ECONOMICS
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COMBINED EFFECT OF ECONOMIC VARIABLES ON FRAUD, A SURVEY OF DEVELOPING COUNTRIES

ABSTRACT. Recently, many researchers have examined the factors affecting fraud and introduced the elements required for fraud to exist. In this paper, we define these variables in two broad groups of economic and non-economic variables. We examine the combined effect of economic variables on fraud. We used 7 variables namely; fraud, the size of government, democracy, per capita income, inflation, the total value added of the industrial sector divided by GDP, and the total value added of the service sector divided by GDP. The predictive method used in this study is panel data. Our research findings show that democracy and GDP tend to have a reverse effect on fraud, whereas the size of the government and inflation are positively associated with fraud. Furthermore, we describe the association between industrial sector and fraud and also the service sector and fraud.

Introduction

It has been established that the impact of fraud is detrimental to all societies, which also explains poor economic performance especially in the context of developing economies. The current business environments have experienced an upsurge in fraud and many academic researchers and business participants have investigated the factors involved in fraud and corruption. Also, the scope of fraud and its consequences and magnitude have been discussed in the literature. It is generally agreed by researchers of fraud that cost of fraud is unknown. This is because the nature of fraud is hidden so the cost of fraud is also hidden and incalculable. In addition, fraud causes intangible damage such as reputational and social damage to the organization and these costs are not easy to estimate. Many researchers believe that pervasiveness of fraud has to be considered as one of the important factors that contributes to economic growth, the effectiveness of public management, strategic decision making for investment, and forming international relationships. The Oxford English Dictionary (2009) defines fraud as – wrongful or criminal deception intended to result in financial or personal gain. In academic literature fraud is defined as leading to personal enrichment by circumventing the prevention measures without necessarily being prosecuted

INTERDISCIPLINARY APPROACH TO ECONOMICS AND SOCIOLOGY

by judiciary systems (Phua, 2005). Public sector fraud is pervasive and fraud is present in all the mechanism of development in different forms, magnitude and consequences. Public sector fraud is broadly defined as abusing an organizational system for personal gains. In this work, we study the effect of economic variables on fraud. Economic variables reflect the economic status of the country and public as a whole. The data set used in this research were obtained from 60 developing countries in the time period of 1995 to 2014. In this research, we used the world bank definition of developing and developed countries. We found that there is a service sector – fraud positive association and an industrial sector – fraud negative association in the context of developing counties subjected to our study.

Value added reflects the contribution of labor and capital to production. In this study, we used value added in industry and service sector. Value added by activity breaks down the total value added by sector, namely industry, and service activities in this paper. The shares of each sector are calculated by dividing the value added in each sector by total value added.

Our aim in this paper is to examine the combined effect of economic variables on fraud. To accomplish this, we used 7 variables namely; fraud, the size of government, democracy, per capita income, inflation, the total value added of the industrial sector divided by GDP, and the total value added of the service sector divided by GDP.

We use panel model throughout our study. Panel data combine a time series dimension with a cross section dimension. We also applied co-integrated test to give an explanation for the long run association between the variables. In addressing the inquiry of what the causes of corruption are, with few exceptions, majority of the empirical studies have examined various cross-sectional comparative, but country case studies and/or by regional analysis has not been emphasized enough. Recent studies, notably by Sandholtz and Koetzle (2000), Treisman (2000), Fisman and Gatti (2002), and Pellegrini and Gerlagh (2008), considered several aspects of the causes of corruption across countries. With the complexity of corruption issues and use of different empirical methodologies, studies have separately or with combination of factors analyzed the economic, political, historical and cultural traditions of the causes of corruption. But the findings show some lack or inconclusive results on the relationship between corruption and some variables such as the size of government and democracy as non-economic variables.

The fraud phenomena have different perspectives in developing and developed countries. In developing countries, we witnessed higher frequency in fraud incidences due to restrictive regulations and lack of freedom in media, whereas in developed countries fraud occurrence has other reasons. *Fig. 1* shows the frequency and the median loss of corruption in different regions in the world.

