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Underground economy

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Abstract

The two phenomena of financial corruption and the underground economy are closely related to each other, so that the existence of the underground economy provides the possibility of creating financial corruption. Considering the increase in inflation and the decrease in per capita income and the almost increasing trend in the tax burden, it can be acknowledged that the increase in the tax burden has been effective on the increasing trend of the relative size of the underground economy. Also, the unemployment rate has a direct effect on the underground economy, but in terms of size, the unemployment rate is less elastic than the tax burden, therefore, due to the high elasticity of the underground economy to the tax burden, the government should have a suitable combination of tax components according to Also, the government should take effective steps to fight against corruption and tax evasion.

Keywords: underground economy, shadow economy, developing countries, financial corruption

Introduction

Since the underground economy is that part of the economic activities that remains far from the eyes of official observers and the statistics related to it are not mentioned in the national accounts and official statistics; It can be considered as the root of many economic and social disturbances (such as inefficient allocation of incomes and incorrect policy making and reduction of social welfare) (Shahabadi *et al.* 2019) ^[37]. In other words, 44-35% of official economic activities are spent on unproductive underground activities. It seems that the existence of this vast volume of the size of the underground economy, a large part of which is caused by the characteristics of developing countries, such as the inefficient tax system, the existence of inflation and increasing unemployment, strong dependence on natural resources (especially oil) and the spread of corruption and Rent-seeking, weak institutional quality, lack of effective foreign investment attraction platforms, extensive trade restrictions and low per capita income. It has caused about 35-44 deep gaps in the ratio of the informal economy to the formal economy of the countries in question, thereby reducing the effectiveness of various types of policies. Considering that the formation of the underground economy is a function of the characteristics and economic, social and political conditions of the countries and these characteristics are different from one economic structure to another economic structure, the reasons for the creation of the underground economy are also in different economic structures, for example in the countries It is different in developing countries compared to developed countries (Shahabadi *et al.*, 2019) ^[37].

One of the reasons for the exchange rate is that if it starts falling and approaches its previous figures, we can say that the economic situation may get even worse; Because the source of our economic problems is not the exchange rate, but the accumulation of liquidity beyond the economic capacity. (Azad armaki & *et al.*, 2020) ^[8] Different types of taxes may not have the same effects on the size of the shadow economy, because first, the society's sensitivity to the increase of different types of taxes is not the same, and second, the practical solutions for tax evasion are not the same for different types of taxes. As a result, understanding the effect of changes in the composition of taxes (substitution of taxes) on the size of the underground economy sector can be an effective guide to adjust the composition of taxes with the aim of limiting this sector (Farahti, 2019) ^[16].

