countries. The factors that apply to a country in this respect may be different for the other. The fact that general validity cannot be established for each country or countries group also makes it difficult to measure the shadow economy. The purpose of measuring the shadow economy is to highlight its causes and effects and to shed light on the development of appropriate solutions. This is important not only for the identification of the shadow economy but also for the success of monetary and development policies.

2.3.1 The main causes of the shadow economy

As mentioned previously, the emergence of the notion of “shadow economy” is often attributed to the famous “Kenya Report” of the ILO in 1972. In fact, it was (*Hart, 1973*) who used the word “Informality” by applying it to “revenue opportunities” and not to any sector. Hart’s analysis focused on households. A year later, the ILO uses the concept to characterize a sector defined as a grouping of production units, identified on essentially technical criteria, to which is added the low level of regulation. Two lines of analysis emerge, one centered on households and one centered on production units, which remain present in all the work on the informal economy. The causes of the growth of the informal activity are numerous, but investigations carried out three essential causes.

The first is the failure of the shadow economy to create jobs and income. This failure has favored the creation of individual jobs; the informal sector has become a substitute for a structure in crisis and an ultimate recourse for the survival of a large part of the population. This situation also justified the legitimacy of the informal (*weeks, 1975, Penouil and Lachaud, 1985, Bandt, 1988, Hugon, 1987*).

The second set of causes is institutional and legal, it therefore affects the economic, social and legal organization of developing societies. The existence of overly burdensome and restrictive administrative systems, even unfair to a large part of the population, has favored the emergence of the shadow economy. (*De Soto, 1989*) studied this question in Peru by describing the economic, social and legal organization as a redistributive tradition. This Peruvian society whose author says that it is built on a system favoring not all its members but only a small nucleus (redistributive tradition) is similar to the mercantilist societies of yesterday, it can only create frustrations and deviations in the economic behavior of the actors. The informal is therefore for this author discrimination by law, the lack of access to official law.

The third group of factors explaining the rise of the shadow economy is related to culture and tradition. Studies undertaken by researchers have led to the fact that some cultures are more favorable than others to emergence of the shadow economy (*Bhérier, 1992*).

According to Professor Su, the dividing line between the various informal activities remains difficult to draw, given the fact that economic illegality manifests itself in various forms. Three forms of illegal activity can be observed:

- Activities that are not officially registered: They are practiced by those who work without an operating license. The majority of workers work in this way in large and medium-sized cities. This same phenomenon is observed among street vendors and also in small workshops of manufacturing, repair, tailoring, etc.
- Activities prohibited by the State but still practiced: The individual workers have embraced activities that have been the preserve of the state. These activities include the marketing of industrial and agricultural raw materials (steel, cotton cloth, paper, seeds, etc.), the sale of much needed consumer goods on the domestic market (cars, cigarettes and alcohol of good brands, household machines,...), financial services (foreign exchange, financial loans, etc.). Smaller activities have developed even in areas where the current law prohibits all exercise: the reproduction and sale of officially forbidden books, the trafficking of ancient and precious objects, etc.,
- Activities that ignore all the legal and administrative provisions: These activities are said to be out of law and are of three kinds: first, the practice of “false recording” means the registration of an activity or is simply sold or rented to others. Then, apprentices or employees that work without social insurance or employment contract required by state regulations. And finally, there is an absence of accounting in the exercise of an individual activity.

The typology of informal activities as just described, augurs the importance of the differentiation to operate to better understand the realities in question. It also allows us to see that the rise of individual activities in an economy based on public property is explained by the risk of small business savvy and their audacity to challenge the regulations and constraints imposed by the system in place. This shows that the good laws produce good effect and that information could make people less ignorant.

2.3.1.1 The evolution of the shadow economy

The shadow economy is heterogeneous from the point of view of the activities practiced, but its existence and its evolution are only in reference to the nature of the state power and its capacity, its logic to implement, to through its agents and authorities, and its regulatory power. The previous studies have shown that the shadow economy exists first with reference to the market system and that, in its relationship with the state, the shadow economy is only at second level.

In fact, the shadow economy is, according to Marie-Anne Barth, negatively correlated with the “health” of the state. Thus, she wrote:

“Tax concealment appeared at the same time as the tax. So, it’s also where there has been a constitution of recognized and regulated economy that emerged in diversion into an informal sector. In other cases, this underground economy does not bypass the dominant mode of production: it ignores it to assert itself as a parallel economy, that is to say a true “counter economy”. This theme of the unofficial economy appears recurrently in the economic, political and social debate. Interest in this sector follows a contra-cyclical evolution: at its lowest level in a period of strong growth, it grows when an economic, social or, of course, a natural crisis occurs.”

2.3.2 Classification of shadow economy

In the literature, the Shadow economy concept is characterized by different attributes and different elements and is divided into three groups (*Sarılı, 2002*), which are as follow:

- Unregistered Economy (Informal economy)
- Semi-Registered Non Declared Economy.
- Illegal, Underground Economy.

The underground economy implies that the activities of the public authority are prohibited and the activity itself is prohibited. In the Non Declared Economy, it is meant that the legal activities do not record the economic activities in order to avoid tax or escape the rules, in the informal economy economic activities are outside. While the Non Declared economy (*Önder, 2012*)

- Avoiding paying taxes.
- Avoiding paying social security shares.
- Avoiding legal regulations.
- All kind of legal economic activities that are concealed from public authority in order to avoid administrative arrangements.

Although economic activities in the shadow economy are legal, they are becoming illegal due to irregularities in the name of not paying taxes. It is classified according to informal economy activities. This classification is shown in Table 2.1. All these class distinctions show the breadth of the size of the shadow economy. The fact that there is no clear definition due to the fact that it is a dimensional concept can vary according to the level of the development of the countries and according to the field of researches, as a matter of fact, the shadow economy has been examined.

Table 2.1: Shadow economy activities

Type	Monetary transactions		Non-monetary transactions	
Illegal activities	Stolen goods trade, production and sale of drugs, prostitution, gambling, smuggling and fraud.		Drugs, stolen goods, smuggling etc. Exchange of goods, the use of drugs for personal use, cultivation, theft for personal use.	
	Tax evasion	Tax avoidance	Tax evasion	Tax avoidance
Legal activities	Unreported earnings, unpaid wages, unreported revenues for legal goods and services, asset acquisition.	Payments made to employees but exempt from tax and workers discounts.	Swap of legal goods and services.	Personal or someone else aid.

Source: Erkuş and Karagöz (2009), Informal Economy and the Estimated Tax Loss in Turkey, İnönü University Journal of Finance, (156), P.129

2.3.3 Characteristics of shadow economy

When the definitions of the concept of Shadow economy are examined, it is observed that it is focused. These criteria also define the characteristics of the shadow economy; the most important of these is the transfer of an economic activity out of the law. The characteristics of the shadow economy are as follow:

- Illegal
- Realization of economic activities under the name of privacy
- Statistically not measurable
- Income is a creative process

The shadow economy is illegal as a source; it has been scrutinized by the public authorities. Illegal gambling business and the alcohol industry may change according to some countries. Whether an economic activity is legal or not can vary according to the authorities of the countries. In other words, legality is not a limit for the shadow economy (*Gönnetlioğlu, 2010*).

The shadow economy activities can be measured less statistically, or it may not be measured at all. While the concept of shadow economy is explained, the records are kept incomplete, the activities do not have monetary value and the activities are hidden. It is an area that is very difficult to be measured and to be detected.

2.3.4 The origins of the shadow economy

Of course, the shadow economy is a universal fact but if we look at its size, it is rather much important in the developing countries such as Turkey, India or Latin American countries. Thus, the less developed countries in Africa for instance Cameroon, Nigeria or Bolivia which are the champions of the shadow economy in the globe nowadays (*Chen, 2012*). The developed countries also have their own shadow economy, but it is expressed in a small scale. Hence, the reasons of the shadow economy in developed and developing countries are very different (*De Soto, 2010*).

As mentioned before, the developed countries have their own shadow economy, for mainly two reasons: on one side, the soft crimes build up a shadow economy such as prostitution, gambling and drugs, etc... If there is a relationship between those crimes and the human nature then there will be a demand; hence it is almost impossible to prevent this shadow economy, by only legal punishment, as we know, the demand is always accompanied with a supply. Thus, this kind of soft crimes can be eradicated from a society with the help of a change in the social ethics code (*Schneider and Enste, 2000*). On the other side, the state failure is also a reason of shadow economy, in terms of the excessive regulation, heavy tax burden or high social payments. The state's excessive interventions to the market, leads to an increase in the transactions

cost so that the demand price is always less than the total average cost of the supply, and by the end a shadow economy becomes a necessity.

The origins of the shadow economy in the economic theory are too important. The classical economists had realized the existence of the shadow economy more than the modern economists. Since there is a structural unemployment, then a shadow economy is unavoidable. The chronic structural unemployment hides itself in the unemployment so as in the shadow economy (*Luxemburg, 1951*).

There are three main approaches to the emergence of the shadow economy. This is the main one of the most important approaches is the Marginalist approach which refers to the shadow economy in the Latin American countries by the industrialization process, while the other is the Legalist approach, which is the approach of De Soto, the last approach, the Structuralist approach, defines non-regulated income generating activities. These approaches are shown in the Table 2.2:

Table 2.2: The emergence of the shadow economy

	Causes of non-registration	Role of the state	Constraints
Legalism	“As a result of the implementation of import substitution industrialization model in Latin American countries increasing the supply of labor from rural to urban, increasing labor supply, low labor supply wages without state control in enterprises. In this way, the poor segment of society generate income”	“Supporting services of the state for enterprises are important”	“In the shadow economy, only the poor segments of the society do not operate. The shadow economy is dynamic. The different activities in the shadow economy generate different amounts of income”.
Marginalism	“As a result of the migration from the village to the city, the mercantilist state and the city elites saw the migrants as rivals and had restricted their freedom. According to this, those who operate in the shadow economy are the hero who struggle against the pressures of the state”	“Mercantilist state restricts economic freedom by increasing regulations”	“Northern European countries and market economy, where regulations are higher, but the shadow economy is lower, it ignored the importance of the regulations to be sustained”.
Structuralism	“Registered economy and unregistered economy cannot be considered separately. The reasons for informality lie in this relationship. According to this the role and class structure of informal enterprise in capitalist accumulation is important. The class structure in the shadow economy is heterogeneous”.	“The role of the state in capitalist accumulation is emphasized”	“The structuralist approach has ignored the fact that ineffective rules could increase the shadow economy”

Source: Kamalioğlu, N (2014). Unregistered employment and Applied Evaluation of Corruption Policy in Turkey, M.Sc., Hacettepe University Institute of Social Sciences, Ankara, p:7.

Schneider and Williams (2013) gathered the most important reasons of the shadow economy under the following headings:

- Tax burden and social security burden.

- Increased market regulations.
- Unemployment.

Among the most common reasons of the shadow economy, tax rates are high as well as tax is a burden on taxpayers. At the same time, an economy inconsistencies and crises, uncertain environment and taxpayers are factors of pushing out tax. When the reasons of the emergence of shadow economy in the literature were examined, it was observed that the researchers concentrated on financial, administrative, legal, political, social and psychological factors. These reasons are shown in Table 2.3.

Table 2.3: Reasons of the shadow economy

Economic and Financial causes	<ul style="list-style-type: none"> ○ Tax burden, high tax rates. ○ Income distribution imbalance. ○ High input and labor costs. ○ Inflation. ○ Economic instability and crises. ○ Applied economic policies. ○ Unemployment.
Administrative and Judicial causes	<ul style="list-style-type: none"> ○ Corruption “Bribery”. ○ Lack of tax audit. ○ Lack of accounting system. ○ Ineffectiveness of tax penalties.
Social and Psychological causes	<ul style="list-style-type: none"> ○ Taxpayers’ view on public spending. ○ Tax ethics. ○ Taxpayer psychology and tax resistance. ○ Trust issue towards the law.
Political causes	<ul style="list-style-type: none"> ○ Voting. ○ Bureaucratic reasons.

Source: Sugözü, H. (2010). *Informal economy and Turkey (Level1)*, Ankara: Nobel Publications, Erdinc, Z. (2016).

a. Economic and financial causes

The informal economy may vary according to the level of development of the countries, and it has a dynamic structure that knows to change over time according to the practices in the country. Economic and financial reasons are the main factors leading to the emergence of the informal economy concept:

a.1: Tax burden

The inadequacy of the tax system, the continuous change in tax policies, the burden on taxpayers, and the inadequacy of tax audits are among the most important factors leading to shadow economy. Tax rates for both producers and consumers affect

preferences; moreover, it is a burden for individuals who aim to keep their income at a high level as it causes a decrease in the purchasing power of individuals. This burden can create a reaction and resistance to tax for individuals who do not prefer that their income decrease.

Table 2.4: Tax burden as the percentage of GNP in Turkey

Years	Tax Burden %	Years	Tax Burden %
2005	25.8	2011	29.7
2006	26.2	2012	30.3
2007	26.3	2013	31.9
2008	26.5	2014	30.7
2009	27.1	2015	30.5
2010	28.4	2016	33.1

Source: Turkish Ministry of Development web site (8th April 2017)

The attitudes induced by taxes are tax burden and tax force. And of course, the tax burden is one of the most significant variables for the existence of shadow economy since the inadequate distribution of the economic surplus between taxes and savings. Hence, the shadow economy could be caused by various reasons engendered by tax system (*Sabirianova, 2009*), among them:

- **The excessive tax burden:** It is the efficiency cost, also called deadweight loss, in association with taxation. In the economy, the total burden of tax contain payments to government paid by the taxpayers which form the revenue remit to government, and any lost in the economic value from the inefficient activities undertaken in reaction to taxes (*James and Hines, 2007*).
- **Double taxation savings by income tax:** It has an important impact on savings' size. Equally important, it reduces the size of savings that leads to the unemployment due to the low level of capital accumulation (*Fisher, 1939*).
- **Higher payroll tax and social security:** Obviously, social security besides tax burden are so high on the employment, as a result an incentive to employ an illegal labor could be engendered. The workers within a shadow economy refer to make a comparison between their salaries and wages in the formal economy. While they found themselves in front of the possibility to prefer to declare themselves as a part of the poor class and take advantage of social

security from the state since the wages in shadow economy are higher than those in the formal economy (Binay, 2015). Table 2.5 shows the tax and social security burden on minimum wage:

Table 2.5: Tax & social security burden on the minimum wage of the firm in Turkey 2017

Employer's share pay roll tax	15.5%
Employee's share pay roll tax	14%
Unemployment insurance shares	3%
Personal Income Tax	15%
Stamp Tax	>1 %
Total	33%

- **The high rates of VAT and their high burden:** This is another cause leading to the shadow economy, since the supervision of VAT in Turkey is difficult and costly. Thus, there is a preference of the state to concentrate on the VAT paid from the firms' revenues that could end up in shadow economy, among the incentives that VAT has for the shadow economy we could cite:
 - * A financial burden created by VAT to the firms since the very beginning production step to the end meant by the selling to consumer.
 - * The lack of auditing by IRS leads to an addition to the benefit of the firm which is not collected by IRS and by the end creates an inflationary pressure.

In fact, the rate of VAT legally approved in Turkey is divided in three different rates that are levied on products, namely 1%, 8% and 18%, they are based on products as follow:

-Products from which 1% is taken: They are taxed on wheat flour and its derivatives, considered essential consumables, as well as residential units that do not exceed 150 square meters.