There are strong evidences of intensive presence of corruption throughout the economic mechanisms of the developing countries. Existence of corruption would result in social and economic destructions such as distortion of GDP by falsified measurements and data, reduction in the tax incomes of the government and also the costs involved when prosecuting a suit. Hence, an elaborative study is needed to discover the factors affecting fraud and specifically analyze the effect of economic variables on fraud.
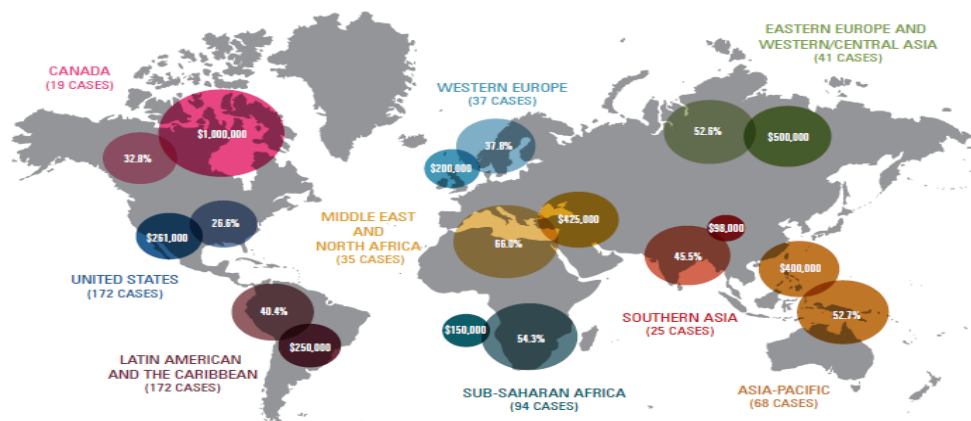
Figure 1. Frequency and Median Loss of Corruption Cases by Region
Source: Transparency International, 2013 *Corruption Perceptions Index* (cpi.transparency.org/cpi2013/results).

This paper has been designed in five parts. In the second part, the theoretical background has been discussed, and in the third part the literature and the existing researches have been reviewed. In the fourth part, we discussed the research methodology and the results were explained. The conclusion along with the research limitations and further directions are in the final part.

1. Theoretical background

Fraud takes place whenever private and public sectors interact. Once a public authority has the right position to allocate the resources, and spend budgets, naturally there will be incentives for bribery. Since the related executives in the private sector are likely to offer bribes for gaining the interests held by the public authorities, fraud is proportional to the scale of the interest and also resources accessible in public sectors.

Fraud has remained an economic and social challenge. Nevertheless, a coordinated effort has recently been intended to shed light on the subject. The progressive attempt in prevention and detection of fraud is the result of the advisory panels in the world bank when they emphasize the impact of fraud and refer to it as an economic cancer. To the current day, research is being carried out to illuminate the corner stones of fraud. In this paper, we defined the influencing factors of fraud in two broad terms as economic and non-economic factors.

1.1. Economic factors

In existing literature, many economic variables have been discussed which affect fraud. Per capita income (Saha and Gounder, 2013; Wong, 1992), the share of importation of goods and services in GDP (Kim, 2017; Bai, 2014; Nauro Campos, 2012), economic openness (Bojnec Štefan, 2017), inflation (Wong, 1992) and tax are among all the variables which have been studied. In this study, we discus and evaluate the impact of per capita income, the size of government and inflation on fraud, and examine the combined effect of the economic variables on fraud.

1.1.1. Per capita income

Per capita income is generally known as one of the most common factors affecting fraud (Persson, 2003; Damania, 2004). Based on the fraud triangle theory (Ramos, 2003) there are mainly three elements essential to exist when fraud takes place. They are pressure (incentives), motivation (opportunity) and attitude (rationalization). Usually, when per capita income increases, there is lower persuasion to commit fraud. Additionally, when per capita income increases, there are more resources to allocate for fraud mitigation and deterrence. Resources might be in the form of technology enhancement as well as hiring specialist to combat fraud from the early stages. Many of the studies have concluded that per capita income has a negative effect on fraud incidences. The undeniable fact is that fraud is more pervasive in poor countries. A report released by Transparency International 2014 shows that 10 countries with the least incidences of corruption have an average of per capita income of USD 37144. Whereas countries like Republic of Haiti and Afghanistan by having an average per capita income of USD 455 are among the countries with the most frequency in fraud incidences. While there is a general consensus that nations with lower per capita income are more susceptible to fraud, however there are not many studies to highlight the real reasons and factors that make the fraud so widespread in those countries. The first assumption is that fraud has a reverse effect on economic growth (Nauro Campos, 2012). Fraud is one of the skeptical factors for economic development and cooperation. In other word, fraud makes the potential Foreign Direct Investments (FDI), reluctant to invest in host countries (Pinto and Zhu, 2016). That means eradication of fraud can positively affect the economic growth of the developing countries (Magtulis and Park, 2017).