Considering that in all the economies of the world, the underground economy has existed as a complex and effective phenomenon, having information and obtaining scientific findings regarding the scope of the shadow economy, the people who are involved with it or are engaged in it, how the circulation and periodicity of these activities, its size and magnitude, and especially the scope of its effects and the type of interaction with the formal economy and especially economic welfare are very vital and necessary for effective and efficient decision-making in relation to the allocation of the country's resources (Shahab and Pajoyan 1394). Corruption is not a new phenomenon and has been affecting societies for many centuries. Although corruption is not a new issue, it has spread surprisingly all over the world. Researchers have devoted more attention to studying the effects of corruption (Van Wu *et al.*, 2020). Corruption is commonly defined as the abuse of public office for private gain. While corruption has been defined in different ways, most of them define corruption as "illegal activity (bribery, fraud, financial crime, abuse, forgery, favoritism, nepotism, manipulation) through the abuse of power by It is done by public (government) or private (companies) office holders for personal, financial or non-financial benefits (Bahu *et al.*, 2020). From an institutional perspective, corruption indicates lower institutional quality and is likely to hinder business transactions. When the institutional quality of countries is high and corruption is low, market transactions are facilitated and companies more easily implement their strategies and actions, such as R&D investment (Barasa *et al.*, 2017; Bahu *et al.*, 2020). On the contrary, when the pervasiveness of corruption prevails in a particular country, companies have less organizational and strategic decision-making (Rodriguez *et al.*, 2005). For this and other reasons, corruption is known as a burden that increases transaction costs and external uncertainty in investment returns (Gaslik Gokcek, 2018) and corruption risks exist in both less developed and developed countries and have consequences for companies' investment and financial performance (Yang *et al.*, 2021) ^[44, 45]. The existing business and management literature mainly supports that corruption reduces corporate innovation and entrepreneurship (Annaman and Bukhari, 2021) and generally reduces economic growth (Goodhayes *et al.*, 2019). In addition, corruption also reduces the activity of foreign companies (ie foreign direct investment) in the country. Specifically, corruption increases agency and transaction costs, limits revenues, destroys firm value, and increases the costs of innovation. However, the nature of the relationship between corruption and corporate performance is not clear (Wang and Yu, 2012; Wen Wu *et al.*, 2018) ^[11]. The economic crisis and sanctions have led the government to favor entrepreneurship, but in practice, official assistance for key infrastructures such as making it easier to start a new firm and giving low-interest loans appears to be minimal. As a result, the percentage of adults planning to establish a business in the next three years in Iran has dropped from 38% in 2019 to 24% in 2020 (Saadat & *et al.*, 2021) ^[31] And it still requires more attention. Theoretically, we might expect that a country's institutional quality (e.g. low levels of corruption) positively affects R&D investments as a valuable knowledge activity that is essential for firms to develop new innovations. Considering the importance of research and development investments for the performance of companies in emerging countries, previous researches have proven the relationship between corruption and companies' research and

development investments (Alam *et al.*, 2019; Barasa *et al.*, 2017) ^[3]. Specifically, the present study examines how the perceived level of corruption moderates the relationship between R&D investments and firms' financial performance. It is argued that the reduction of institutional quality through corruption can have a significant impact on research and investment of companies and subsequent performance (Viglioni *et al.*, 2022) ^[42]. According to the presented materials, this research explains the relationship between research and development costs and financial performance, emphasizing the role of the moderator of financial corruption.

Theoretical

Economic prosperity

Welfare is an organized set of policies and plans and policies that are offered in the framework of social institutions to ensure human happiness to provide the basis for his growth. In fact, two points are important in defining well-being: meeting material and spiritual needs (Arman Mehr and Farahmand Manesh 2016) ^[6]. Internet and communication industries of the country are not exception and meet the goal of obtaining profit and knowledge management and measured the effect of knowledge management on financial profiting. (Pourbahrami & *et al.*, 2014) ^[26]

Financial development In the dictionary of financial and banking concepts, financial development is synonymous with asset deepening. Financial development refers to a situation where the rate of increase of financial assets is higher than the rate of increase of non-financial assets. In this case, the financial system with the functions of obtaining information about investments and monitoring the investments made and distributing risk and pooling funds and facilitating the exchange of goods and services reduces transaction costs and improves the allocation of resources and as a result economic growth and The national income will increase (Mohammadzadeh *et al.* 2015) ^[23].

One of the ways of financial development is blockchain technology, which has not yet been fully accepted by various industries in the world. There are still many doubts and ambiguities regarding the inviolability of data privacy, the confirmation of the identity of the parties to the contract, and the security of data protection, especially financial information. (Alizadehmajd & *et al.*, 2022) ^[5].

Corruption and corporate performance

Companies should consider the extent and possible effects of corruption when formulating strategies to improve operational efficiency and performance (Bahu *et al.*, 2020). Corruption may be the basis for multiple risks and has a negative effect on stock returns on average, so that returns increase as the level of corruption decreases. In addition, (Van Wu *et al.*, 2018) observed by examining a set of small and medium-sized companies that different types of corruption have different effects on the financial performance of companies. (Noor Tegin and Jacky 2020) showed that corruption is significantly harmful, although in some cases, it may have benefits (Rashad Karmani and Busada 2021). By examining European companies, they concluded that corruption significantly reduces the performance of companies. Despite this, there is a lot of evidence that corruption has a negative effect on the performance of companies, there is evidence that the opposite may occur for example, (Alam *et al.* 2020) ^[20], using micro-level data from several emerging and developing countries, found that