-Products from which 8% is taken: They are also taxed on essential consumer goods that are not part of luxury goods, such as: meat products, milk products, eggs and legumes, honey, jam, sweets, some animals and other products and services.

-Products from which 18% is taken: They are taxed on products that are not considered essential consumables, with some exceptions, such as: communication

products, furniture, electrical appliances, certain spices and other products and services. Table 2.6 summarizes the VAT rates structures in Turkey:

Table 2.6: The tax rates of VAT in Turkey 2018

The agricultural Products or inputs	1%
Food and Medicine	8%
The rest	18%

Source: VAT Tax Law

a.2: Inflation

An element affecting the informal economy is the increase in prices at the general level. It can show a different course according to the level of development of countries. Inflation figures are higher in developing countries than in developed countries, the increase in the general level of prices also increases the nominal income so that the higher taxation is the subject. The cost of resources is increasing with inflationary pressures. Due to these situations, informal financial institutions have increased, so the economic units, which have to be borrowed at a high rate, apply to informal roads. As well as, the decreases in purchasing power pushes the individuals to illegal ways (Aydın and Yilmazer, 2010).

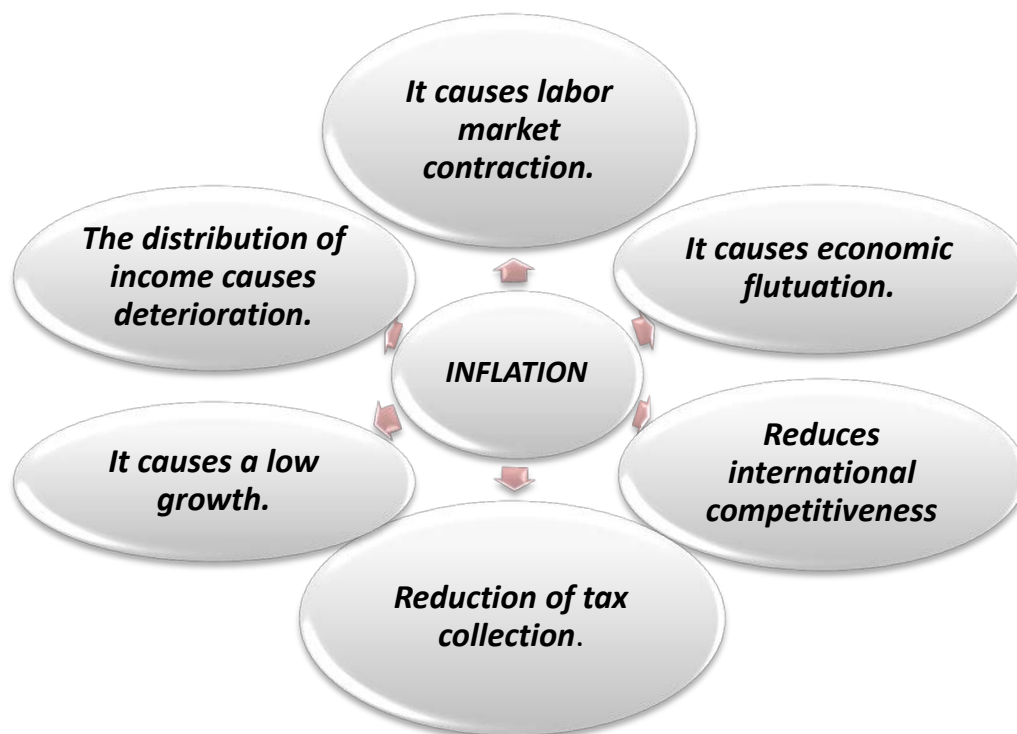


Figure 2.1: Effect of inflation

a.3: Unemployment and unregistered employment

Among the economic factors causing the shadow economy, unemployment and unregistered employment are considered.

a.3.1: Unemployment

Unemployment is expected to increase or decrease informality from factors causing informality. It may create an informal expansionist effect during periods of high unemployment. The fact that the registered sector does not provide security in the economy may lead individuals to unregistered activities. The high unemployment rate creates continuity in employment and leads to the decline of employers. In this case, the high unemployment rate is the concept of an impressive impact on the shadow economy (*Çetintaş and Vergil, 2003*). Figure 2.2 shows the unemployment rate in Turkey till 2016:

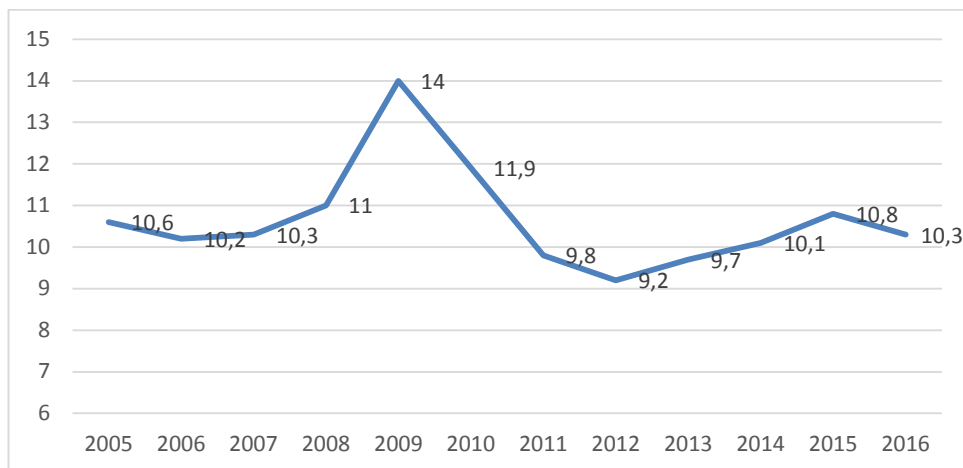


Figure 2.2: Unemployment rate in Turkey

Source: Turkish Ministry of Development web site (8th of April 2017)

a.3.2: Unregistered employment

The meaning of unregistered employment is the employment of workers without declaring to the official institutions. According to the ILO, in the framework of the employment policy (supplementary provisions), the term unregistered employment is defined as follow: “A job that does not comply with the requirements of the legislation, regulations and practice” (*ILO, 1984*). In other words, the unregistered employment is not authorized legally to work, equally important, it is a kind of employment that is not declared to the official institutions (Tax offices, Social security, etc..). Which is considered as a result of unsuccessful social policies besides

the observed increasing unemployment rate engendered by the country's economic conditions that makes finding work difficult for workers, and by the end workers resort to work informally.

b. Administrative

Another reason for the shadow economy is bureaucracy, regulations and legal structures. Tax legislation should be as comprehensible as possible. Common regulations may cause confusion. In a country, if the tax system is constantly changing, if it is not a stable structure, the tax leakage in the country may show an upward trend, hence, the tax system should have certain characteristics which are the following (*Sugözü, 2010*);

- Simplicity.
- Openness.
- Certainty-precision.
- Stability.

According to the OECD report; the reason why the producers are out of the register is completely economic. In the report; tax, social security, product and labor markets were found to be costly. At the same time, the frequent change in the regulations causes uncertainty. This situation causes many enterprises and employees to run to informality (*Sugözü, 2010*).

(*Johnson et al,1997*), in the study conducted in countries where tax regulations related to informality, they have identified good equilibrium and bad equilibrium situations for countries. Countries in good balance have established a successful tax system and have moved away from informality (*Eroğlu, 2014*).

Another issue is the one of tax amnesties and exemptions and there are different opinions about the issue. Tax amnesties and exemptions mean that the state's authority give up the sanctions of tax duties that are not fulfilled or incomplete in time. This authorization is regulated by law no.7143, which makes into effect a tax amnesty (*Edizdoğan and Gümüş, 2013*). (*Savaşan, 2006*), has done research on the benefit of tax amnesty and examined taxpayers, those who applied frequently to the beneficiaries which did not fulfill their tax responsibilities until a new amnesty.

b.1: Corruption and Bribery

Using alternative theories, as rent-seeking, transaction cost, public choice, institution and social cost, etc... Many studies have analyzed the consequences of corruption economically (*Zhao et al, 2003*). Theoretically, corruption could be considered as a grabbing hand that creates market distortions by the fact of providing corrupt firms the preferential access to markets (*Habib and Zurawicki, 2002*). Although there is no scientific connection that has been established, it is known that there is a direct relationship between the shadow economy, bribery and corruption, the bribery increases with the shadow economy since in countries where these phenomena are widespread, the shadow economy is increased.



Figure 2.3: Relation shadow economy, corruption, bribery and forgery

Source: Akca, H., Ünlükaplanm İ, and Yurdoğ, V (2016). Unregistered economy, corruption and unregistered state, *cukorova Journal of Economics and Administrative Sciences*, 20 (2).

b.2: Ineffectiveness of tax sentences and audits

Another issue affecting the shadow economy is the irregularities applied the deterrent effect of sanctions on the shadow economy. In the Turkish Tax System, it was found that there was a positive relationship between tax sanctions and the shadow economy in the researches conducted on the deterrence of the fines imposed on tax crimes and tax fraud. In other words, taxpayers tend to avoid informality as penalties increase. In Turkey, sanctions are under the form of fine. Figure 2.4below shows the sanctions related to tax crimes in Turkey:

Ineligibility	Financial penalties	Public disclosure of names	Freedom connector fines
<ul style="list-style-type: none"> •It is applied for the purpose of forcing people to pay for tax debt. 	<ul style="list-style-type: none"> •Tax loss misconduct; general proceduralty. 	<ul style="list-style-type: none"> •It is applied for the purpose of forcing people to pay for tax debt. 	<ul style="list-style-type: none"> •Contraband, imprisonment from 18 monts to 5 years

Figure 2.4: Sanctions related to tax crimes in Turkey

Source: Şanver, C. (2017). The research on the deterrence of sanctions on tax misconduct and crimes in Turkish Tax system, Journal of management sciences.

According to Şanver (2017); if the state could have a system in which the tax structure and consciousness are provided for all taxpayers that will perfectly functioning, the cost will be much lower, and the cost revenue will be at the desired level. Without the deterrence of sanctions to prevent informality, taxpayers will not tend to avoid informality.

Also in order to reduce the shadow economy in Turkey, in the 10th Development Plan prepared by the Ministry of development, a program prepared under the name of Eylem Action Plan for the Reduction of the Shadow Economy Program on 2014-2018 period; in which some activities were focused on, improving macroeconomic factors such as economic stability, income distribution, employment, increasing the efficiency and competitiveness levels (Teyyare, 2018).

c. Social and psychological

Although it is a fact that economic factors come at the top of the factors causing the shadow economy, the findings of recent studies have showed that it is not limited to economic reasons. While the other factors could be evaluated as social, environmental and psychological factors. The reasons such as migration, population growth, the quality of the workforce and the level of education impact the individuals’ decisions and preferences and by the end push them to work in the shadow economy.

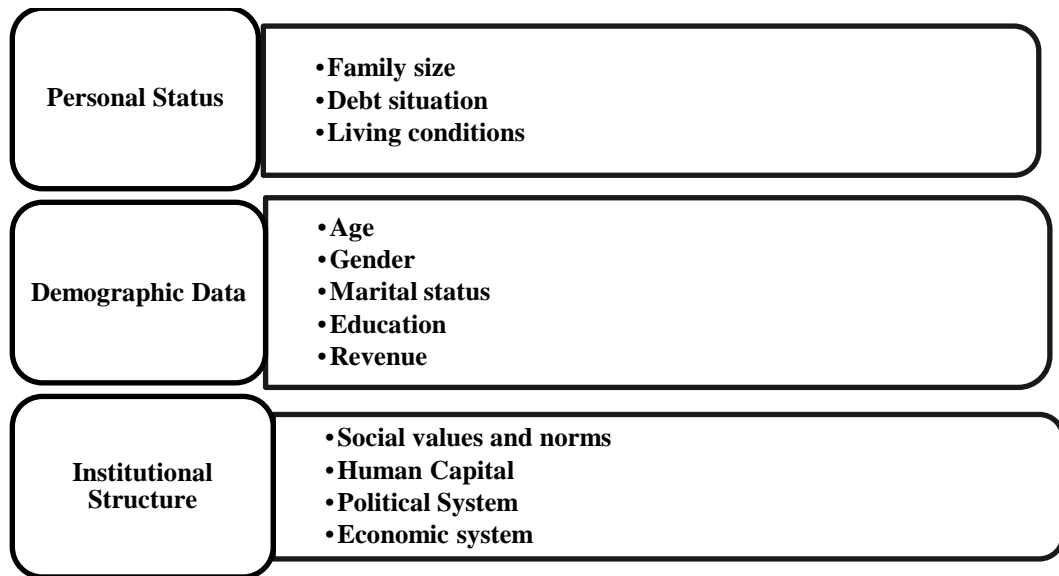


Figure 2.5: Sociological and institutional reasons of shadow economy

Migration to the cities and other countries lead to rapid population growth and unskilled labor as well as unqualified workforce is directed to informal areas, thus, engender an irregular urbanization and squatters. Moreover, when the rate of population growth is above the growth rate, the unemployment problem occurs in the economy, as this problem concerns over individuals push them to work informally with lower wages. Also, in another study, a negative relationship was found between educational level and shadow economy. In countries with high level of education, tax awareness develops more, and individuals can better understand the tax system, thus, the perception of tax changes and their attitudes can be moderated (*Eroğlu, 2014*).

Furthermore, another important point that is shown among social reasons is tax morality. The concept of tax ethics is related to the individual's point of view towards tax. Tax ethics; is a concept related to the proper fulfillment of tax liability on time, which was determined by the researchers that there was a negative relationship between shadow economy and tax morality.

d. Political

Besides all the reasons mentioned above, there are also the political reasons for the shadow economy. In fact, voting concerns are the leading causes of bureaucracy; hence, the attitudes of the politicians are effective in the reasons of the increase in the tax revenues and the tax evasions. Equally important, the ineffectiveness of tax auditing mechanisms and the non-deterrence of penalties and frequent changes in tax practices, the size of the informal economy may increase due to political impotence.

Of course, one of the issues that taxpayers are focusing on is the way in which the taxes collected by the states are spent. Even if taxation is the most appropriate environment for taxpayers; if individuals have a bad idea about public spending, there is a resistance against taxation could be noticed, as the tax ethics is the belief that individuals are willing to pay their earnings voluntarily without legal pressure. The most important factor affecting tax ethics is the citizenship consciousness of the individuals, and since the taxes are the most important source of income for states, all criteria for government borrowing are considered by taxpayers. For these reasons, governments should take into consideration this effect while deciding. In order to evaluate the tax perspective of individuals, in Turkey, 100 people were randomly selected from all ages and 2 questions were asked. The questions were as follows:

Q₁: Do you think that you are paying an important contribution to the development of your country with the taxes you pay?

Q₂: Do you consider paying taxes as a duty? The answers were as shown in Table 2.7

Table 2.7: Public opinion on taxation

Questions	I agree %	Neutral %	I Disagree %	Total
Q ₁	49	19	32	100
Q ₂	52	17	31	100

Source: Ministry of Finance, Tax Administration, Taxpayer Trends Survey Against Tax Applications 2017.

As we can see from the Table 7, the majority of people answered by “I agree” from both questions, respectively, 49% and 52%, and the percentage of people who answered by “I disagree” are respectively 32% and 31%, while the rest are neutral.