1.1.2. Inflation

Inflation erodes the purchasing power of the money (Jonsson, 1999). That means with the same amount of money, lesser things can be bought. This naturally leads to uncertainty about the prices in the future. So, there is a direct connection between fraud and inflation (Wong, 1992). Inflation can be defined as a continuous increase in the general level of prices. Therefore, inflation can lead to moral erosion and can provide more opportunities for immoral behaviors like jugglery and cheating. Although Inflation diminishes the purchasing power of the families and declines their welfare (Zhou, 1997; Choudhry, 1999) , they must meet the requirements of their daily life. So, they may choose to commit fraud to overcome the pressure imposed by economic situation. According to this, nations that experience lower inflation rate are more immune to fraud.

1.1.3. The size of government

The size of government affects the occurrence of fraud. But causality and direction of the relationship may be reciprocal. Wong (1992) in his research conducted in China suggests that if the government facilitates a low level of public services, or the power of distributing of the productive resources has not been decentralized, people would be tempted to offer a bribe in order to benefit from more public services. On the other hand, government officials who have such power will have an enormous incentive to distribute the resources to benefit themselves. In other words, the bigger the size of government would result in more intervention of the government in the economic activities. Therefore, the more opportunities for fraudulent conduct would be expected. There are two opposing opinion in this regard. First is a government size − fraud positive association (Rose, 1978), and the other opinion is a government size − fraud negative association. That's because when the government size is

INTERDISCIPLINARY APPROACH TO ECONOMICS AND SOCIOLOGY

bigger, there will be more prevention and detection measures and subsequently the more fear to be defamed or prosecuted and convicted by the judicial system. This opinion has been perceived from experience of the developed countries in the Scandinavia region. Because, though the size of government in those countries is relatively big, however there are rare cases of fraud.

1.1.4. Combined effect of economic variables

Economic variables have a combined effect on fraud. To evaluate this combined effect, we used two variables namely; the value added of the industrial sector divided by GDP and the value added of the service sector divided by GDP. In so doing, we aim to describe the association of the industrial production sector and fraud, and also, the association of the service sector and fraud when the two main sectors of economy (Industrial sector and service sector) have made various contributions to GDP. This has been illustrated in *Fig. 1* and *Fig. 2*.

The high share of the industrial sector in GDP is an indicator of the economic development. In other words, industrial growth is the driving engine of the economic development and it can lead to the development of other sectors. In addition, industrial development can help the domestic production to grow and it is an incentive for domestic innovation (Bai, 2014). Industrial development can reduce the dependency of the economy on natural resources and raw materials exportation. Since natural resources are mainly controlled and exploited by the government sector and other market and business participants are usually banned from entering, this reduction in the share of natural resource income can reduce the risk of fraud. So that being the only player in the natural resource sector is a red flag for fraud. As shown in the *Fig. 1*, the more contribution of industrial sector to GDP, would result in lesser cases of fraud.
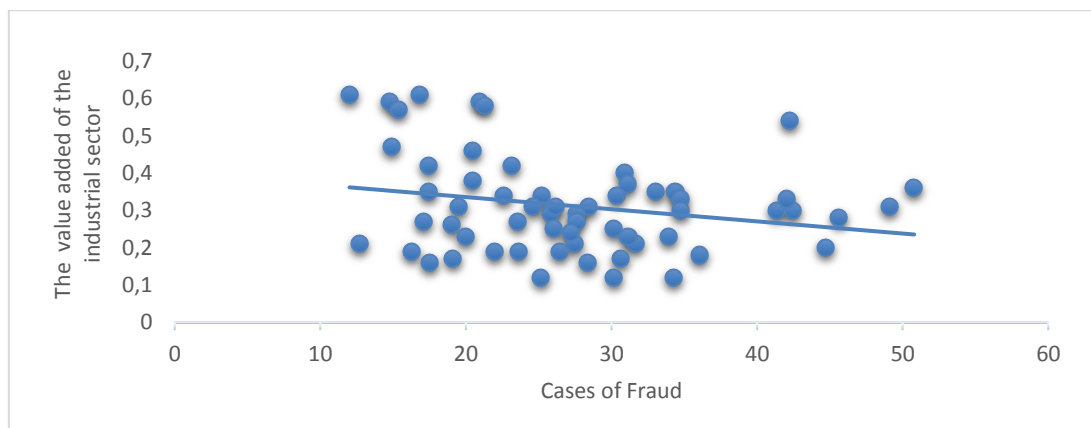