corruption control positively affects the performance of companies. However, it should be kept in mind that corruption control mechanisms are different in different countries and do not affect the activities of companies in the same way. While investors exposed to bribery at home seek to invest in countries where corruption is prevalent. In essence, these studies argue that corruption may have a positive outcome. Because it is a way for firms to avoid risks in organizational environments that face inefficiencies – and thus, some forms of corruption may increase efficiency when the surrounding organizational quality is poor (Mion and Weil, 2010). Despite this apparent enigma, we suggest that the level of corruption is likely to increase transaction costs, reduce investor security, and impair corporate financial performance (Viglioni *et al.*, 2022) ^[42].

Corruption measurement methods

Gallup Institute evaluates corruption periodically in different

countries and mentions three methods in this regard: measuring the perception of individuals and target groups regarding the spread of corruption, measuring behavioral indicators in the occurrence of corruption, and evaluating opinions. Experts about the prevalence of corruption. It seems that the methods of measuring corruption are included in the same category, although they differ in some details (Renica and Sonson, 2006). The decrease in government revenues affects economic well-being. (because a part of the government's welfare services are realized through tax revenues) can be a potential stimulus for the influence of the underground economy on economic well-being. In this form, it has shown the effect of the underground economy on the economic well-being and its income in two cases. In each of the cases, it has been determined that there is an inverse relationship between tax burden and economic well-being (Ragfar *et al.* 2015).

tax	Legal activities	Illegal activities	tax income	Economic prosperity
↑	↓	↑	↓	↓
tax	Legal activities	Illegal activities	tax income	Economic prosperity
↓	↑	↓	↑	↑

Fig 1: Table of the impact of taxation on legal and illegal activities

The underground economy also hinders economic growth and development in various ways, which will lead to a decrease in economic prosperity. The growth of the underground economy sector is associated with a decrease in the ability of dot to collect taxes. On the other hand, the reduction of government tax revenues imposes various costs on the official sector of the economy. For example, with the

reduction of tax revenues, the government's ability to provide public goods such as infrastructure and other public institutions that play an effective role in economic growth is reduced. Also, the reduction of tax revenues will reduce the budget. In this case, the government harms economic growth by using inflationary financing methods (Haghnezhad and Farahani 2019).

Underground economy	Delivery of goods	Illegal activities	Economic Growth	Economic prosperity
↑	↓	↑	↓	↓
Underground economy	Delivery of goods	Illegal activities	Economic Growth	Economic prosperity
↑	↑	↓	↑	↑

Figure 2: Table of the influence of the underground economy on economic prosperity and economic growth