3. MEASUREMENT OF SHADOW ECONOMY

3.1 Introduction

The measurement of the shadow economy is infamously too difficult since it requires the estimation of the economic activities that are consciously hidden from official transactions. Although surveys typically understate the shadow economy's size, the econometric techniques are used as well in order to better understand the size of shadow economy (*Schneider & Williams, 2013*).

In different studies to reveal the dimensions of the informal economy different measurement methods are used. The first regulations concerning the shadow economy were made in France in 1936 and 1940 on unregistered employment. The first study on shadow economy was made by *Çağan* during the World War II. However, it was published in 1977 by Guttman. From 1958 until today, different methods have been developed in order to measure the shadow economy. Although the shadow economy's problem is the same for developed and developing countries, the methods used and applied differ according to the structural characteristics of countries. The methods of developed countries, since 1970s, related to the market, the diversity of demand and compliance with the competition rules of small and medium sized enterprises to support the process to be applied in the light of these problems and enter into the search for methods in underdeveloped countries seems to be unable to capture the economic trends (*Erdinç, 2016*).

In accordance with the Action Plan for Fight against Shadow Economy between 2008-2010 which has been the subject of research since 1990s in Turkey. The research activities of the shadow economy in Turkey were investigated first by focusing on the causes and consequences of informality. Then, it is tried to be estimated by using measurement methods. Due to the nature of the shadow economy, a clear figure has not been reached in the studies conducted in the shadow economy by different researchers in different time frames in Turkey. Depending on the estimation method used and according to the components previously identified and included in the

evaluation, the result obtained will make it possible to quantify all or part of the underground activities. To achieve this, two major families of models are listed: the macroeconomic approach and the microeconomic approach. The favored approach will depend on the assumptions used and its statistical limitations. On the one hand there are indirect methods based on macroeconomic type assumptions that relate the phenomenon to observable variables, and on the other hand, direct methods that seek to quantify the underground economy from microeconomic data. Indirect methods include in particular the monetary approach and the so called latent variable approach, while the direct approach includes studies based on household surveys or tax audit data.

Another point is crucial to be mentioned, any measurement that ignores the market economy could lead to false conclusions. Of course, the shadow economy is a problem related to the market economy. Accordingly, the market economy in Turkey is composed with three units:

- The registered market economy.
- The result of tax evasion and excessive regulations leading to shadow economy.
- The underground or crime economy and terrorism (*Akalin, 2017*)

3.2 Methods of Shadow Economy's Measurement

Methods of measuring the shadow economy in literature, the indirect method is grouped under four different headings as direct methods and model approach at national level. The methods of measurement are shown in Figure 3.1 . In Turkey, it is difficult to reach the data related to income in the GNP model.

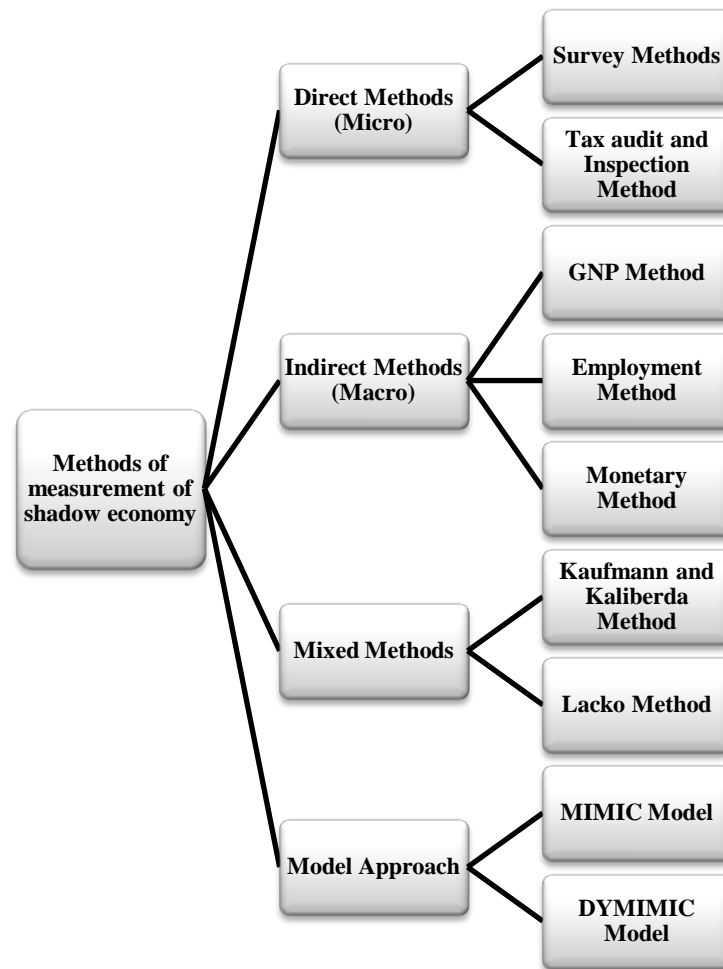


Figure 3.1: Methods of measurement of shadow economy

Source: Sedat Aybar & Emrah Eroğlu, Shadow Economy in Turkey, Measurement, causes and consequences, 2017, p : 114

3.2.1 Direct methods of measurement (micro)

The most commonly used methods of measurement based especially on using micro economy data that are collected through sociological investigations so called survey methods, and fiscal audits besides other direct investigations.

3.2.1.1 Survey methods

The use of the surveys methods is widespread, the survey method is smaller than other methods and tries to measure the shadow economy within the scope of the questions asked to various individuals and organizations. In this method, the content of the questionnaire and the participants are crucial, and then measure the size the of the shadow economy at a given time. Due to the limited scope, the results obtained with the studies using the survey method are aimed at determining certain issues

rather than measurement. It is possible to provide detailed information about the structure of the shadow economy with the survey method. However, as stated by (*Çetintaş and Vergil (2003)*), the reliability of the research depends entirely on the accuracy of the answers of the respondents. In particular, it is possible to ensure that the names of the respondents are kept strictly confidential and that they will never be a subject to a legal follow up from the answers they will give, and that in the event of illegal activities being excluded from the research, it is possible to obtain accurate results, in other words, survey based researches are under the risk of undervaluation of the shadow economy since there could be non-truthful responses (*Putnins and Sauka, 2015*).

The main disadvantage of using surveys as a method to measure the shadow economy is that the questionnaires are supposed to be applied to some persons who would like to hesitate to admit their fraudulent behavior, for this reason, the results obtained from this method would be considered as far from reality. However, it could also give precious information about shadow economy and its way of manifestation, since the most important is the structure of the questionnaire and its way of appliance (*Lazar, Moldovan and Pavel, 2008*)

3.2.1.2 Tax audit and inspection method

In this method, the aim is to measure the shadow economy by means of tax and similar liabilities by finding the difference in declared income and the difference in income. In the estimation of the shadow economy through tax inspections, all activities in the GNP calculations are assumed to be taxed. However, some activities may not be taxed as it might be included in the national income size. On the other side, although the taxation is compulsory, there might be transactions that are excluded from the tax. The work of this method is only possible with the effective functioning of tax auditors. The inadequacy of the supervisors as qualified staff and infrastructure will undermine the reliability of the results obtained using this method. Moreover, since the main purpose of this method is to determine the tax loss, not the shadow economy, the scope of the review is shaped within this perspective (*Aybar and Eroğlu, 2017*). Nevertheless, there is a disadvantage of this method which is the subject of the fiscal audits that know often the date and the object of the audit in advance, and by the end obtaining poor result. Equally important, this method could not be effective since the audits are not representative for the whole population for

the reason that they are not sampled, and some activities could not be found by the fiscal agent (*Lazar, Moldovan and Pavel, 2008*).

3.2.2 Indirect methods (macro)

Indirect measurement methods are more diverse than direct methods; GNP method, employment method and monetary methods are among those indirect methods.

3.2.2.1 GNP method

This approach is mainly based on the determination of the differences between national income and expenditure figures. According to this approach; the difference between the GNP size calculated for income, production and expenditure, indicates the shadow economy and it is expected that the GNP sizes calculated according to three methods in an economy without shadow economy are the same. However, the existence of the shadow economy causes a difference between the results obtained with different methods (*Aybar and Eroğlu, 2017*). Furthermore, in the less developed countries, usually the GDP is higher than GNP, since the using of the capital and the non-residents' work, that leads to be more attractive than GNP from point of view of governmental statistics. It is expected that it will provide the same results in three methods in the GNP, which are calculated using production, expenditure and income methods (*Lazar, Moldovan and Pavel, 2008*).

$$\mathbf{GDP = C + GOS + OTP - OSP} \quad (1)$$

C: compensation of employees;

GOS : the gross operating surplus;

OTP : other taxes on production and imports;

OSP : other subsidies on production;

$$\mathbf{GDP = FC + GFCF + GS + (E - I)} \quad (2)$$

FC : final effective consumption;

GFCF : gross fixed capital formation;

GS: change in inventories;

E – I: the net export of goods and services (export-import);

$$\mathbf{GDP = GVA + TP + D - SP} \quad (3)$$

GVA : the gross value added (basic prices);

TP : taxes on products (VAT inclusive);

D: import duties;

SP : subsidies on products.

The differences between the results from the shadow economy, and the measurement error occurring in any of these methods may cause these differences to occur.

3.2.2.2 Employment method

In the employment method, it is tried to determine the size of the shadow economy according to the labor force supply of the population and the situation of employment in time. The shadow economy could be identified, especially on the assumption that changes in labor force participation may be due to unregistered employment and that efficiency is the same in both markets. In this method, a reduction in labor market participation rate or a lower participation rate compared to other countries is considered as an indicator of the shift of the labor force from the formal economy to the shadow economy, in other words, if the (employment / population) ration is lower than the (labor / population) ratio, then it is said that those who cannot be employed are out of the register (*Babaoğlu, 2016*).

3.2.2.3 Monetary methods

In order to measure the shadow economy, monetary methods are also utilized, they are explained as follow:

3.2.2.4 Monetary method

The cash plays an important role in keeping shadow economy activities hiding from public authorities. Since the shadow economic activities are only eligible for cash use, the inequality between the amount of money in circulation outside the banks and demand deposits reflect the size of the shadow economy.

3.2.3 Transaction volume approach

Another method, the transaction volume approach that was derived from Feige's concept of Fisher's quantity theory of money (*Schneider and Enste, 2000*):

$$M * V = p * T$$

Where, **M**: Money;

V: Velocity;

p: Prices;

T: Total transactions.

In this method, which is based on some assumptions, it is tried to calculate the shadow economy by subtracting the official GDP from the nominal GDP, thus both official and unofficial nominal GDP are used in this approach (Omodero, 2019). The transaction volume method is based on a year when there is no shadow economy and the constant rate of circulation of money over time, these are important assumptions of the method. (*Çetintaş and Vergil 2003*), stated that although it was positive in terms of relying on theoretical ground, it was not sufficient to meet empirical, observational requirements to obtain reliable calculations for the shadow economy.

3.2.4 Mixed methods of measurement

In the mixed methods, data on physical outputs are taken as basis and the most basic data used in the method is electricity consumption as the main indicator of the indicator of the entire economic activity. Until now 2 main methods are used to measure the shadow economy that are engendered by the electricity consumption, those methods are the Kaufmann – Kaliberda method and the Lacko method.

3.1. Kaufmann – kaliberda method

According to Kaufmann and Kaliberda (1996), to estimate an economy activity in an economy either official or unofficial, it is assumed that electricity consumption is considered as the best physical indicator of the whole economic activity. Kaufmann and Kaliberda have used an estimation of unofficial GDP by having a proxy measurement for the economic activities as a whole and subtracting it from GDP (*Lazar, Moldovan and Pavel, 2008*). While this method is simple in practice, there are some criticisms. As in labor centered shadow economy activities, there is no need for electricity consumption in every unregistered economic activity, and other energy resources such as natural gas and oil might be used during the execution of

unregistered economic activities. In addition, the efficiency of the electricity consumption used in the shadow economy in both official and unofficial economy may vary in both sectors. According to (*Lemieux, 2007*) mentioned that, if we admit that there is a more or less constant proportion between overall economic activity and the use of electricity, we can estimate the growth of the underground economy by taking the difference between official GDP growth and output growth which would correspond to the increase in electricity consumption.

This method is very simple; nevertheless, it could have some critics on some grounds:

- Not all economic activities under the shadow economy require an exact amount of electricity, as other sources of energy could be used such as gas, coal, as mentioned before, so by the end just a part of the shadow economy will be measured.
- The electricity consumption and the production are more efficient nowadays than in the previous time due to the technical progress. So that will be applied in official and unofficial uses.
- There might be noticed considerable differences in the relation of elasticity of electricity / GDP in different countries.

3.2. Lacko method

This method assumes that the vast majority of the shadow economy is related to household electricity consumption, and the method includes, among others, household production and individual activities. However, a huge amount of electricity cannot be used in any informal activity. In addition, the relationship between production and electricity might change over time due to substitution and technical progress and might vary between countries. This approach is not particularly suitable for economies with large structural changes. On the other hand, the increase in the electricity consumption may reflect a structural movement in terms of much more electricity intensive GDP (*Aybar and Eroğlu, 2017*).

3.2.5 Model approach

The first of the model approach models is the Multiple Indicators Multiple Causes, which is known as MIMIC. Another method is the DYMIMIC model which is a

different model of the MIMIC model, also called LISREL (Linear Independent Structural Relationship).

3.2.5.1 MIMIC model

The MIMIC method is a special case of the Structural Equation Model. The MIMIC model was first implemented by Frey and Weck, who attempted to determine the shadow economy's dimension of the 24 OECD countries. While determining the size of the shadow economy, the causes and effects of the shadow economy are included in the model. In this context, it is a model that finds application areas in social sciences with the inclusion of causes and effects. It is also a model that can be statistically tested, as the change in the shadow economy, which is considered as a hidden variable, is examined over time (*Eroğlu, 2014*).

The most important feature that distinguishes this method from others is the fact that the registered economy makes use of them, not all of the traces left in the money, labor and production markets. The registration is stated to cause the disease; the tax burden, state regulation' burden, inflation, unemployment, tax morality, etc., are combined with the help of a model to estimate the volume of the registered economy. However, the model may include those that could be measured quantitatively from the factors affecting the economy, except for a number of factors which are important in terms of the birth of the economy but not quantitatively determined (*Savaşan, 2004*). The MIMIC approach consists by applying a benchmark to convert the shadow economy index to series of shadow economy as percentage of GDP, as determinants, such as, tax burden with all its components, the employment rate, unemployment rate, government effectiveness, and as indicators such as, index of GDP, the labor force participation rate and currency ratio (*Dell'Anno and Davidescu, 2019*).