Fig. 2. The value added of the industrial sector and Fraud

Our findings also show that the more contribution of the service sector to GDP, the greater the number of fraud cases. In developing countries, the need for products is more than the need for services. In these countries, the service sectors are initiated to carry out consultant services, sub-contracting and supplying the products and service to the government sector. It is expected that the more contribution of the service sector to GDP in developing countries, would result in more cases of fraud. This has been illustrated in *Fig. 2*.
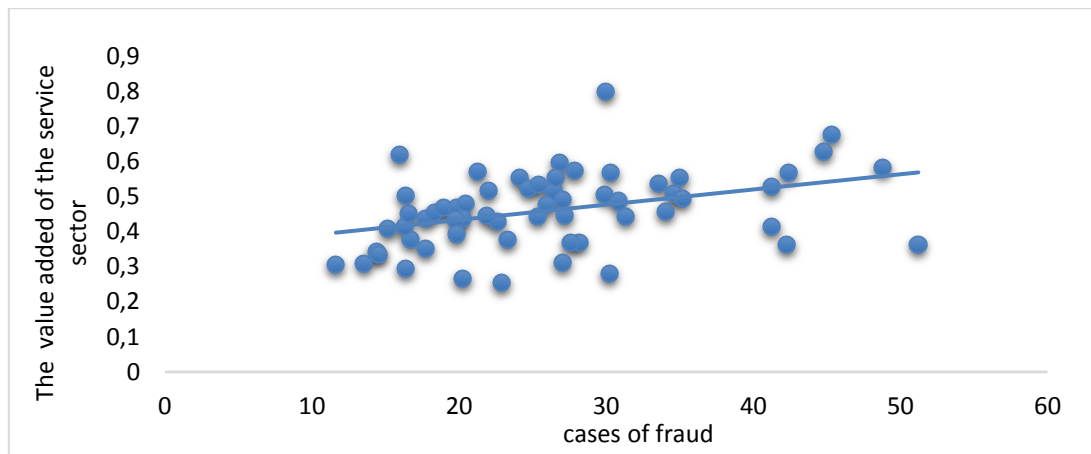
Fig. 3. The value added of the service sector and fraud

1. 2. Non- economic factors

Democracy, press freedom and education are part of the variables that have been listed by previous researchers as the variables affecting fraud. In this study, we only evaluate the effect of democracy on fraud. The effect of democratic reforms on fraud has already been proven, but the modality of this effect is subjected to different opinions. One school of thought believe that the countries with more democratic governments have lesser cases of fraud (Şahin, 2016; Altindag and Xu, 2017; Kolstad and Wiig, 2016). The other school of thought which is known as inverted U theory, states that in the initial stages of democratic reforms, the incidences of fraud increases but in the latter stages of stabilization of the democratic changes, the incidences of fraud decreases significantly (Rock, 2009).

2. Literature review

In the section above, we evaluated the factor affecting fraud and we put the affecting factors in two major categories of economic and non-economic factors. In this section, we review the literature in this regard.

