

EFFECTS OF SHADOW ECONOMY ON FOREIGN DIRECT INVESTMENT

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ABSTRACT

The paper investigates the affects of Shadow economy on FDI using panel data test in 4 regions i. e Europe, South and North America, Africa and Middle East, and Asia and Oceania for period from 2000 to 2008. The panel data estimation results show that shadow economy is statistically significant in Europe and South and North America but contrastingly, it has no effect in Africa and Middle East, and Asia and Oceania. The finding justifies that economic situations, government system efficiency, size of market, and cheap labor costs lead to a different effect of shadow economy on FDI according to regions.

Keywords: Shadow economy, FDI, Economic Freedom and Economic Growth.

INTRODUCTION

Foreign direct investment (FDI) is considering one of main way to transfer technology and capital from developed to developing countries. When FDI inflow to a domestic country that firm or company obtain competitive advantage the reason of using new knowledge, management system and efficient and effective way of production. Therefore FDI plays very important role in successful economic growth of country and also major channels of technology transfer. This is main reason developing countries are trying to attract more FDI. On other hand, Foreign investors increase their investment to developing country for generate higher profit. However, investors are facing unexpected problems of doing business in developing countries such as: unfamiliar regulatory frameworks, corruption, bureaucratic systems, high inflation, inaccurate statistical reports (unemployment and others), political and economic instability and other market conditions. Shadow economy is main cause of these risk factors.

According to Schneider (2014), “Countries with higher tax revenues achieved by lower tax rates, fewer laws and regulations, a better rule of law and lower corruption levels, should thus have smaller shadow economies”. When shadow economy activities increase in the country, budget deficits rise because income tax decreases due to tax evasion. For fulfill the budget deficit government rise the tax. As result, the number of firms which are working in shadow economy increase. It will affect the ability of government to fight against corruption. Controlling and decreasing corruption rate is very costly activity. In this situation, Government concentrate more for reduce budget deficits. Therefore, corruption increases in the country by following by reduction in institution quality as well. As we know that FDI inflow depends on business environment and regulations. High shadow economy increases the risk of investment and reduces FDI inflow. In addition, shadow economy creates unfair compotation in the market and reduces profit of foreign investors. Most of foreign investors work in the bright side of economy. They need follow all regulations such as: tax payment, minimum wages, safety standards and others. They have higher cost of conducting business compare to firms which are working under shadow economy. Therefore, interm of price they are not able to compite with each other. This is one of reason investors profit reduces.

Although the relationship between Shadow economy and FDI is very important for econmic policies, it gets less attention and there are very few studies about it. In this paper we try tu fulfill the gap by using panel data.

LITERATURE REVIEW

There are some studies claims that increasing of productions in shadow economy has a positive effect on the formal sector in term of rose demand (Schneider and Enste 2000). According to Schneider (1998), nearly 66% of the earning in shadow economy is spent in legal economy. On the other hand, Schneider and Enste point out that large shadow economy can influence on creating effective economic policy and make it more difficult because policy maker use official economic indicators which is not accurate.

The different ideas reflect the fact that the consequences and cause of shadow economy is different in different type of counties (Schneider and Enste 2000). Best on the literature review of Gerxhani (2004), the relationship between shadow and legal economy may be positive in developed countries. At the same time a negative relationship is more likely in less developed countries.

According to studies, political system can affect formal and shadow economy activities. Torgler and Schneider (2007) proofed that if governance and institutional quality increased as a result shadow economy size will decrease. If residents understand that their interests clearly represent by political institutions and they get very good support from them, citizens’ trust for government will increase. As a result their willingness to contribute increased.

However, when government is inefficient and the corruption is uncontrolled, citizen will have very little trust to authority. Therefore, they will have very low intention to cooperate. Government can only create a sustainable tax system which is fair and flexible with strong connection between tax payments and the supply of public goods (Bird et al., 2006). According to Friedman et al. (2000) high corrupted country has high size of shadow economy. It was proofed empirically. Dreher and Schneider (2006) have also tasted relationship between corruption and shadow economy. They notice the propensity that shadow economy and corruption are alternates in high-income countries, but accompaniments in low-income countries.