3.2.5.2 DYMIMIC model

The Dynamic Multiple Indicator Multiple Causes model « DYMIMIC » contain in general two parts, this model of measurement make in relation the observed indicators and the unobserved variables. Furthermore, it create a causal relationship specific among the unobserved variable. In this case, only one unobserved variable exist, which is the size of the shadow economy. That is supposed to be affected and influenced by a set of indicators of the size of the shadow economy, hence, the

interaction during time between causes, indicators and the size of the shadow economy is explained in the figure 3.2 below:

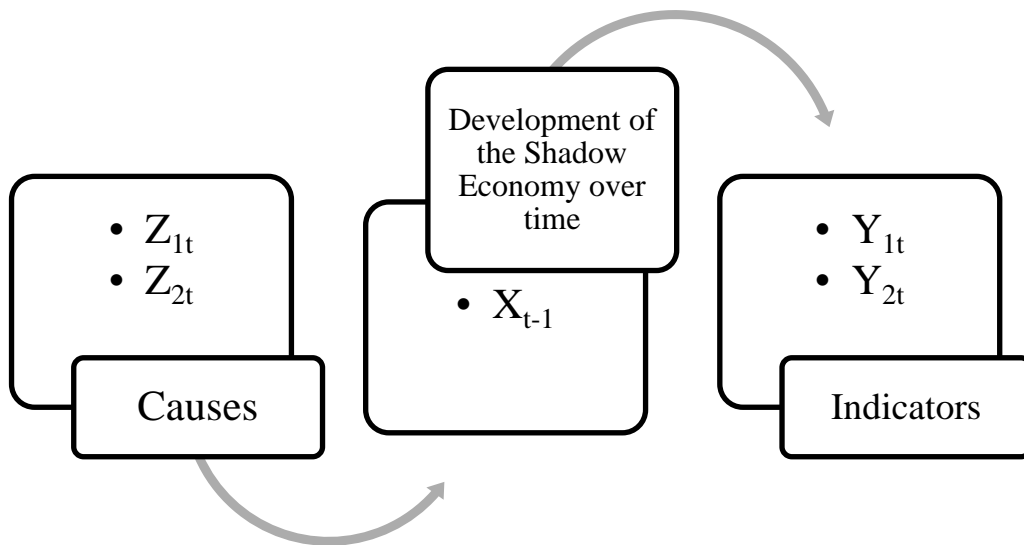


Figure 3.2: Development of the shadow economy over time

Source: F. Schneider & D. Enste, Shadow Economies Around the World – Size, Causes, And Consequences, September 1999, p: 40

We will discuss below some possible shadow economy's causes and indicators:

Causes:

- In the first position, there is the burden of taxation; with a higher burden of taxation emerge a strong willing to work in the shadow economy.
- Second point, the existence of regulation's burden, which leads to a strong incentive to enter the shadow economy.
- The Tax morality so called citizens attitudes toward the state that means the willing of citizens to leave their official occupations and enter to the shadow economy.

Indicators:

- Monetary indicators' development: with the rising of shadow economy's activities, the monetary transactions rise as well.
- Labor market indicators' development: with the increased participation of workers in the informal sector ends up in a decreased participation in the official economy.

- The production market indicator's development: with the shadow economy's increasing, the inputs move out of the official economy.

3.2.6 Currency demand approach

The Currency Demand Approach (CDA) is based primarily on the assumption that the operations of the shadow economy are conducted in cash in order to avoid any evidence that would allow authorities to follow the trace (*Tanzi, 1980, 1983, 1999; Feige and Urban, 2008*). The main assumption of the CDA is that the weak enforcement and high taxes have a direct result known as the undeclared income, therefore, the currency demand for legal and formal transactions could be calculated by the use of the estimated equation of the currency demand where the tax rate is zero and the strength of tax administration is maximum (*Omodero, 2019*). Moreover, the difference between observed demand for currency and estimated amount used for formal transaction could be considered as the currency demand associated with tax evasion. In fact, an increased size of the shadow economy leads to an increased demand for cash. (*Schneider and Mughal, 2018*) applied the CDA with success as the CDA helped by the end to find out that shadow economy had an effect on the increased growth rate in long term while the opposite was noticed in short term. (*Sharma, 2019*), states that the size of the shadow economy is calculated by supposing that the velocity of income for the currency in the shadow economy is as same as the one used in the informal economy, the model of CDA function is similar to the model used by Tanzi, it is as follow:

$$C_t = \alpha_1 + \alpha_2 X_t + \alpha_3 Y_t + u_t$$

Where, **C** – The dependent variable real currency

X – Vector of explanatory variable determinant of currency

Y – Sensitive variable tax rate

u – Stochastic disturbance term at year t.

3.2.7 Regression analysis

Regression analysis is a statistical method of modeling relationships between different variables (dependent and independent). It is used to describe and analyze relationships between data. Regression analysis allows predictions to be made, the relationships between the data being used as a basis for predicting and designing a prediction model. Regression and correlation analyzes are considered as a component

of multivariate analytic methods. It is primarily based on the idea that a dependent variable is determined by one or more independent variables. Assuming that there is a casual relationship between two variables, the value of the independent variable affects the value of the dependent variable. The regression model could be considered as an empirical model, and this model should be consistent with the manner in which the variables actually behave (*Insel, 2019*). If the relationship is clearly represented, it can serve as a forecast. Regression analyzes have two central objectives. They are supposed to:

- Quantify relationships and describe those using measured values and their graphical representation.
- Provide forecasts and predictions.

There are four types of regression known as:

- Simple regression: only one explanatory variable is used to explain the dependent variable, it could be expressed using the following equation:

$$Y = \alpha + \beta X + \varepsilon$$

Where : **Y** - dependent variable

X – Independent variable

α – intercept

β – slope

ε – residual error

- Multiple regression: several explanatory variables are linked to a dependent variable; it could be expressed as follow:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \varepsilon$$

Where:

Y -dependent variable

X_1, X_2, X_3 – independent variable

α_0 – intercept

$\alpha_1, \alpha_2, \alpha_3$ – slopes

ϵ – residual error

- Linear regression: there is a linear relationship between several explanatory variables and several dependent variables. The concept also includes linear parameters and a structure.
- Non-linear regression: if there is no linear relationship between the dependent and independent variables, it is about a non-linear regression. These models could be very complex since relationships between variables cannot be organized and mapped using simple mathematical methods.

4. RESEARCH METHODOLOGY

4.1 Introduction

This chapter explains the method of the research conducted in this thesis. It encompasses the plan of the study, the variables to be studied. This chapter also present the validity and the reliability of the variables.

4.2 Research Design

The study will be presented by utilizing a secondary quantitative data and will depend totally on annual statistics of economic field of Turkey and Sweden in order to make the comparison between both countries, for the time span of 1990-2017.

4.3 Data Sources and Instruments

The research will utilize the secondary data and the work done will be collected from evaluation of yearly reports and statistics listed at OECD stats web site concerning Turkey and Sweden.

Table 4.1 bellow shows the variables used in this study with the abbreviation besides the explanation of the variables.

Table 4.1: The used variables with definitions

Variable	Abbreviation	Explanation
Corporate Income Tax	CIT	A tax levied on corporations' profits. Actually corporations could be considered as a legal separate from their owners, so that they could be taxed as if they were persons. A corporate tax then, is the equivalent of the income tax for natural persons.
Gross Domestic Growth Rate	GDP_{gr}	The growth rate of the total value of all goods and services produced domestically by a nation during a year.
Interest Rate (short term)	IR_{st}	It is the percentage of the nominal value of a bond or the balance of a deposit account that persons receive as income on investment.
Labor force participation rate	LF	The labour force participation rates is calculated as the labour force divided by the total working-age population. The working age population is known as people aged 15 to 64.
Labor force ratio	LF_r	It is the total number of population currently employed or in search of a job.
Property Taxes	PT	Recurrent and non-recurrent taxes on the use, ownership or transfer of property. These include taxes on immovable property or net wealth, taxes on the change of ownership of property through inheritance or gift and taxes on financial and capital transactions.
Tax revenue as % GDP	TR_{GDP}	Tax revenue is the revenues that the government collect as taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes.
Capital and financial transactions tax	CFTT	Taxes on financial and capital transactions consist of taxes payable on the purchase or sale of non-financial and financial assets including foreign exchange.
Goods and services tax (%GDP)	GST_{GDP}	It contain mainly the value added and sales taxes. This indicator relates to government as a whole (all government levels) and is measured in percentage both of GDP and of total taxation.
Individuals' Income tax (%GDP)	IIT_{GDP}	The taxes levied on the net income and capital gains of individuals. This indicator relates to government as a whole (all government levels) and is measured in percentage both of GDP and of total taxation.
Total Tax Revenue as % GDP	TTR_{GDP}	Total tax revenue as a percentage of GDP indicates the share of a country's output that is collected by the government through taxes. It can be regarded as one measure of the degree to which the government controls the economy's resources.
Value Added Tax (% GDP)	VAT_{GDP}	The tax in which the tax is applied to products whenever any value is added, including in the product's production and final stage.
Unemployment Rate	Unemp	Unemployment rate is the number of unemployed people as a percentage of the labour force, where the latter consists of the unemployed plus those in paid or self-employment.

Source: OECD stats, 2019.

4.4 Data Processing and Analysis

The research requires to employ different approaches to study the variables influencing the shadow economy. First, basic statistics will be used to analyze and describe data for final rendering with mathematical calculations that make it possible to release data a real positive or negative trend of the results. The means and the variance of the data will be calculated then graphical analysis will be presented. The descriptive analysis will be fully shown, equally important, the correlation matrix for the variable will also be stated in order to check the correlation that could exist between the variables with graphs as well to figure the correlation type. Therefore, the regression analysis will be done to test the causality between variables after doing the stationarity test since we have time series databases.

4.4.1 Descriptive analysis

Basic descriptive statistics provide simple information about the sample and observations that has been interpreted after the collection of data. It essentially displays the data and numerical facts as graph or table surely with examining and determining procedures. To reach the result, mean, median, standard deviation, variance, kurtosis, skewness, range, minimum and maximum are used for the evaluation. Table 4.2 shows the descriptive results.

Table 4.2: Descriptive results

	Mean	Median	Std, deviation	Variance	Kurtosis	Skewness	Min	Max
CIT	1,46	1,60	0,37	0,14	-1,03	-0,56	0,76	2,01
GDP	4,73	6,09	4,62	21,37	0,56	-1,16	-5,96	11,11
IR	15,47	12,81	8,20	67,22	3,79	1,68	6,93	39,73
LF	53,88	52,68	3,36	11,31	-1,11	0,36	49,64	59,96
LFr	49,54	49,19	3,29	10,81	-0,76	0,51	45,45	55,74
PT	0,79	0,80	0,30	0,09	-1,02	-0,04	0,33	1,31
TR	4,95	5,24	1,70	2,90	-1,31	-0,11	1,98	7,30
CFTT	0,60	0,58	0,22	0,05	-1,00	0,12	0,29	0,95
GST	9,33	10,77	2,64	6,96	-0,86	-0,82	4,06	12,46
IIT	4,06	3,84	0,67	0,44	0,85	1,38	3,44	5,63
TTR	22,01	23,43	3,68	13,57	-0,69	-0,92	14,55	25,90
VAT	4,81	5,01	0,92	0,84	0,15	-0,68	2,67	6,28
UNEMP	9,02	9,08	1,89	3,56	-0,10	0,37	6,00	13,34

The maximum value of CIT is 2.01 and the minimum value is 0.76 the mean and median of CIT are 1.46 and 1.60 respectively as the standard deviation and variance

are 0.37 and 0.14 respectively as well, concerning the skewness value is -0.56 which means that there is a moderate negative skew, besides -1.03 as value of kurtosis which means that we have a platykurtic more flat.

The maximum of GDP rate is 11.11 and the minimum is -5.96, the mean is 4.73 while the median is 6.09 concerning the skewness value is -1.16 which means that there is a high negative skew, while the kurtosis value is 0.56 which is small than 3 which is considered as the interval of kurtosis and that means that is also a platykurtic more flat.

For the IR variable, the maximum and minimum values are respectively 39.73 and 6.93, the variance of IR is 67.22 which is a huge number that means that the sets are so far from each other, the skewness value is 1.68 which means that there is a high positive skew and concerning the kurtosis is of the value 3.79 which means that there is a leptokurtic high peak.

For the LF rate the maximum and minimum values are respectively 59.96 and 49.64, the mean and median are around the same number and are respectively 53.88 and 52.68, while the variance is 11.31 that means that the sets are near from each other, concerning the skewness is of 0.36 which imply that there is a symmetrical skew while the kurtosis is negative with the value of -1.11 that means there is platykurtic more flat.

Coming to PT we observe that the minimum and maximum values are respectively 1.31 and 0.33 small numbers comparing to other variables, the skewness value equally is small and negative which is equal to -0.04 that means that there is a symmetrical skew.

The GST as a percentage of the GDP present a maximum value of 12.46 and a minimum as 4.06 the variance is also small with a 6.96 number, while the skewness is near to -1 with a number of -0.82 that imply that there is high negative skew.

TTR as percentage of GDP as well shows a skewness value of -0.92 that imply that there is a high negative skew. Equally important the VAT shows a skew with a -0.68 a moderate negative skew, besides a small value of variance that could imply that the sets are near to each other or might be stationary.

4.4.2 Correlation analysis

Correlation analysis is an analysis based on calculating the strength of relationship between two variables. Correlation matrix is used to evaluate the dependence or the relationship between several variables at the same time, the characteristics of the correlation matrix are that it is diagonal and symmetric since the coefficients of the matrix are symmetrical with respect to the main diagonal which equal to 1 (from the top left corner to the bottom right corner).

The strength of the linear relationship between the two variables: The more the value of the coefficient is close to +1 or -1, the more strongly the two variables are associated. On the contrary, the closer the coefficient is to 0, the less the variables are related and hence the less the association is strong.

The direction of the linear relationship between the two variables: The correlation coefficient, which finally the standardized covariance varies between -1 and +1. A coefficient of 1 indicates a perfect positive correlation between the two variables. Conversely, a coefficient of -1 indicates a perfect negative correlation: when X increases, the Y decreases in the same proportion. In both cases, the points fall perfectly to the line. A coefficient of 0 indicates that there is no relationship between the two variables. Table 4.3 summarizes the rule of thumb for interpreting the size of a correlation coefficient

Table 4.3: Rule of interpreting the size of a correlation coefficient

Size of Correlation	Interpretation
0.90 to 1.00 (-0.90 to 1.00)	Perfect positive (negative) correlation
0.70 to 0.90 (-0.70 to -0.90)	High positive (negative) correlation
0.50 to 0.70 (-0.50 to -0.70)	Moderate positive (negative) correlation
0.30 to 0.50 (-0.30 to -0.50)	Low positive (negative) correlation
0.00 to 0.30 (0.00 to -0.30)	Little if any correlation

Usually, there are different methods of correlation testing, but in statistics researchers tends to use mostly the Pearson correlation Test is used to analyze the linear relationships, the Spearman correlation is used to analyze the monotonic nonlinear relationships, which are rank-based tests. Pearson correlation is usually a test of parametric type that is used to calculate the extent of the connection among linear related variables. To be interpreted, the correlation coefficient must be significant (the value of p must be smaller than 0.05). If the coefficient is not significant, it is considered to be similar to 0.

In this study, we tried to make a comparison between two countries with different size of shadow economy, in order to check whether the chosen variables have the same relationship in both countries so that we could measure the idea saying that those variables are the reasons behind the shadow economy, Turkey and Sweden has been chosen, therefore, the data has been collected from OECD stats, and the matrix analysis of both data shows the results illustrated in Table 4.4 and Table 4.5 respectively of Turkey and Sweden.