2.1. Economic factors

Ulman (2014) examined the Impact of the national competitiveness on the perception of corruption. The survey evaluated the data that was provided in a report on global competitiveness in 2012. The study shows that there is a direct and strong connection between these two variables. The hypothesis in this research was confirmed by the regression performed. The results indicated that a strong connection between the Global Competitiveness Index (GCI) and Corruption Perceptions Index (CPI) really exists. This study shows that one determinant cause of the negative or positive perception of corruption about a country is its national competitiveness. This means that the standard of living, the rate of employment, the productivity, the commercial equilibrium, the national attractiveness, the ability of objective implementation, the flexibility and ability of sustaining growth which define the national competitiveness concept influence the way of perceiving the actions and the strategic behaviors of the public institutions represented by their public persons.

A.Yılmaz ATA (2011) illustrated the factors affecting the economic fraud. They said corruption's roots are grounded in a country's economic, political, legal, social and cultural structure. It threatens security, damages trust and public confidence in systems which affect

people's daily lives. They empirically test a model that links economic factors such as economic development and growth, inflation, economic freedom and income distribution to corruption in a cross-section of 25 European countries in the average of 2004-2007 years. The empirical findings of this paper suggest that economic development, inflation, economic freedom and income distribution are found statistically significant determinants of fraud and corruption.

T. S. Aidt (2010) evaluated the relationship between the fraud and sustainable development in 110 countries between 1997-2006. Sustainability is measured by growth in genuine wealth per capita. The empirical analysis consistently finds that cross-national measures of perceived and experienced corruption reduce growth in genuine wealth per capita. In contrast to the evidence on the relationship between corruption and growth in GDP per capita, the negative correlation between a wide range of different corruption indices and growth in genuine wealth per capita is very robust and is of economic as well as of statistical significance.

Evrensel (2010) provided an empirical analysis of corruption by viewing corruption as an evolutionary process. It assumes that the institutional set-up of the country such as the characteristics of the political and judicial system determines the extent of corruption. The empirical results confirm that countries with totalitarian political regimes, ineffective judicial systems and lower levels of education as well as slower economic growth and higher inflation rates tend to have higher levels of fraud.

Goel and Nelson (2010) sought to address two questions: What are the effects of the size and scope of government on the incidence of corruption across countries? How important are historical and geographical influences in affecting corruption? Overall, the answer to the first question is that government does matter in an important way in its impact on corruption. Both size and scope of government play major roles. On the second question, the historical inertia of institutions that induce corruption persists, as do rent-seeking opportunities in new countries. Some geographic factors on the other hand can mitigate corruption.

J. Shao (March 2007) reported quantitative relations between corruption level and economic factors, such as country wealth and foreign investment per capita, which are characterized by a power law spanning multiple scales of wealth and investment per capita. These relations hold for diverse countries, and also remain stable over different time periods. The study shows a negative correlation between level of corruption and long-term economic growth.

2.2. Non-Economic factors

Jetter *et al.* (2015) provided an explanation for the ambiguous association between democracy and fraud and further suggested that Democracy reduces fraud but only in economies that have already crossed a GDP/capita level of approximately US$2,000. For poorer nations, democratization is suggested to be an increasing element for corruption.

W.-S. Lee (2013) used micro-level data for over 20 European countries that directly measure individual characteristics, corruption experiences, gender roles, trust and values to examine the determinants of corruption. One focus of their study is on how cultural norms such as gender roles and risk preferences influence corruption.

T. Eicher, C. García-Peñalosa (2009) examined how the interaction between education and corruption affects institutional reform and economic development.

3. Research methodology and findings

In this part, we estimate our model and examine the results. We use panel model throughout our study. Panel data combine a time series dimension with a cross section

dimension, in such a way that there are data on N countries (or firms, individuals ...), followed over T time periods. However not all datasets that combine a time series dimension with a cross section dimension are panel data-sets. Since we use time series data, it is important to conduct unit root test in our model analysis. This test will prevent the false linkage between variables. Additionally, we applied co-integrated test to give an explanation for the long run association between the variables. Our assumption in this study is that, the combination of economic variables will likely have an effect on the occurrence of fraud. We applied the data set from 1995 to 2010 for 60 developing countries. In the following sections, we perform the model estimation.