Most of recently studies have shown that the service of corruption discouraging foreign investors. According to Wei (2000) there is a significant negative impact of corruption on FDI. He focused on two-sided flows between 14 sources and 45 host country in 1990 and 1991. Similarly, Lambsdorff and Cornelius (2000) illustrated unfavorable effect of corruption on FDI for the African countries. Abed and Davoodi (2002) found a negative influence of corruption on the US Dollar per capital value of FDI for a cross section of 24 transition countries. Doh and Teegen (2003) indicated that the extent of corruption can affect the investment negatively in the telecommunications industry. Habib and Zurawicki (2001; 2002) proofed that the line of corruption reduces inflow of foreign direct investment. They found that the influence of corruption on FDI is higher than local investment. However, Egger and Winner (2005) empirically proofed a positive relation between corruption and FDI for 73 countries from 1995 to 1999.

According to Turand and Sotirios (2013) all government indicators has a negative and significant effect on FDI inflow by using Panel Data Gravity model during 1985 and 2004 in 18 Latin American countries. Also Steven and Daniel (2002) proved empirically both “voice and accountability” and “government effectiveness” influence FDI inflow positively for 144 countries during 1995 and 1997. On other hand, Sedik (2012) find out that there is negative and significant effect on FDI inflow. Government effectiveness has a positive effect to the inward FDI.

Economic freedom also plays important role to attract foreign direct investment. There are a lot of researches proved that higher level of economic freedom attract more FDI. This result proved by researches such as: Kirk and Noel (2008), Murat and Philip (2008), Jose and Antonio (2009), and others. Dreher and Schneider (2006) and Grexhani (2004) highlighted that relationship between corruption and shadow economy may be different in high income countries and low income countries. It may be normal, if two groups of countries are considered by different types of corruption activities.

ECONOMETRIC METHODOLOGY

We analyze the effect of shadow economies on FDI for 40 countries over the period 1999 to 2009 using panel data method. 40 countries are divided into 4 groups which are Europe, South & North America, Africa & Middle East and Asia & Oceania for investigating the regional affect of Shadow economy on FDI. Table 1 prove the list of countries, which we using in our study and also we creat common panel data model as follow:

$$FDI_{it} = \beta_1 + \beta_2 EF_{it} + \beta_3 SHE_{it} + \beta_4 GDP.pc_{it} + \beta_5 IR_{it} + \varepsilon_{it}$$

FDI: Foreign Direct Investment, net inflows (% of GDP) in 40 countries in the world during 2000 to 2008.

SHE: Shadow Economy in 40 countries around the world in the period of 2000-2008.

EF: Economic Freedom in 40 countries around the world during 2000 to 2008.

GDP.pc: Annual percentage growth rate of Gross domestic product in 40 countries around the world during 2000 to 2008.

IR: Investment Share of GDP Per Capita at 2005 constant prices in 40 countries around the world during 2000 to 2008.

DATA

Quantitative research of relations between variables such as shadow economy and economic freedom used to be impossible to be conducted till a few years ago. However, the recently availability data such as shadow economy helps to make such researches possible for us. This study refers to the data set of shadow economy from Ceyhun and Oguz (2012). The collected data set covers period from 2000 to 2008 for 40 countries. The selected countries for this study are given in Table 1.

We obtained variables such as: Annual percentage growth rate of Gross domestic product from the World Bank and real investment as percentage of real GDP (denoted I/Y) from PWT. The depended variable in this sample is Foreign Direct Investment inflow as percentage of GDP (denoted FDI/Y) is obtained from the World Bank date.