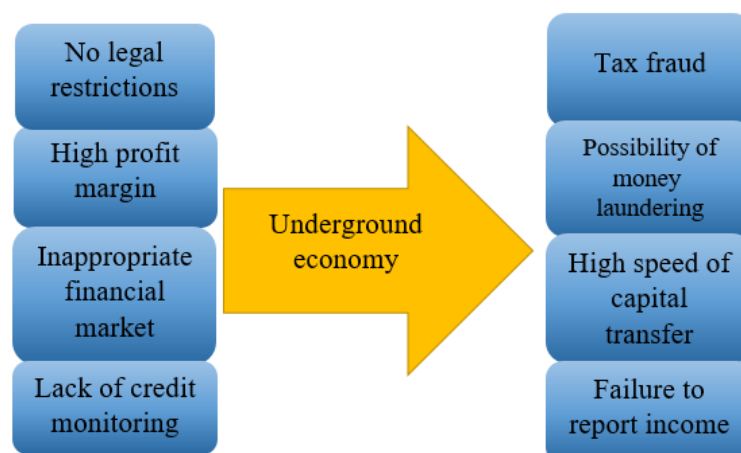


Fig 3: Consequences of the underground economy

The effect of unemployment on the shadow economy

Valuable theories in this field can be referred to the study of Bohn and Schneider (2012). These two researchers also consider the ambiguous effect of unemployment on the underground economy. According to their opinion, as people become unemployed and lose income, the demand for goods and services in both the official and underground sectors decreases and as a result, they turn to the shadow sector; This is the income effect. On the other hand, at the same time, in order to meet their needs, people may turn to the underground economy, and as a result, the demand for shadow sector goods and services replaces the demand in the official sector; Because in the underground economy, prices and costs are significantly lower than in the official sector and therefore, it is cost-effective to enter the shadow economy during the period of declining income. This is the substitution effect. If the income effect is greater than the substitution effect, the relationship between the shadow economy and the unemployment rate is negative, and if the substitution effect is greater than the income effect, there is a positive relationship between these two variables. In addition, Bohn and Schneider (2012). They believe that the ambiguous effect of the unemployment rate on the shadow economy is not only due to the existence of forces opposing the effects of substitution and income, but also due to the effects of the supply side. They believe that the effect of the unemployment rate depends on whether the shadow sector workers are considered as unemployed people in the statistics related to the official sector or not? Unemployed people who are looking for a job in the shadow economy and increase the activities of that sector by working in the shadow sector, are considered unemployed in the official sector statistics, and as a result, take a part of the official sector unemployment statistics. Have assigned If the workers of the shadow sector are not considered unemployed, unemployment has decreased; this is while the shadow economy increases and as a result a negative relationship between the shadow economy and the unemployment rate is observed.

Experimental research literature

In the field of size and causes of underground economy in recent decades, various researches have been done in different countries. These researches, which have been carried out using different variables and using different methods, have brought dissimilar and sometimes contradictory results, which are summarized in some of them. (Abada *et al.* 2021) ^[10], this study is of the nature investigated the relationship between the size of the underground economy and the unemployment rate in Nigeria using the Toda-Yamato method during the period from 1980 to 2018 and the results have shown that there is a strong and positive relationship between the unemployment rate and the underground economy that the ability of the economy approves the underground in order to attract unemployed workers from the formal economy. (Farzanegan and Baderledian" 2020). This study has investigated the relationship between economic liberalization and the size of the underground economy in Egypt using time series data between 1976 and 2013. In this regard, the results show that policies that strengthen trade and economic liberalization are able to moderate the expansion of the underground economy in Egypt (Delano and Davidseco 2018), using the method of multiple indicators and multiple causes, this article estimates They have examined the underground economy of Tanzania

for the period from 2003 to 2015 and tested the statistical relationships between the underground economy and its potential causes and indicators. In this regard, the results show that in order to reduce the size of the underground economy, the government must keep inflation and unemployment constant over time in order to reduce the expenses incurred by the government; Soroush Yar Vabandani (1401), investigated the effect of information transparency on the amount of research and development expenses of the company, taking into account the role of managers' job risk and investment opportunities in pharmaceutical companies admitted to the Tehran Stock Exchange. The research results show that information transparency has a positive and significant effect on the company's research and development expenses. Also, the research results showed that when job risk is high, transparency has a positive effect on research and development expenses. In addition, the obtained results indicate that investment opportunities do not have a significant effect on the relationship between information transparency and research and development expenditures. In general, the results of the research show that companies can increase the amount of research and development expenses by increasing information transparency, and high job risk can strengthen this effect. (Sabouri and Karimpour 1400) ^[33], The role of the management of the four-jurisdiction asset audit committee on the supervision and financial corruption of companies was investigated. The findings of their research showed that the management of the audit committee with four competences has an effective role in monitoring and corruption of companies listed in the Tehran Stock Exchange, and the indicators of independence, managerial experience, capacity and share ownership, and financial expertise of the audit committee managers, respectively. Supervision and financial corruption of the company have a negative effect. (Moradi and Haj Ghorbani Tahaghoghi 1400), investigated the effect of operating cash flow on research and development expenses, emphasizing the role of managers' competence. The results of the research showed that operating cash flow and cash rewards have a significant and positive effect on the research and development expenses of companies, and this is in the case that non-cash rewards do not have a significant effect. Also, the results show the negative impact of cash rewards on the relationship between operational cash flow and research and development expenses, and this is if non-cash rewards have no significant effect. (Viglioni *et al.* 2022) ^[42], investigated financial corruption, research and development expenditures and financial performance of companies in Latin America. The results showed that corruption has a direct and positive effect on the financial performance of companies. Furthermore, while the financial performance of firms increases despite corruption, the authors' findings show that corruption negatively moderates the relationship between R&D investments and firms' financial performance. Finally, the authors observed a negative effect of long-term R&D investments on firm performance, which shows that high levels of corruption even harm long-term innovative activities. (Mikael *et al.*, 2021) investigated the role of the audit committee management in the four-level competence on the supervision and financial corruption of companies. The results showed that each of the management characteristics of the audit committee, which includes independence, management experience, financial expertise,