3.1. The variables selection

We used the below variables in our model:
1. Fraud(COR): Fraud is an independent variable in this study. This variable is extracted from economic freedom variable that Heritage forum (HERITAGE.ORG) releases annually. This variable has been defined in an interval between 0 to 100. 0 is entirely fraudulent and 100 is entirely non-fraudulent.
2. Democracy(Democ): This variable is often used in economic debates. This variable has been extracted from systemicpeace.org. Here democracy is measured in an interval between -10 to +10 which indicated the totally dictatorship and totally democracy respectively.
3. Per capita income(GDPP): This variable is obtained from the value of GDP divided by the country's population. This information is obtained from the world bank.
4. The size of government(GSIZE): To calculate this variable we used a variable used by Heritage forum which is the government expenses. This variable shows the intervention of government in the economy and can fall in a range of 0 to 100. 0 shows the minimum intervention of the government in the economy and 100 shows the maximum.
5. Inflation(INF): We used the information collected from the world bank for this variable.
6. Combination of economic activities: we used two variables for this item. The value added of the industrial sector divided by GDP and the value added of the service sector divided by GDP.
7. The value added of the industrial sector divided by GDP (IG): we used the data collected from world bank.
8. The value added of the service sector divided by GDP (SG): this is also obtained from world bank dataset.

The common techniques in econometrics using time series data are all based on this assumption that the model variables are stationary. The possibility of alteration of the distribution function of the variable during the time span, makes it necessary to evaluate the stationarity of the functions in different models. The below table shows the results of the IPS unit root test for all the variables.

Table 1. IPS Unit root test for variables

INF	GSIZE	SG	IG	GDPP	DEMOC	COR	Variable
-54.3290	-11.9550	-6.3338	-779.818	9.8202	-7.5608	-1.2755	Parameter
0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.1000	Probability

The Null hypothesis in this study is that variables are non-stationary and have unit root. As the test results show IN, GSIZE ،SG ،IG ،DEMOC are statistically significant at 5% level. But GDPP and COR are non-stationary at 5% level of significance. To make the non-stationary variables turn to stationary we employ the unit root test with one structural break.

3.2. Co-integration test

Co-integration test examines the long run relationship between the economic variables. If two variables are co-integrated, they have co-movement in a long-time span. The Null-hypothesis for this experiment is that there is no co-integration between the variables involved in our study. As *Table 3* shows, based on 3 parameters, v panel, ρ panel and ρ group, there is no co-integration between the variables at 5% of significance. But based on 4 parameters, PP panel, ADF panel, PP group and ADF group, there is a strong co-integration between the variables at 5% level of significance. In the following section, we estimate the main model.

Table 2. Cointegration test

Without IG		Without SG		Model
Without time series	With time series	Without time series	With time series	Parameters
1.000	0.999	1.000	1.000	*v panel*
1.000	1.000	1.000	1.000	*ρ panel*
0.000	0.000	0.000	0.000	*pp panel*
0.000	0.000	0.000	0.000	*ADF panel*
1.000	1.000	1.000	1.000	*ρ group*
0.000	0.000	0.000	0.000	*pp group*
0.000	0.000	0.000	0.000	*ADF group*

3.3. Model estimation

After stationarity and co-integration test, we should estimate the main model. At first, we employ F Limer test to identify the model of fix effects and the model of combined effects. After getting the results, we observed that the fixed effect model is accepted. Next, we employ the Hausman test to identify the fixed effect and random effects. *Table 3* shows the estimation of the model based on random effects.

Table 3. Model estimation with random effect

Model with IG			Model with SG		
Probability	Coefficient	Variables	Probability	Coefficient	Variables
0.0001	4.5559	CONSTANT	0.0000	7.9781	CONSTANT
0.0000	0.8079	COR (-1)	0.0000	0.7984	COR (-1)
0.0005	3.0867	IG	0.0003	-5.7984	SG
0.0003	-0.0005	INF	0.0008	-0.0042	INF
0.0859	-0.0171	GSIZE	0.0253	-0.022	GSIZE
0.0001	0.0004	GDPP	0.0000	0.0006	GDPP
0.1474	0.0759	DEMOC	0.1923	0.0671	DEMOC
	0.7945	R^2		0.7965	R^2
	0.7931	Adjusted R^2		0.7952	Adjusted R^2
	565.6893	F parameter		572.9332	F parameter
	0.0000	F probability		0.0000	F probability