Table 4.4: Correlation matrix results of Turkey

	CIT	GDP	IR	LF	LF r	PT	TR	CFTT	GST	IIT	TTR	VAT	UNEM
CIT	1	--	--	--	--	--	--	--	--	--	--	--	--
GDP	-0.03	1	--	--	--	--	--	--	--	--	--	--	--
IR	0.26	0.00	1	--	--	--	--	--	--	--	--	--	--
LF	-0.81	-0.09	-0.34	1	--	--	--	--	--	--	--	--	--
LF r	-0.43	-0.01	-0.29	0.99	1	--	--	--	--	--	--	--	--
PT	0.53	-0.08	-0.64	-0.53	0.22	1	--	--	--	--	--	--	--
TR	0.76	0.13	-0.65	-0.84	0.12	0.74	1	--	--	--	--	--	--
CFTT	0.67	0.17	-0.70	-0.83	0.22	0.80	0.92	1	--	--	--	--	--
GST	0.90	0.14	0.38	-0.94	-0.31	0.67	0.84	0.79	1	--	--	--	--
IIT	-0.14	-0.47	0.49	0.21	-0.13	-0.42	-0.40	-0.33	-0.34	1	--	--	--
TTR	0.91	0.05	-0.27	-0.88	-0.20	0.66	0.87	0.85	0.96	-0.15	1	--	--
VAT	0.85	0.09	0.48	-0.80	-0.39	0.52	0.64	0.61	0.90	-0.07	0.90	1	--
UNEMP	0.52	-0.06	0.04	-0.55	0.25	0.56	0.71	0.57	0.62	-0.55	0.54	0.34	1

The correlation coefficient between CIT and LF is -0.81 which indicates that there is a high negative relationship between these variables that implies if the CIT increases (decreases) the LF decreases (increases).

Equally important, the correlation coefficient is positive with all of TR, GST, TTR, VAT and UNEMP and that implies that there is a high positive relationship between both variables which states that they correlate in the same direction.

Concerning GDP, we could notice clearly that there is a weak relationship with other variables except with IIT it is negative stating that there is a moderate negative correlation.

For the variable IR, we notice that except PT, TR, and CFTT that shows a high negative relationship, the rest are showing a low to a little correlation in both directions.

Coming to LF, the matrix shows a positive correlation with LF ratio near to 1 with a value of 0.99 correlating in the same direction positively, while with TR, CFTT, GST, TTR, and VAT there is negative correlation.

PT shows a positive correlation with all of TR, CFTT, GST and TTR.

TR as well shows a perfect positive correlation with CFTT, GST, TTR and UNEMP that means the variables increase and decrease in the same direction.

Concerning GST, there is also a perfect correlation with TTR and VAT that states that the correlation is in the same direction. And finally, TTR correlate highly in a positive way with the VAT with a value of 0.90.

Table 4.5 illustrates the results of Sweden

Table 4.5: Correlation matrix results of Sweden

	CIT	GDP	IR	LF	PT	CFTT	GST	IIT	VAT	TTR	UNEM
CIT	1	--	--	--	--	--	--	--	--	--	--
GDP	0.54	1	--	--	--	--	--	--	--	--	--
IR	<u>-0.71</u>	-0.28	1	--	--	--	--	--	--	--	--
LF	-0.38	-0.42	0.21	1	--	--	--	--	--	--	--
PT	-0.39	0.03	<u>0.63</u>	-0.28	1	--	--	--	--	--	--
CFTT	-0.47	-0.28	<u>0.56</u>	<u>0.61</u>	0.25	1	--	--	--	--	--
GST	0.08	-0.19	-0.11	0.24	-0.19	0.03	1	--	--	--	--
IIT	-0.39	0.03	<u>0.74</u>	-0.14	<u>0.87</u>	0.36	-0.25	1	--	--	--
VAT	<u>0.61</u>	0.19	<u>-0.84</u>	-0.02	<u>-0.72</u>	-0.42	<u>0.53</u>	<u>-0.80</u>	1	--	--
TTR	-0.10	0.17	0.47	-0.32	<u>0.88</u>	0.24	-0.05	<u>0.87</u>	<u>-0.50</u>	1	--
UNEMP	0.22	0.17	-0.11	-0.40	0.02	<u>-0.76</u>	0.01	-0.03	0.05	-0.12	1

The correlation coefficient between IR and CIT indicates that there is a negative relationship between both variables which means that when IR increases (decreases), CIT decreases (Increases), same with the relationship between CIT and CFTT, while the matrix shows a positive relationship between VAT and CIT that implies that if VAT increases CIT increases and the opposite is possible.

While correlation coefficients of GDP show that there is a weak relationship of GDP with the other variables.

Concerning IR, there is a positive relationship between IR with all of PT, CFTT and IIT that means that the variables mentioned correlate in the same direction, but there is a negative correlation with VAT that states that an increase of VAT leads to a decrease of IR and vice versa.

The LF shows a positive correlation with CFTT, which indicates that both variables increase and decrease in the same direction.

PT correlate positively with all of IIT and TTR showing a positive coefficient, while it shows a negative correlation with VAT that means there is a correlation in different directions

Concerning CFTT, it indicates that there is a low negative correlation with VAT that means both variables correlate in different directions. IIT as well shows a negative relationship with VAT and a positive relationship with TTR.

As it is mentioned in the analysis part we could notice that there is correlation between variables in both directions, but we need as well to test the p value of Pearson's Correlation, for that we analyzed the variables using SPSS to test the p value, Table 4.6 and Table 4.7 respectively show the results.

Table 4.6: p value of correlation results of Turkey

	CIT	GDP	IR	LF	LF _r	PT	TR	CFTT	GST	IIT	VAT	Unemp	TTR
CIT													
GDP	0,89												
IR	0,36	0,99											
LF	0,00	0,69	0,42										
LF_r	0,02	0,94	0,26	0,00									
PT	0,00	0,67	0,01	0,01	0,26								
TR	0,00	0,52	0,01	0,00	0,53	0,00							
CFTT	0,00	0,39	0,00	0,00	0,27	0,00	0,00						
GST	0,00	0,49	0,16	0,00	0,10	0,00	0,00	0,00					
IIT	0,48	0,01	0,07	0,35	0,49	0,03	0,03	0,08	0,08				
VAT	0,00	0,65	0,07	0,00	0,04	0,00	0,00	0,00	0,00	0,72			
UNEMP	0,01	0,77	0,88	0,01	0,19	0,00	0,00	0,00	0,00	0,00	0,08		
TTR	0,00	0,81	0,33	0,00	0,32	0,00	0,00	0,00	0,00	0,44	0,00	0,00	

In Pearson test, the P value is usually lower than 5% ($p < 0.05$) and statistically if the p value of correlation is lower than this value, then it is called statistically significant. The SPSS results of Turkey shows that there is a significant relationship between CIT and all of LF ratio, PT, TR, CFTT, GST, VAT, UNEMP and TTR.

The result shows as well that there is a significant relationship between GDP and IIT. Moreover, IR results indicates that there is a significant relationship between IR and all of PT, TR, and CFTT.

LF states that has a significant relationship between LF_r, PT, TR, CFTT, GST, VAT, UNEMP and TTR.

While LF_r shows that there is a significant relationship with VAT. Coming to PT, the results indicates that there is a significant relationship with all of TR, CFTT, GST, IIT, VAT, UNEMP and TTR.

CFTT and GST shows that there is a significant relationship with VAT, UNEMP and TTR.

Table 4.7 illustrates the p value of correlation results of Sweden.

Table 4.7: p value of correlation results of Sweden

	CIT	GDP	IR	LF	PT	CFTT	GST	IIT	VAT	TTR	Unemp
CIT											
GDP	0,00										
IR	0,00	0,12									
LF	0,05	0,03	0,27								
PT	0,04	0,87	0,00	0,16							
CFTT	0,01	0,15	0,00	0,00	0,21						
GST	0,68	0,33	0,56	0,21	0,33	0,90					
IIT	0,04	0,86	0,00	0,48	0,00	0,06	0,20				
VAT	0,00	0,33	0,00	0,93	0,00	0,03	0,00	0,00			
TTR	0,61	0,40	0,01	0,10	0,00	0,21	0,78	0,00	0,01		
UNEMP	0,25	0,35	0,57	0,03	0,93	0,00	0,97	0,89	0,82	0,55	

Table 14 indicates that there is a significant relationship between CIT and all of GDP, IR, LF, PT, CFTT, IIT and VAT.

While GDP states that there is a significant relationship with LF. Concerning IR results, there is a significant relationship between IR and PT, CFTT, IIT, VAT and TTR.

Equally important, LF indicates that there is a relationship with CFTT. PT as well has a significant relationship with all of IIT, VAT and UNEMP.

CFTT illustrates that there is a significant relationship with all of VAT and TTR. While GST shows a significant p value with VAT.

Finally, IIT shows a significant relationship with both VAT and TTR.

In Pearson test, when p value is lower than 0.05, then it is called statistically significant. In Table 4.6 of Turkey, the test of p value tested on SPSS shows that there is a significant relationship and correlation between most variables. And in Table 4.7, the results indicate that except GST and GDP and UNEMP, there is a significant relationship and correlation between other variables.

By analyzing both matrixes we could notice that there is a difference in the taxes level, for Turkey, a critical issue of taxes that are high and that the relationship between them changes in the same direction so that could impact negatively the taxpayers and by the end the individuals tries to avoid paying tax and recourse to illegal activities creating the shadow economy in the country that is highly noticed. While the correlation analysis for Sweden show that the relationship between taxes varies in different directions when one increases the other decreases creating a less tax pressure on taxpayer's morality so that could explain the low size of shadow economy in Sweden.

4.4.2.1 Graphical analysis

Relationship between GST and CIT

Figure 4.1 indicates that there is a positive relationship between GST and CIT which implies that when there is an increase in CIT then GST increases as well and similarly, so a direct relationship has been found.

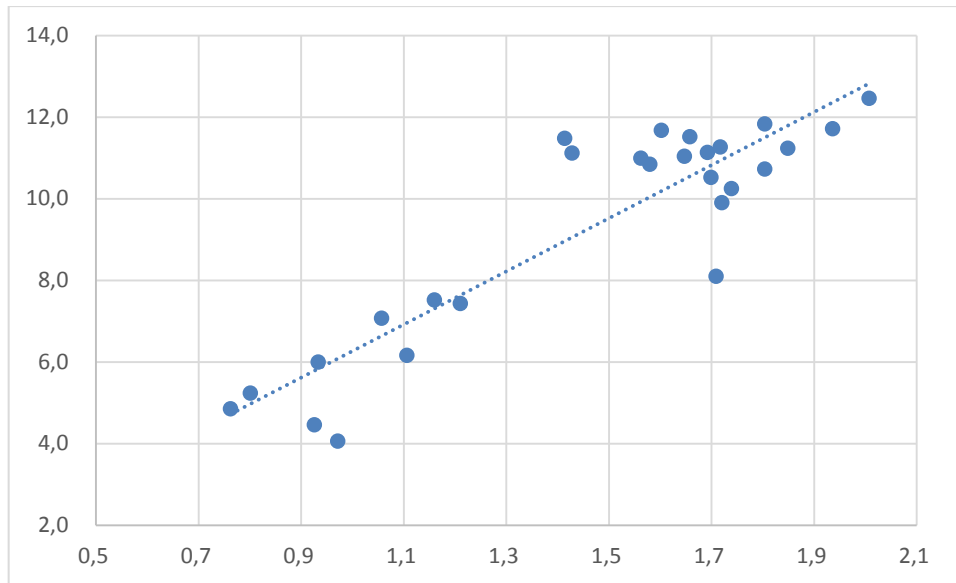


Figure 4.1: Relationship between GST and CIT

The relationship between GST and LF rate

Figure 4.2 indicates that there is a negative relationship between GST and LF which states that a decrease in GST leads to an increase in LF rate and the opposite, that means that there is an inverse relationship between the two variables.

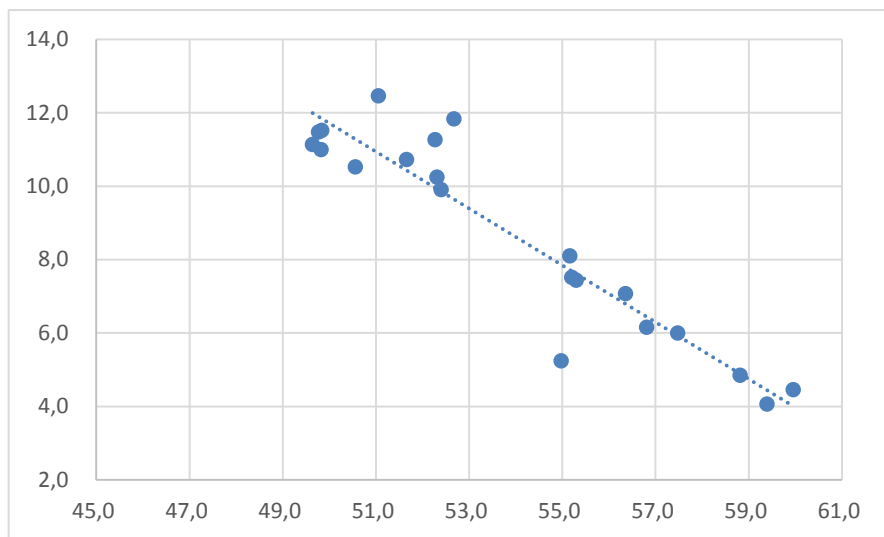


Figure 4.2: Relationship between GST and LF rate

Relationship between TTR and CIT

Figure 4.3 shows that there is a positive correlation between TTR and CIT, that implies that an increase in TTR leads to an increased CIT, so a direct relationship has been found.

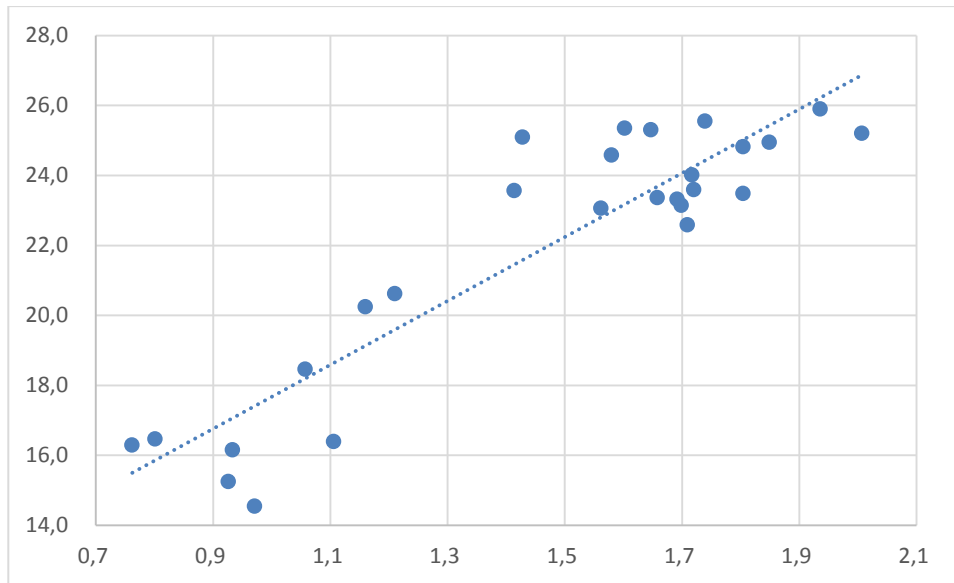


Figure 4.3: Relationship between TTR and CIT

Relationship between LF rate and CIT

Figure 4.4 indicates that there is a high negative relationship between LF rate and CIT, that implies that an inverse relationship has been found and means that when there is an increase in CIT then there will be a decrease in LF rate and similarly the opposite.