capacity and stock ownership of the director of the committee, has a negative and significant effect on the supervision and financial corruption of companies. (Alam *et al.*, 2020) ^[20] Investigated the effects of country-level investor protection (protective measures) and governance mechanisms (systems) on the relationship between research and development and company performance. The results of the research showed that the protection measures of a country moderate the relationship between research and development and company performance more than the country's system. The results show that protection is relatively more important for the relationship between R&D and firm performance than other governance mechanisms at the country level, because the former mechanism can easily attract foreign capital when it is strong. These results have important implications for innovation policy. Specifically, managers may want to strengthen investor support to promote high R&D investment in order to increase firm performance (Gaspérine *et al.* 2016). In this study, using the multiple index method of multiple causes, the size of the underground economy in Iran was estimated for the period of 1359 to 1394, and the most important causes of the underground economy and the most important effects resulting from it were examined in the form of structural equations and simultaneously. is placed This research shows the positive effect of the variables related to the size of the underground economy including inflation rate, tariff rate, tax, income inequality and official exchange rate in Iran on the relative size of the underground economy. (Piraei and Rajaei 2014) have also studied the dimensions of the underground economy and its causes and effects during the period of 1353 to 1392. The results of this research show that the greatest effect of the underground economy is on the money market. Among the reasons for the emergence of the underground economy, the price index of consumer goods and services has the most underground economy. The positive effect on (Sharifi *et al.* 1401) ^[38] has investigated the effect of financial development and tax evasion on the size of the underground economy. For this purpose, in this research, the augmented factor vector auto regression model has been used for the time series data from 1350 to 1394, and the results show that the dynamics of the underground economy in response to a shock equal to one standard deviation in financial development will have a downward path. Also, a one standard deviation shock in tax revenue will increase the underground economy over time. (Asgari *et al.* 1400) ^[7], in a research, they investigated the effect of economic sanctions on the size of the informal economy in Iran during the period of 1357 to 1398 using self-explanation method with wide intervals. What has been obtained in this study shows that different dimensions of sanctions, including the length of the sanctions period, the number of sanctions or their multilateralism, have had a positive and significant impact on the size of Iran's informal economy. Also, other variables such as the exchange rate gap, tax revenue, liquidity and income and gas have a positive effect on the amount of the informal economy, and the variables of GDP per capita, trade openness, the ratio of credits granted to the private sector, have a negative and significant effect on the amount of the economy. have informal - Oil studies (Qasemnezhad and Rezazadeh 2019), using the soft transition regression model as one of the regime change models, this study examines the effect of government size on the relationship between the underground economy and income inequality in Iran during the period from 1998 to 2019 have placed. The results show