We can observe that in the model which has been estimated with IG, all the variables are statistically significant at 5% level, except DEMOC and GSIZE. Also, we can see that GSIZE is statistically significant at 10% level. As shown in *Table 3*, the Variable coefficient (COR (-1)) has become positive. This shows that the existence of fraud in any period can raise the possibility of fraud occurrence in the coming periods. This is normal that fraud can be extended from one period to the other one. Based on the results, variable coefficient IG indicates that an increase in the share of the industrial sector in GDP, will reduce the risk of fraud occurrence. The high share of the industrial sector in GDP is an indicator of the economic development. In other word, Industrial growth is the driving engine for the economic development and it can lead to development of other sectors. In addition, industrial development can help the domestic production to grow and it is an incentive for domestic innovation (Bai, 2014). The variable coefficient of GSIZE shows that the bigger the government size, the higher opportunity for fraudulent activities. This will support the first hypothesis. If we take the size of government as the indicator of the intervention of government in economy, this intervention can have different forms such as the barriers for the fair competition in the market or overriding power by allocating and distributing the resources, which is a government failure (Wong, 1992).

The coefficient variable of the GDPP shows that the more per capita income resulted in lesser fraud risk. Hence, there is a negative relationship between fraud and GDPP.

DEMOC variable has no significant coefficient at 5% level, but as expected, there is a positive inflation − fraud association. That means the higher the rate of increase in price index, the higher possibility of fraud occurrence.

The model which has been estimated shows that all the coefficient variables are statistically significant at 5% level except DEMOC. The variable coefficient of SG show that an increase in the contribution of the service sector to GDP, can lead to an increase in fraud. The more contribution of service sector in GDP, the more the risk of fraud. In developing countries, the need for products is more than the need for services. In these countries, the service sectors are initiated for consultancy services and sub-contracting and supplying the products and serviced to the government sector. It is expected that the more contribution of the service sector in GDP in developing countries will lead to more fraud occurrences.

Conclusion

Fraud and corruption has been and still are one of the main challenging factors in society. In this study, we examined the combined effect of economic activities on fraud. Industrial sector and manufacturing are the driving forces of the economy. When the share of this sector in GDP increases, the incidences of fraud decreases. From the other side when the share of the service sector in GDP increases, incidences of fraud increases. This supports the theoretical background of the study.

According to our result, in developing countries, democracy has no significant effect on fraud. Democracy cannot be considered as a strong tool to combat fraud. Based on our results, the most influential factors for combating fraud are IG and SG. The combination of economic activities has a significant effect on fraud. So, in developing countries, appropriate incentives must be provided to incorporate with industrial sectors.

The difficulty of measuring levels of relative corruption in different countries has presented a major limitation in this research field.

Further research may investigate the influence of the business cycle dynamics on the level of the fraud risk. The hypothesis could be: economic slowdown rises the level of the fraud risk.

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References

2009. *Oxford Concise English Dictionary*, 11 ed.: Oxford University Press, 2009.

Aidt, T. S. (2010). Corruption and sustainable development. *International Handbook on the Economics of Corruption*, 2.

Altindag, D. & Xu, J. (2017). Life Satisfaction and Preferences over Economic Growth and Institutional Quality. *Journal of Labor Research*, 38, 100-121.

Bai, J., Jayachandran, S., Malesky, E. J., & Olken, B. A. (2013). *Does economic growth reduce corruption? Theory and evidence from Vietnam* (No. w19483). National Bureau of Economic Research.

Bojnec Štefan, F. I. (2017). Effects of globalization and corruption on the outward fdi in oecd countries. *Ekonomický časopis* (*Journal of Economics*), 65, 201-219.

Choudhry, T. (1999). Purchasing power parity in high-inflation eastern European countries: Evidence from fractional. *Journal of Macroeconomics*, 21, 293.

Damania, R., Fredriksson, P. G., & Mani, M. (2004). The persistence of corruption and regulatory compliance failures: theory and evidence. *Public choice*, 121(3), 363-390.

Eicher, T., García-Peñalosa, C., & Van Ypersele, T. (2009). Education, corruption, and the distribution of income. *Journal of Economic Growth*, 14(3), 205-231.

Evrensel, A. E. Y. (2010). Institutional and economic determinants of corruption: a cross-section analysis. *Applied Economics Letters*, 17, 551-554.