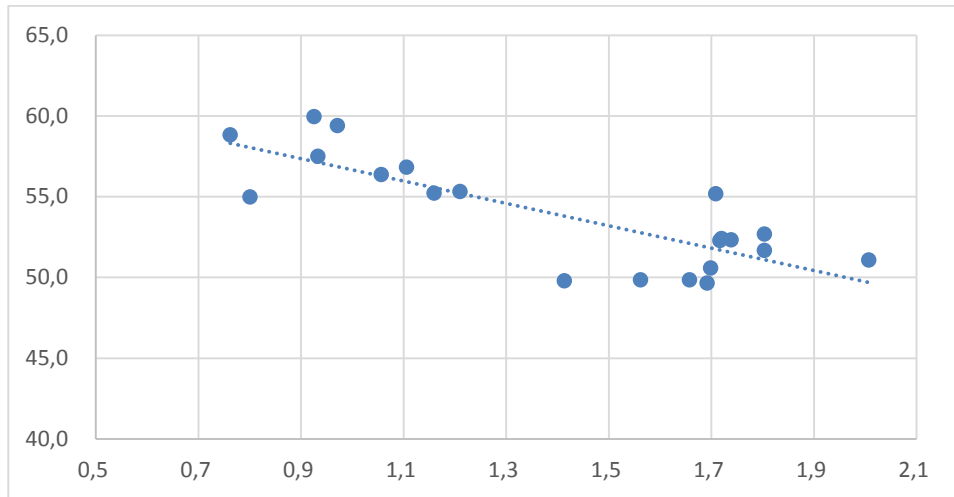


Figure 4.4: Relationship between LF rate and CIT

Relationship between VAT and CIT

Figure 4.5 indicates that there is a positive relationship between VAT and CIT that states that an increase in VAT leads to an increase in CIT, then a direct positive relationship has been found.

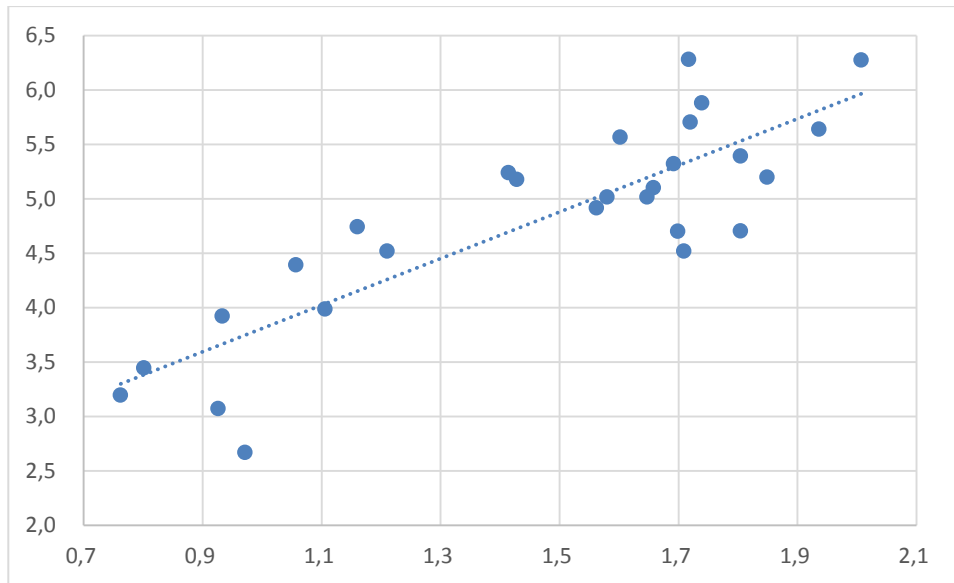


Figure 4.5: Relationship between VAT and CIT

Relationship between CFTT and IR

Figure 4.6 indicates that there is a moderate negative relationship between IR and CFTT that states that there is an inverse relationship meaning that when there is an increase in CFTT then there will be a decrease in IR.

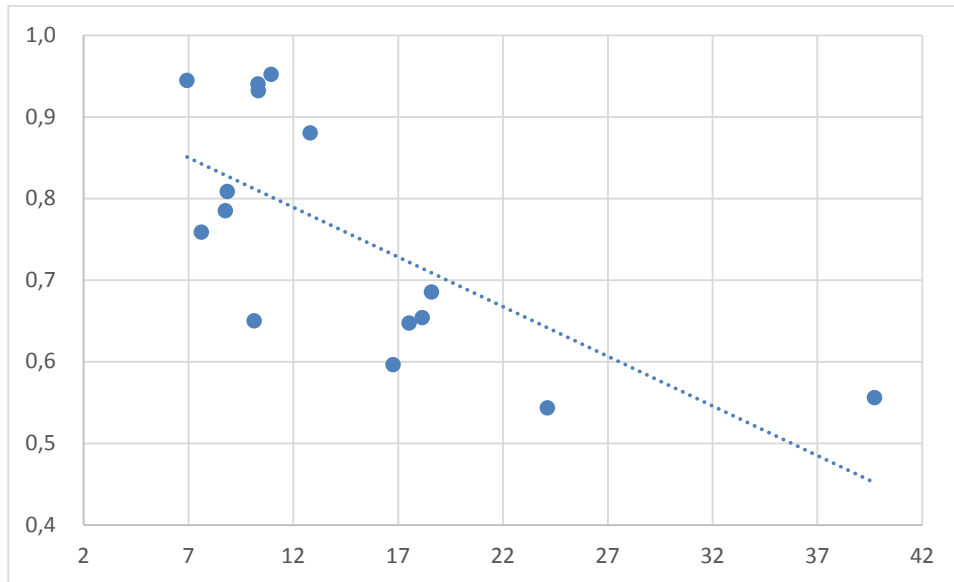


Figure 4.6: Relationship between CFTT and IR

Relationship between TTR and LF rate

Figure 4.7 indicates that there is a negative relationship between LF rate and TTR that indicates that a decrease in TTR leads to increase in LF rate, it is an inverse relationship.

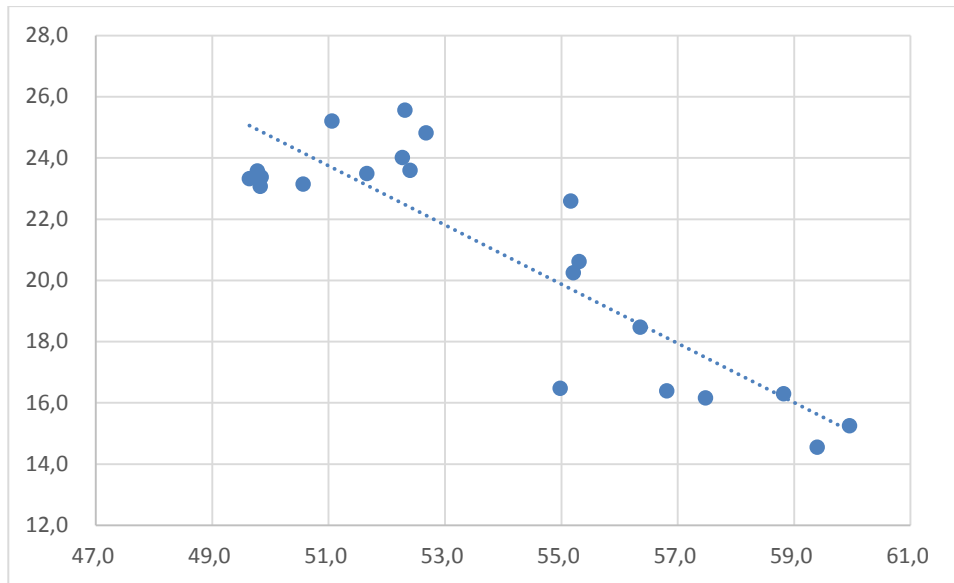


Figure 4.7: Relationship between TTR and LF rate

2.2.8. Relationship between VAT and CIT

Figure 4.8 indicates that there a positive relationship between the two variables, that means that the both variables varies in the same direction.

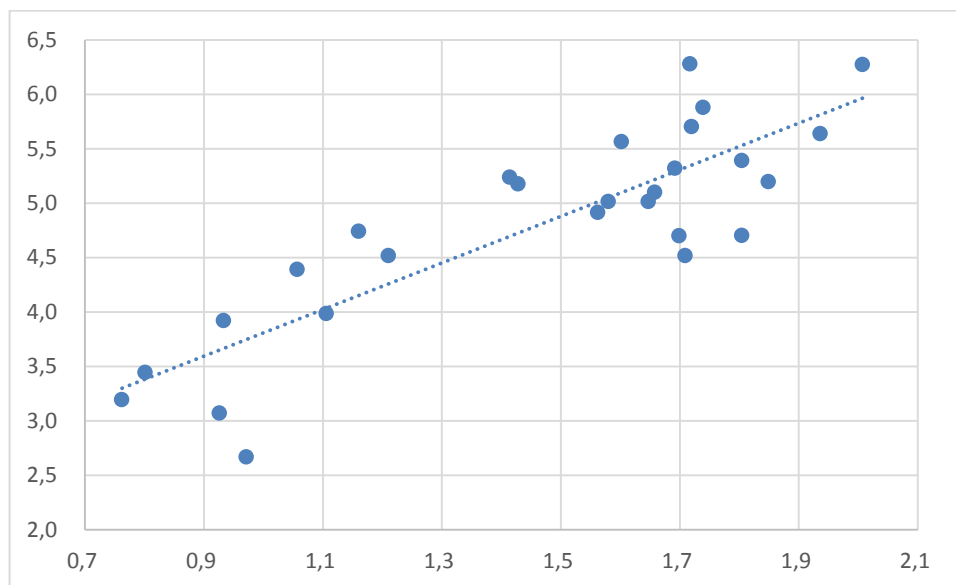


Figure 4.8: Relationship between VAT and CIT

Relationship between CFTT and PT

Figure 4.9 shows a positive relationship between CFTT and PT, that indicates that increasing CFTT is accompanied with an increased PT. A direct relationship has been found.

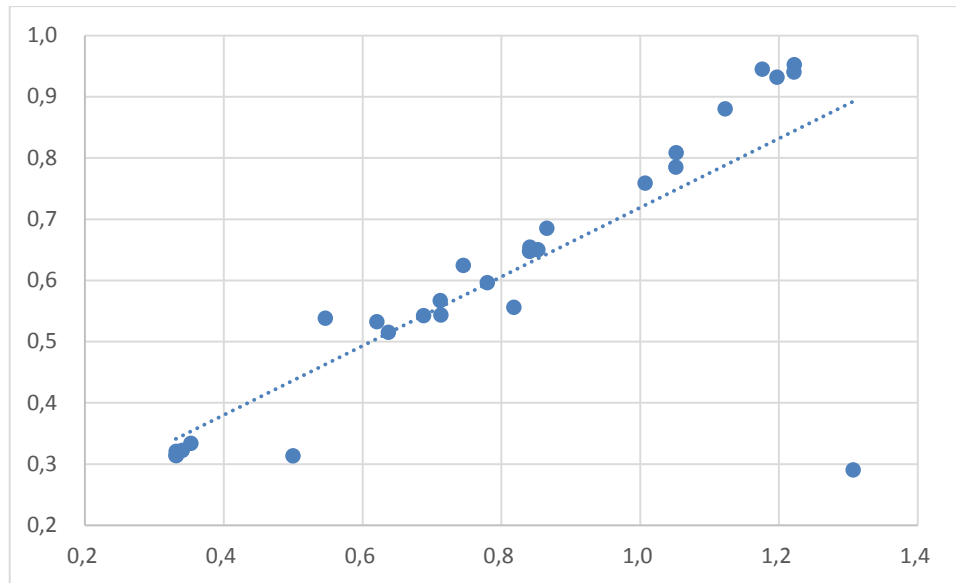


Figure 4.9: Relationship between CFTT and PT

Relationship between TTR and GST

Figure 4.10 indicates that there is a positive relationship between TTR and GST that is explained by the correlation in the same direction of both variables. When TTR increases GST does.

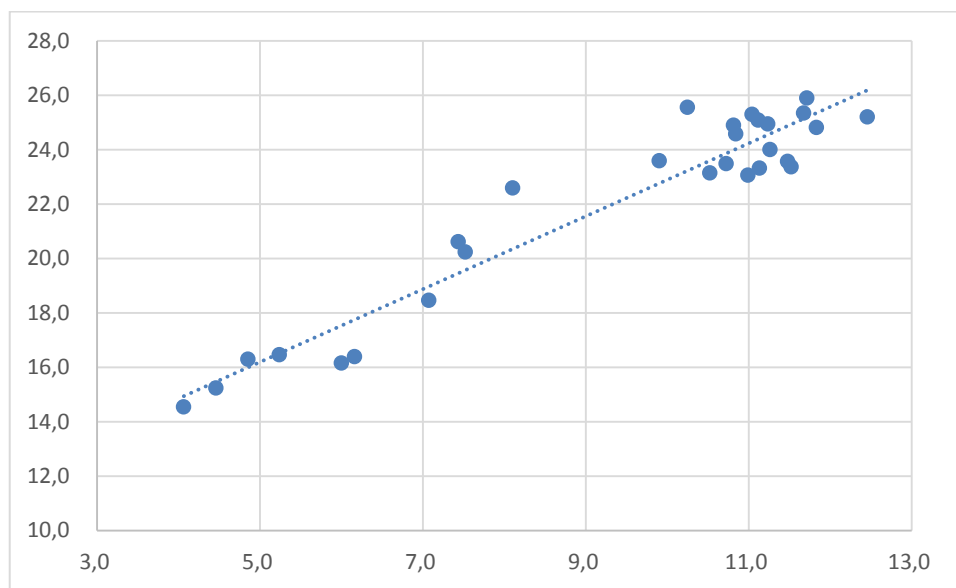


Figure 4.10: Relationship between TTR and GST

Relationship between VAT and GST

Figure 4.11 shows the positive relationship between VAT and GST that implies that when GST increases VAT increase as well, so there is a direct positive relationship found.

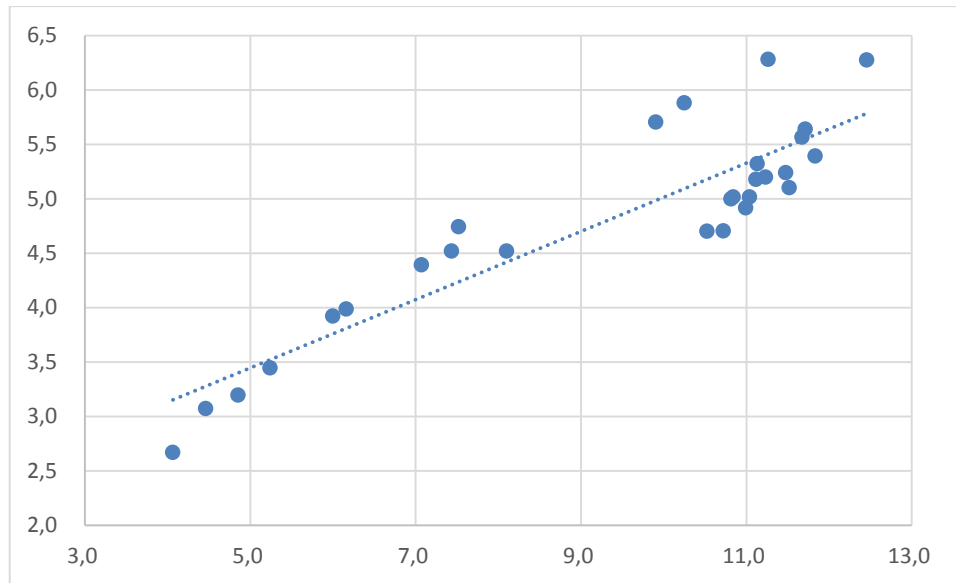


Figure 4.11: Relationship between VAT and GST

Relationship between UNEMP and IIT

Figure 4.12 indicates that there is a negative relationship between UNEMP and IIT that states that with the increase of UNEMP the IIT decrease and the opposite is possible since it is an inverse relationship.