that in the first regime of the increase in the underground economy, the positive effect and increase (Qasemnezhad and Rezazadeh 2019), this study using the soft transition regression model as one of the regime change models, the effect of the size of the government on the relationship between the underground economy and inequality The income in Iran has been studied during the period of 1348 to 1397. The results show that in the first regime, the increase in the underground economy has a positive effect and the increase in real GDP per capita has a negative effect on income inequality. In the second regime, the underground economy and real GDP per capita have a different effect on income inequality than before. In other words, with the increase in the size of the government, the underground economy has a negative effect and the real GDP per capita has a positive effect on income inequality. (Nasrullahi and Hosseini 1396), In their research for Iran's economy, they have examined the relationship between the development of the financial sector and the underground economy using structural equations and the method of multiple indicators-multiple causes in the period 1352 to 1391. The results of this research show that openness in financial development is one of the factors affecting the performance of this sector, and financial development reduces credit costs and reduces the motivation to operate in the underground sector. The results of this research show that, on average, for one Unit increase in financial development, the size of the underground economy decreases by 5%. (Fitras and Delai, Milan 2015), have investigated the effect of oil shocks and financial shocks (such as tax rate changes) on the formal economy and underground economy, as well as tax evasion for the period of 1369 to 1389 in the framework of the stochastic dynamic general equilibrium model. They have concluded that the positive momentum of the corporate tax rate, income tax and social security contribution has led to a decrease in official production, an increase in underground production and an increase in tax evasion. (Hassanvand *et al.*, 2015), in their research, they investigated the effect of the unemployment rate on the underground economy for 67 developing countries, during the time period of 1999 to 2009, using the system generalized moments estimator, and based on the results of This approach has shown that in the studied countries, the unemployment rate has a positive effect on the size of the underground economy (Abonuri and Nikpour 2013). In their research, they investigated the effect of tax burden indicators on the size of the hidden economy in Iran during the period from 1345 to 1395 based on regression with distribution breaks. Based on this, the results of the first step have shown that the tax burden, the size of the government and trade restrictions are the main factors of the emergence of the hidden economy in (Fitras and Dalai, Milan, 2015). The official economy and the underground economy as well as tax evasion for the time period 1989 to 2009 have been analyzed in the framework of the stochastic dynamic general equilibrium model. They have concluded that the positive momentum of the corporate tax rate, income tax and social security contribution has led to a decrease in official production, an increase in underground production and an increase in tax evasion. (Hassanvand *et al.*, 2016), in their research, they investigated the effect of the unemployment rate on the underground economy for 67 developing countries, during the time period of 1999 to 2009, using the system generalized survey estimator, and based on the results from this approach, it has been shown that in the studied

countries, the unemployment rate has a positive effect on the size of the underground economy.

Conclusion

According to the results of this study, the size of the underground economy has a direct relationship with the amount of tax burden. In other words, increasing the tax burden strengthens the motivation of economic agents to evade taxes and enter the underground economy. This issue requires adopting an optimal tax system to overcome it. Also, the results show that there is a direct relationship between inflation and the size of the underground economy. With the increase in inflation, many people fall below the poverty line, and these people turn to underground activities to secure their livelihood. By implementing appropriate tax policies, the spread of inflation and its harmful effects can be prevented. Per capita income is also one of the factors that can have a positive or negative effect on the size of the underground economy. In addition, the unemployment rate is an indicator of macroeconomic performance, and its increase can indicate entering into a period of economic recession and a decrease in labor demand, both for official and authorized activities and for unauthorized and underground activities. Also, corruption control positively affects the performance of companies. The level of corruption increases transaction costs, reduces the security of investors and impairs the financial performance of companies. Repairing and improving the tax system, as well as creating an environment for improving business and economic security, which will reduce the size of the underground economy sector, can be a factor influencing people's motivation to participate in the official and legal sectors of the economy.

Practical research suggestions

It is suggested to establish appropriate regulatory and penal provisions to convict and punish those who evade paying taxes by hiding their real income.

It is suggested to adopt heavy taxes from informal investment markets. If the economic activists believe that they will have to pay heavy taxes by investing in buying foreign currency and hoarding goods, gold, coins and informal capital markets, they will much less engage in speculation in unproductive and harmful sectors for the national economy.

Efforts to improve the business environment and reduce the rate of corporate tax and income tax - along with the implementation of value added tax in the tax system, the necessary action to guide underground production towards official production should be provided.

Preparing a strategic plan, setting long-term goals using the global experiences of fighting corruption and the results of holding conferences and meetings and the experiences of successful countries in dealing with corruption.

Establishing an independent and permanent unit to fight economic and administrative corruption and downsizing other relevant organizations and following this unit under the supervision of the highest official of the country who is the leader of the society.

Expanding tax culture and honoring taxpayers as a principle at the top of the organization's goals has a great contribution to sanity and prevention of tax corruption.

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