Fisman, R. & Gatti, R. (2002). Decentralization and corruption: evidence across countries. *Journal of Public Economics*, 83, 325-345.

Goel, R. K. & Nelson, M. A. (2010). Causes of corruption: History, geography and government. *Journal of Policy Modeling*, 32, 433-447.

Ylmaz Ata, A., & Arvas, M. A. (2011). Determinants of economic corruption: a cross-country data analysis. *International Journal of Business and Social Science*, 2(13).

Jetter, M., Agudelo, A. M. & Hassan, A. R. (2015). The Effect of Democracy on Corruption: Income is Key. *World Development*, 74, 286-304.

Jonsson, G. (1999). Inflation, Money Demand, and Purchasing Power Parity in South Africa. IMF Working Papers.

Kim, E., Ha, Y., & Kim, S. (2017). Public Debt, Corruption and Sustainable Economic Growth. *Sustainability*, 9(3), 433.

Kolstad, I. & Wiig, A. (2016). Does democracy reduce corruption? *Democratization*, 23, 1198-1215.

Lee, W. S., C. G. (2013). Engaging in Corruption: The Influence of Cultural Values and Contagion Effects at the Micro Level. *IZA DP No. 7685*.

Magtulis, P. P. & Park, S.-H. (2017). The Lagged Effects of Corruption Control, Business Environment and Economic Growth on Foreign Direct Investment in the Philippines. *Asian Journal of Social Science*, 45, 176-204.

Nauro Campos, R. D. A. A. S. (2012). Corruption and Economic Growth. An Econometric Survey of the Evidence. *Journal of Institutional and Theoretical Economics*.

Pellegrini, L. & Gerlagh, R. (2008). Causes of corruption: a survey of cross-country analyses and extended results. *Economics of Governance*, 9, 245-263.

Persson, T., Tabellini, G., & Trebbi, F. (2003). Electoral rules and corruption. *Journal of the European Economic Association*, 1(4), 958-989.

Phua, C., Lee, V., Smith, K. & Gayler, R. (2005). A comprehensive survey of data mining-based fraud detection research. *Artificial Intelligence Review* 14.

Pinto, P. M. & Zhu, B. (2016). Fortune or Evil? The Effect of Inward Foreign Direct Investment on Corruption. *International Studies Quarterly*, *60*, 693-705.

Ramos, M. (2003). *Auditors' Responsibility for Fraud Detection*, *195*, 28-35.

Rock, M. T. (2009). Corruption and Democracy. *Journal of Development Studies*, *45*, 55-75.

Rose, A. (1978). *Corruption: A Study in Political Economy*, Academic Press: New York.

Saha, S. & Gounder, R. (2013). Corruption and economic development nexus: Variations across income levels in a non-linear framework. *Economic Modelling*, *31*, 70-79.

Şahin, İ. (2016). Türkiye'de 1980-2015 Yılları Arası Demokrasi, Ekonomik Özgürlük Ve Yolsuzlukların Ekonomik Büyümeye Etkileri. *The Impacts of Democracy, Economic Freedom and Corruption on the Economic Growth of Turkey During the Period Between 1980-2015*, *6*, 317-334.

Sandholtz, W. & Koetzle, W. (2000). Accounting for Corruption: Economic Structure, Democracy, and Trade. *International Studies Quarterly*, *44*, 31-50.

Shao, J., Ivanov, P. C., Podobnik, B., & Stanley, H. E. (2007). Quantitative relations between corruption and economic factors. *The European Physical Journal B-Condensed Matter and Complex Systems*, *56*(2), 157-166.

Treisman, D. (2000). The causes of corruption: a cross-national study. *Journal of Public Economics*, *76*, 399-457.

Ulman, S.-R. (2014). The Impact of the National Competitiveness on the Perception of Corruption. *Procedia Economics and Finance*, *15*, 1002-1009.

Wong, K.-Y. (1992). Inflation, corruption, and income distribution: The recent price reform in China. *Journal of Macroeconomics*, *14*, 105-123.

Zhou, S. (1997). Purchasing power parity in high-inflation countries: A cointegration analysis of integrated. *Southern Economic Journal*, *64*, 450.