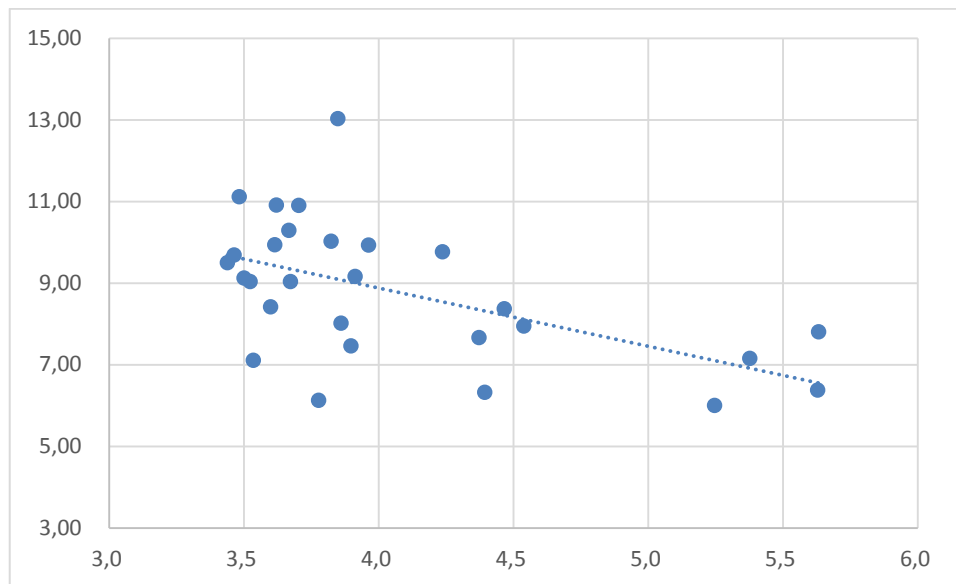


Figure 4.12: Relationship between UNEMP and IIT

Relationship between VAT and TTR

Figure 4.13 shows a positive relationship between VAT and TTR, that implies when VAT increases automatically TTR increases since there is a direct relationship found.

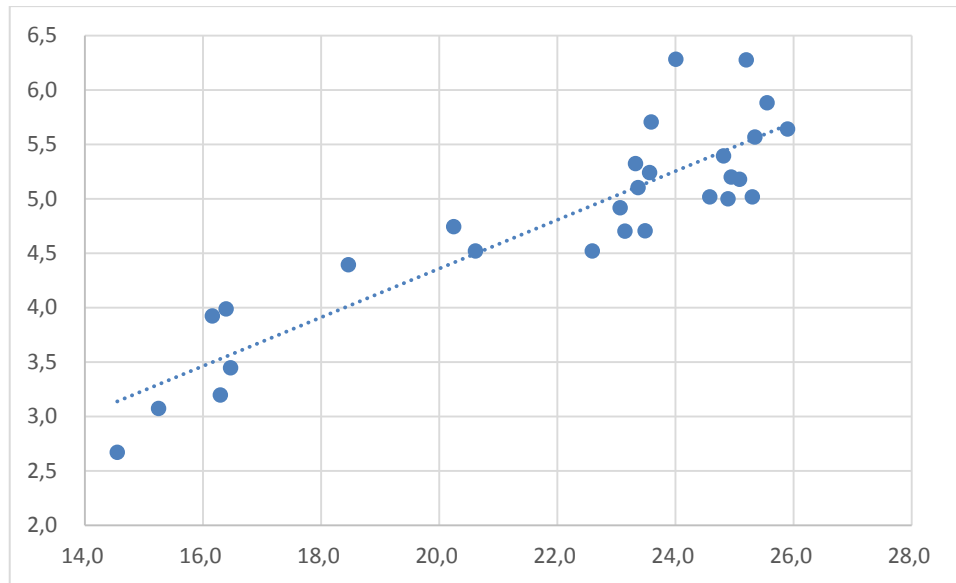


Figure 4.13: Relationship between VAT and TTR

4.4.3 Regression analysis

In this study we choose to apply the regression model in order to analyze the data collected, thus, to do so and since we have time series databases, we have first test whether our data is stationary or not. Hence, in order to test the stationarity, the Dickey-Fuller method known the Augmented Dickey-Fuller (ADF) test is used.

4.4.3.1 Stationarity test (unit root)

Testing the stationarity is a crucial step in the research where the variables are based on time series. Actually, a stationary process shows the property that the variance, mean and correlation do not show change over time. Hence, in this context the method developed to understand course of the series since the past is known as the unit root test. In statistics, the Dickey-Fuller tests is used to test the null hypothesis saying that the time series has a unit root and the alternative hypothesis that the time series doesn't have a unit root.

Table 4.8: ADF test results

Variables	ADF	
Level	Intercept	Intercept and Trend
CFTT	-0.803995 0.8019*	-2.967240 0.1591*
CIT	-1.535882 0.5000*	-1.593952 0.7675*
GDP	-5.697045 0.0001*	-5.745437 0.0003*
GST	-2.256016 0.1926*	-0.828696 0.9501*
IIT	-1.750337 0.3958*	-2.780424 0.2170*
IR	-1.418842 0.5450*	0.265752 0.9951*
LF	-1.686098 0.4227*	-1.217158 0.8787*
LFr	-2.517828 0.1250*	-2.191293 0.4709*
PT	-2.561332 0.1131*	-5.249556 0.0012*
TR	-0.556967 0.8605*	-5.798750 0.0006*
TTR	-2.098825 0.2466*	-1.318384 0.8613*
UNEMP	-0.903825 0.7725*	-3.106909 0.1241*
VAT	-2.557758 0.1139*	-1.811903 0.6708*
1st Difference	Intercept	Intercept and Trend
CFTT	-3.412077 0.0211*	-3.126883 0.1238*
CIT	-5.066723 0.0004*	-5.106128 0.0020*
GDP	-9.184433 0.0000*	-8.972106 0.0000*
GST	-4.753502 0.0008*	-5.555002 0.0006*
IIT	-4.326109 0.0023*	-4.224310 0.0134*
IR	-3.863738 0.0119*	-3.537446 0.0813*
LF	-4.801736 0.0013*	-5.479854 0.0016*
LFr	-2.367999 0.1600*	-2.348197 0.3929*
PT	-6.365355 0.0000*	-6.234630 0.0002*
TR	-5.271255 0.0004*	-5.066915 0.0030*
TTR	-2.496260 0.1283*	-5.501867 0.0007*
UNEMP	-4.116867 0.0035*	-4.119965 0.0158*
VAT	-4.718799 0.0009*	-5.020386 0.0022*

*MacKinnon (1996) p-values.

According to Table 4.8, except the GDP variable, all the variables in the intercept and trend models are not stationary, while after making the first difference, except the LFr, all the variables are stationary. Therefore, we could reject the null hypothesis saying that variables has unit roots and accept the alternative hypothesis saying that variables does not have unit roots.

4.4.3.2 Regression model

A size of shadow economy is around one third of official GDP, therefore, taxes which are already in official GDP get high values of GDP which comes to use the GDP growth rate as a dependent value to estimate the shadow economy (*Inal, 2019*). Hence, in order to test the relationship between taxes and the shadow economy, IIT, CFTT and PT were selected as independent variables for this study, as to determine how much is strong their relationship with the GDP growth which is selected to be the dependent variable for this research. Thus, since we have multiple independent variables, the model of multiple linear regression below was established empirically.

$$Y = \beta_0 + \beta_1 IIT_{i,t} + \beta_2 CFTT_{i,t} + \beta_3 PT_{i,t} + \epsilon$$

Where,

Y: GDP growth rate (Dependent variable)

IIT: Individual Income Tax (Independent variable)

CFTT: Capital and Financial Transactions Tax (Independent variable)

PT: Property Tax (Independent variable)

β_0 : y- intercept (constant term)

$\beta_{1,2,3}$: Slope coefficients of independent variables

ϵ : Residuals.

4.4.4 Conceptual framework

On the basis of theoretical and empirical studies which are discussed previously and presented above, the conceptual framework model of this study is drawn as follow in Figure 4.14:

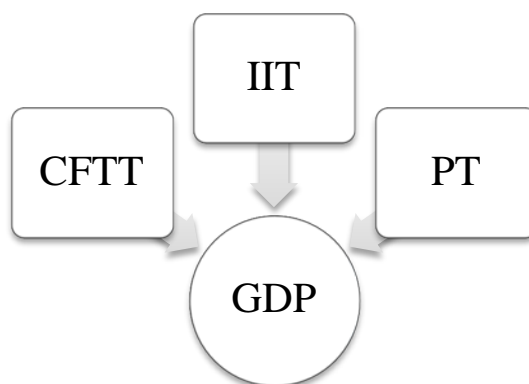


Figure 4.14: Conceptual framework

4.4.5 Hypothesis

The hypothesis to be formulated for this study are shown as the null hypothesis and the alternative hypothesis as follow

H₀: There is no relationship between dependent variable and independent variables.

H₁: There is a relationship between dependent variable and independent variables.

4.4.6 Regression results

Since our variables have been proved stationary after making the first difference using the ADF test, hence, we choose to use the first difference to test the regression, using the SPSS program, the regression results were as illustrated in Tables 4.9 as follow

Table 4.9: Regression results

Regression Statistics					
R	R-square	Adj. R-square	Std Error		
0,812	0,660	0,617	4,315344		
Anova					
	SS	Df	MS	F	Sig. F
Regression	866,512	3	288,837	15,510	0,0001
Residual	446,933	24	18,622		
Total	1313,445	27			
Coefficients					
	B	Std Error	Beta	t	p value
(Constant)	-1,068	0,837		-1,276	0,214
Δ CFTT	59,055	8,831	1,602	6,687	0,000006
Δ PT	-14,935	3,427	-0,705	-4,358	0,0002
Δ IIT	-8,684	1,787	-1,013	-4,860	0,00005

Table 4.9 shows that the CFTT has a positive relationship with GDP growth which is indicated by a significant relation between CFTT and GDP represented by p value which is (0.000006) that is less than 5% the rule of p value of regression.

PT as well shows a strong positive relationship with GDP growth represented by p value of (0.0002) which is also less than 0.05.

Equally important IIT results indicates that there is a strong positive relationship between IIT and GDP growth represented by the p value of (0.00005) that means that the relationship is significant since it is less than 5%.

While, R square which is a statistical value used for calculating how near are adjustable the data to the line of regression , in the results above R square is of value 0.660 which means up to this extent the change of GDP has been occurred by these three independent variables mentioned above. The overall model is valid as it is shown by Sig. F value which is 0.0001 which is less than 0.05, and by the end makes the model significantly true.

Thus, according the results obtained we could reject the null hypothesis saying that there is no relationship between the dependent variable which is GDP growth and the independent variables which are IIT, CFTT and PT in our model, and accept the alternative hypothesis saying that there is a relationship between the dependent variable and independent variables, Table 4.10 summaries the results.

Table 4.10: Hypothesis summary

Hypothesis	
H₀: There is no relationship between dependent variable and independent variables.	Rejected
H₁: There is relationship between dependent variable and independent variables.	Accepted

5. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The shadow economy is the inability to make record of economic activities and which covers different activities. If the factors that create the shadow economy could be eliminated, then the shadow economy will be recorded. Indeed, the shadow economy is a universal phenomenon that exists in all developed and developing countries, while the shadow economy in developing countries is recorded more than in developed countries.

Despite many methods of measurement are used to estimate the shadow economy, the results reached are different since there are different assumptions. The shadow economy is one of the major financial problems in developing countries such as Turkey which is the subject of the study; it represents a complex structure in terms of dimensions, causes and measurement of methods.

While the shadow economy activities have negative effects such as reducing the public revenues, inaccurate statistics, unfair tax system. It has positive effects as well, such as employment, investment and production. But despite the positive effects, the excess of negative effects increases nowadays.

In this study we have used different variables, namely CIT, GDP, CFTT, PT, IIT, LF, IR, VAT, UNEMP and GST, of a time span of a period between 1990-2017, we have made the statistics calculations to reach out the basic statistics of variables such as mean, variance, standard deviation, etc...., then using the SPSS software, the correlation between variables has been tested to find out that there is relationship between the variables in different ways that are statistically significant.

Equally important, in order to test the regression, a unit root test or stationarity test has been used to test the stationarity of the variables, and the results reached were that the variables were stationary after making the first difference to all variables. Thus, using the SPSS software, the regression has been tested and the results indicates that there is a significant strong positive relationship between the GDP

growth which is considered as the dependent variable in this study, and the IIT, the CFTT and the PT which are considered the independent variables in the study. the results are consistent with the previous studies.

The outcome of the study leads to the conclusion that the existence of shadow economy in the economy of the country and its contribution to the economic growth is a sign that something went wrong in the economic activities, since the government depends on tax revenue. Moreover, the lack of tax morality of citizens creating the shadow economy in the country is a critical problem since every citizen benefit from the goods and services of the country as they invest hiddenly within this country.

5.2 Implications and Limitations

The study could be used as a resource besides previous studies, for scholars who could chose to work on the same topic in the future. Concerning the limitations, this research use data from a time span between 1990-2017, hence, the change in time period could lead to a change in the results.

5.3 Recommendations

Finally, after reviewing the results, and reaching the recommendation part, the researcher reached some recommendations to be mentioned to benefit from them for the future studies, since Turkey is facing a phase of high taxes that is becoming more and more a burden for businesses and taxpayers, and since the government has a positive influence on economic growth, therefore, my recommendations includes that the government should attempt to soften some business regulations that push private corporations and businesses to go into hidden and not declare their income that must be subject to tax. Moreover, the policymakers should endeavor to reduce the taxes gradually by applying some improvement to tax laws so that the taxpayers could invest in a healthy economic indicators and the will be encouraged to comply with their duty to the government without high taxes that creates burden and by the end creating the shadow economy.

REFERENCES

BOOKS

- SCHNEIDER. F and ENSTE. D, “**Shadow Economies Around the World – Size, Causes, and Consequences**”, September 1999.
- SCHNEIDER. F, “**Handbook on the Shadow Economy**”, Edward Elgar, Cheltenham, (ed.) 2011.
- PENOUIL. M, and LACHAUD. J.P, “**The spontaneous development, the informal activities in Africa**”. Paris, Editions Pédone, 1985.
- HUGON, P. “**The Dual Economy in the Context of the Crisis**”, In the integrated development (synthesis of Louvain), Louvain la Neuve Ciaco publisher, 1987.
- İNSEL. A, “**Econometric Modelling and Applications**”. Istanbul Aydin University, Istanbul, 2019
- CASSEL, D. and CICHY, U, “**Explaining the Growing Shadow Economy in East**”, 1986.
- CASTELLS, M. and PORTES, A, “**World Undemeath: The Origins, Dynamics and Effects of the Informal Economy**”. L.A.Benton Eds, 1989.
- DE SOTO, H, “**The Other Path: The Invisible Revolution in the Third World**” . NY: harper and row, 1989.
- DE SOTO, H. “**The Mystery of Capital**”. New York: Basic Books, December 26-28, 2000.
- DE SOTO. F, “**The other path: The invisible revolution in the third world**”. New York: Harper and Row Publisher, 1990.
- De Soto. H, “**Understanding the Shadow Economies of Developing and Developed Worlds**”. Beloit College, the annual proceedings of wealth and wellbeing of nations, Vol II, 2010.
- DILNOT, MORRIS, M., “**Divergent Paths: Economic Mobility in the New American Labor Market**”. New York: Russell Sage Foundation, 1981.
- DOMINIQUE, P, “**A Look at the Size of the Underground Economy: Methods of Estimation**”, Department of economics faculty of science social university Laval, Quebec, 2005.
- ERDİNÇ, Z, “**Informed Economy Policies and Suggestions for Solution**”, Ankara, Seçkin publishing house, 2016.
- Eroğlu, E, “**Unregistered Economy in Turkey**”, 2014.
- FEIGE, E. L. and URBAN, I. “**Measuring Underground (Unobserved, Non-Observed, Unrecorded) Economies in Transition Countries: Can We Trust GDP?**” Michigan: The William Davidson Institute, 2008.
- FERMAN, P. “**The Structural Underpinning of The Irregular Economy Poverty and Human Resources**”, 1973.
- FREY, B.S, WECK, H and W.W. POMMEREHNE, “**Has the Shadow Economy Grown in Germany?**”, 1982.
- GOULDNER, A. W. “**Patterns of industrial bureaucracy**”. New York, NY, US: Free Press, 1954.

- HARDING, P. and JENKINS, R. **“The Myth of the Hidden Economy: Towards a New Understanding of Informal Economic Activity”**. Milton Keynes: Open University Press, 1989.
- AYBAR. S and EROĞLU. E, **“Shadow Economy in Turkey, Measurement, causes and consequences”**, Orion Publishing, Istanbul, 2017.
- AYDIN. S, and YILMAZER. Y, **“Corruption and Financial Crimes”**. Ankara: Adalet Publishing House, 2010.
- AKALIN. G, **“The Shadow Economy at the Phase of the Economic Development in Turkey”**, Istanbul, 2017.
- SCHNEIDER. F and WILLIAMS. C, **“The Shadow Economy”**, June 2013.

ARTICLES

- “International Journal of Economic Perspectives”**, Issue 1, 171-193, 2016.
- AIDIS, R. “Institutions and entrepreneurship development in Russia: A comparative perspective”. **Journal of Business Venturing**, 2008, 23(6), pages 656-672.
- AKCA, H., ÜNLÜKAPLANM İ, and YURDOĞ, V. “Unregistered economy, corruption and unregistered state”, **Çukorova Journal of Economics and Administrative Sciences**, 20 (2), 2016,
- BANDT. D. J, **“Can We De Without the Public Sector in the Process of Industrialization?”**, In review third world, Paris, d; PUF, no. 115, 1988, p 929-948.
- BINAY. M, “Optimal Informal Employment Ration for Turkish Economy”, **Procedia economics and finance**, 26 (2015), pp. 598-602.
- BLAU, P. M. “Formal organization: Dimensions of analysis”. **American Journal of Sociology**, 63(1), 1957, pp.58–69.
- ÇETINTAŞ, H. and VERGİL, H, “Informal Economy Forecast in Turkey”, **Doğuş University Journal**, vol. 4, 2003, p.1, pp 15-30.
- CHAUDHARI, K. SCHNEIDER. F and SUMANA, C. “The Size and Development of the Shadow Economy: An Empirical Investigation from States of India” **Journal of development economics**, 2006, 80: 428-443.
- CHEN. M, “The Informal Economy Definition, Theories and Policies”, **WIEGO working papers**, no.1, august 2012.
- CHOI. J.P, THUM. M, “Corruption and the Shadow Economy”. **International Economic Review/** Volume 46, Issue 3. 05 July 2005.
- CHYE, L. T., “Underground economy: Definition and causes”. **Business and Management Review**, 2011, 1, 14–24.
- ÇILOĞLU. İ, “The Operation of the Informal Economy and Its Effects on Public Budget” , **Treasury Magazine**, 1998, p.11, pp.67-91.
- DELL’ANNO. R, DAVIDESCU, A.M., “Estimating Shadow Economy and Tax Evasion in Romania. A Comparison By Different Estimation Approaches”, **ScienceDirect Journal**, Vol. 63, September 2019, p. 130-149.
- DJANKOV, S., GLAESER, E., LA PORTA, R., LOPEZ-DE-SÍLANES, F., and SHLEIFER, A. “The new comparative economics”. **Journal of Comparative Economics**, 31(4), 2003, pp. 595-619.
- EDİZDOĞAN, N, GÜMÜŞ, E, “Evaluation of the Tax Amnesty and Tax amnesty in Turkey”. **Journal of Finance**, (164), 2013, pp. 99-119.
- ERKUŞ AND KARAGÖZ, “Informal Economy and the Estimated Tax Loss in Turkey”, İnönü University, **Journal of Finance**, (156), 2009, p.129

- FEIGE, L. EDGAR. "Defining and Estimating Underground and Informal Economies: The New Institutional Economics Approach", **World Development Journal**, Vol:18, No:7. 1990.
- FELD, L. and SCHNEIDER, F. "Survey on the Shadow Economy and Undeclared Earnings in OECD Countries", **German Economic Review**, 11(2), 2010, pp.109–149.
- FISHER. I, "Double Taxation of Savings", **American Economic Review**, March 1939, pp.16-33
- GERXHANI, K. "The Informal Sector in Developed and Less Developed Countries: A Literature Survey, **Public Choice**", 114/3-4, 2004, pp. 295-318.
- GODFREY. P, "Toward A Theory of the Informal Economy", **Academy of Management Annals**, 5(1), 2011, 231-277.
- GUTTMAN, P. "The Subterranean Economy". **Financial Analysts Journal**, 34(1), 1977, 24-27.
- HABIB, M. and ZURAWICKI, L, "Corruption and Foreign Direct Investment", **Journal of international Business Studies**, 33(2), 2002, pp. 291-307.
- HART, K. "Informal Income Opportunities and Urban Employment in Ghana". **Journal of Modern African studies**, 1973, 11(1): 61-89.
- JOHNSON, S., KAUFMANN, D., SHLEIFER, A., GOLDMAN, M. I. AND WEITZMAN, M. L. (1997). "The unofficial economy in transition". **Brookings Papers on Economic Activity**, 2, 1997, 159-239.
- LAZAR. D.T, MOLDOVAN. B.A, PAVEL. A, "Underground Economy's Measurement Methods" **Transylvanian Review of Administrative Sciences** 4(23), 2008, pp. 43-58.
- MALONEY, W, "Informality Revisited", **World Development Journal**, 32(7): 2004, pp. 1159-1178.
- OMODERO. C.O, "The financial and Economic Implications of Underground Economy: The Nigerian Perspective", **Academic Journal of Interdisciplinary Studies**, Vol 8 No 2 July, 2019, p. 4.
- PUTNINS. T.J. & SAUKA. A, "Measuring the Shadow Economy Using Company Managers". **Journal of Comparative Economics** – May 2015. DOI: 10.1016/j.jce.2014.04.001
- ŞANVER, C, "The research on the deterrence of sanctions on tax misconduct and crimes in Turkish Tax system", **Journal of management sciences**, Vol.8, Issue 2, 2017 pp. 15.
- SARILI, M. A, "Reasons Unregistered Economy in Turkey, Size, Effects and Precautions Should Be Taken". **Journal of Bankers**, (2), 2002, pp. 32-50.
- SAVAŞAN. F, "Taxpayers Response to Tax Amnesty: Who Benefit from Tax Amnesty in Turkey?" Kocaeli University. **Journal of Social Sciences**, (12), 2006, pp. 149-171.
- SCHNEIDER, F, "Estimating the Size of the Danish Shadow Economy Using the Currency Demand Approach: An Attempt", **The Scandinavian Journal of Economics**, 88, 1986, pp. 643–668.
- SCHNEIDER, F, "The Influence of Public Institutions on the Shadow Economy: An Empirical Investigation for OECD Countries", **European Journal of Law and Economics**, 6/3, 2010, pp. 441–468.
- SCHNEIDER. F and ENSTE. D, "Shadow Economies: Size, Causes and Consequences", **Journal of economics Literature**, Vol XXXVIII, March 2000, pp. 77-114.

- SCHNEIDER, F, “Estimating A Shadow Economy : Results, Methods, Problems and Open Questions” **review Article Open Economics** 2017: 1: 1-29.
- SETHURAMAN, S. V. "The Urban Informal Sector: Concept, Measurement and Policy", **International Labor Review**. 114, 1976, 1, pp 69-81
- SHARMA, C., “Estimating the Size of the Black Economy: New Evidence From India”, **International Journal of Emerging Markets**, Vol. 14, No.2, 2019, p. 300.
- SMITH, P, “Assessing the Size of the Underground Economy: The Canadian Statistical Perspectives”, **Canadian Economic Observer**, 11, 1994, pp. 16–33.
- TANZI, V, “Uses and Abuses of Estimates of the Underground Economy”. **Economic Journal**, 109(3), 1999, pp. 338–347
- TANZI, V. “The underground economy in the United States: annual estimates”, **IMF Staff Papers**, 30, pp. 283–305, 1930–1980
- TANZI, V. “The underground economy in the United States: estimates and implications”. **Banca Nazionale del Lavoro**, 135, pp. 427–453, 1980.
- TEYYARE. E., “Shadow Economy and Institutional Quality Relationship in OECD Countries”, **International Journal of Management and Business**, Vol. 14, No1, 2018, p. 52.
- TOKMAN, “An exploration into the nature of informal-formal sector relationships”, **World Development Journal**, N 6, Oxford, 1978, Pergamon Press Ltd.
- WEEKS. J, “Policies for Expanding Employment in the Informal Urban Sector of Developing Economies”, **International Labour Review**, 3(1), 1975, pp, 1-13.
- ZHAO, J., KIM, S., DU, J. “The Impact of Corruption and Transparency on Foreign Direct Investment: An Empirical Analysis”. **Management International Review**, 43(1), 2003, pp. 41-62.

ELECTRONIC SOURCES

- URL-1 ”Tax burden as percentage of GDP” and “Unemployment rate in Turkey”, April 8, 2017 <http://www.sbb.gov.tr/>
- URL-2 WIEGO, Women In Informal Employment: Globalizing and Organizing; International Labour Conference. 2018, www.wiego.org
- URL-3 OECD stats, 2019. <https://stats.oecd.org/>

DISSERTATIONS

- ALTUĞ. O, “**Draft Law on the Amendment of Various Laws for The Informal Taxation of the Informal Economy**”, M.U.I.I.B faculty, 1994.
- BHÉRER. H, “**Entrepreneurship Education Programs**”, Laval University, administration sciences faculty, Quebec, 1992.
- GÖNNETLIOĞLU, H, “**Informal Economy: Causes, Dimensions and Turkey**” Antalya Akdeniz University, 2010.
- İNAL, H, “**Informal Employment and Economic Growth Relationship: Case of Turkey**” Balıkesir University, Social Sciences Institute, Economic Department, Balıkesir 2019.
- JAMES, R. HINES, JR, “**Excess Burden of Taxation**”. University of Michigan and NBER May 2007.
- KAMALIOĞLU, N. Ç, “**Evaluation of Unregistered Employment and Applied Corruption Policy in Turkey**”. Hacettepe University Institute of Social sciences. Ankara, 2014.

- ÖĞÜNÇ, F, YILMAZ, G. **“Estimating the Underground Economy in Turkey. The Central Bank of the Republic of Turkey”**, Discussion Paper, 2000.
- ÖNDER, M, **“Informal Economy and International Practices Advice Solutions at Light in Turkey”**. Ankara: Republic of Turkey Ministry of Finance Strategy Development Department, Finance Expert Qualification Thesis, 2012.
- SABIRIANOVA. K, **“Income Tax Flattering: Reduce the Shadow Economy?”**. IZA discussion paper, No.4223, June 2009 Macroeconomic effects. PhD thesis, Kadir Has University, Istanbul.
- SAVASAN. F, **“Economy and Tax Loss Estimates in Turkey; Tax Loss and Taxation Paths”**, 19th symposium on Turkey finance, 10-14 May 2004, Uludağ University. BF Ministry of finance, 2004.
- SCHNEIDER, F. and ENSTE. D, **“The Shadow Economy: Theoretical Approaches, Empirical Studies, and Political Implications”**, Cambridge University Press, Cambridge (UK), 2002.
- SIMON, C.P. and WHITE. A.D, **“Beating the System: The Underground Economy”**, Boston: Auburn House Publication Co., MA. 1982.
- SUGÖZÜ, H, **“Informal Economy and Turkey”**. Ankara: Nobel Publications, 2010.
- OTHER SOURCES**
- “Estimating the Size of The Shadow Economy: Methods, Problems and Open Questions”, IZA DP No. 9820 March 2016.
- BABAOĞLU. S, “Effect of Unregistered Economy on Countries: The Case of Turkey”, Karatay university, 2008-2016.
- BARTHÉLÉMY. P, “Underground economy”, Aix-Marseille III University, OECD, (2018).
- BARTLETT. B, “Corruption, the Underground Economy and Taxation”, unpublished manuscript, National Center for Policy Analysis, Washington, DC, 1998.
- BILGE. O, ZULKUF. Ç, “Does Unregistered Employment Really Reduce The Labor Costs?”, ILO, 1984, no 169 A study in Turkey first edition June 2017 p 22.
- BOROZAN, “Government Policies Supporting SME Development: Croatian and Polish Perspective”. Conference: Enterprise In Transition. MAY, SPLIT-BOL CROATIA, 2005.
- HORN. Z. E, “No Cushion to Fall Back On: The Global Economic Crisis and Informal Workers”. August 2009. WIEGO publishing.
- HOUSTON, JOHN F., “Estimating the Size and Implications of the Underground Economy”, Working paper 87-9, Federal Reserve Bank of Philadelphia, Philadelphia (N. J.).1987.
- INTERNATIONAL LABOUR ORGANIZATION (1972) “Employment, Incomes, and Equality: A Strategy for Increasing Productive Employment in Kenya”. Geneva, Switzerland.(ILO), 1972.
- LEMIEUX, P, “GDP as a Measure of the Economy”, Economic Exercises, April 1, 2007, Montréal Economic Institute.
- LUXEMBURG. R, “The Accumulation of Capital”, London, Rotledge and Kegan, 1951, ss.361-65.
- MESNARD, A. AND RAVAILLON, M. “Wealth Distribution and Self Employment in a Developing Economy”, CEPR Discussion Paper DP 3026 and Work Bank 2527, 2003.

MUGHAL, K.S. & SCHNEIDER, F.G. "Shadow economy in Pakistan: Its size and interaction with official economy". Munich Personal RePEc Archive, 2018.

N'GUESSAN B. M, "Understanding the Informal Economy in Cote D'Ivoire: A Case Study Through "Maquis" In Abidjan", November 1999.

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