The Heritage Foundation has provided economic freedom index over 19 years. The index of economic freedom consists of 10 specific freedoms such as: Business Freedom, Trade freedom, Fiscal freedom, Government

spending, monetary freedom, Investment freedom, financial freedom, Property rights, and freedom from corruption and Labor freedom. This research expected that shadow economy will decrease, whereas FDI will increase when Economic freedom increase.

THE ESTIMATION RESULTS OF HOW SHADOW ECONOMY CAN AFFECT FDI FOR 40 DIFFERENT COUNTRIES

Before conducting the panel data test, the study runs the Hausman test to identify the appropriate model for the research. The test also helps to compare the fixed effect or random effect. This is to ensure that the study using the correct model to get an accurate result. The result of TABLE 2 indicates the result of Hausman test. According to the result of Hausman test which shown in following table, H_0 Hypothesis cannot be rejected because probability value is higher than 5%. It means that random effect model is better than fixed effect model. Thus, the random effect model is applied in this study.

Table 2 Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.1863	4	0.5271

According to the result of random effect model (Table 3), the variable coefficient of shadow economy (SHE) is not statistically significant. This means that shadow economy does not have any effect on FDI in 40 chosen countries. In addition, the variables such as Annual percentage growth rate of Gross domestic product (GDP.pc) and Investment Share of GDP Per Capita (IR) are not statistically significant. However, variable coefficient of economic freedom (EF) is statistically significant. It has positive effect and is equal to 7.589092, which means that economic freedom plays a crucial role in attracting foreign direct investment. Increasing one percent of the economic freedom will increase 7.589% of FDI.

Nowadays, it needs a very good business environment to attract foreign investment. Creating good background will as well improve the domestic investment. In order to create a good business environment the country must be conducive in terms of political, economic, social and technology. Economic freedom is a significant variable that covers most of it. Investors give more attentions to economic freedom compares to shadow economy, because EF affects every aspect of our life. High level of it leads society higher income, lower poverty, less unemployment, longer life expectancies and cleaner environment. In other words, it can help country to create higher level of life style. In addition, economic freedom covers most important aspects which investors give attention before entering to country such as: corruption, property rights, labor freedom and so on. On that situation economic freedom is more preferable variable compares to shadow economy.

Watson-Durbin quantity statistic is 2.41, which is higher value and shows that there is no any serial correlation in the model.

Table 3 Random Effects Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13.6868	7.7915	-1.7566	0.0799
LOG(EF)	7.5891	2.9330	2.5874	0.0101
LOG(SHE)	-0.8645	1.0051	-0.8601	0.3903
GDP_PC	0.1318	0.1078	1.2223	0.2224
LOG(IR)	1.1442	1.9868	0.5759	0.5650

THE ESTIMATION RESULT OF REGIONAL AFFECT OF SHADOW ECONOMY ON FDI

European Countries

According to Housman test result probity value is 31.32% which is much higher than 5% which shown in Table 4. It means that H_0 hypothesis is based on Random effects model to be failed to reject. So, panel model is random effect model. In other words, random effect is more accurate to this study.

Table 4 Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.7565	4	0.3132

Table 5 illustrated the result of random effect model for 10 European countries which given in Table 1. Regional effect of shadow economy is tested on FDI based on European region. The result is very interesting because variable coefficient of shadow economy is statistically significant and has a negative effect that is -1.52. It means that increasing one percent of shadow economy, -1.52 FDI decreased. Shadow economy is one of powerful variable, which can affect FDI because increasing of shadow economy causes reduction of tax revenue. As a result, government will face with budget deficit. It is known that budget deficit is the first step of economic instability. Lack of economic stability increases the uncertainty atmosphere. This leads to disturb the relative price and finally causes to decrease foreign investment and attraction of FDI.

Annual percentage growth rate of Gross domestic product (GDP.pc) is positively significant and coefficient equal to 1.77. It means that GDP.pc plays important role on FDI. In other words, increasing one percent of GDP, 1.77% FDI, increased. Economic growth stimulates growth rate of FDI inflows because higher GDP means that country market is becoming bigger and bigger. This raises the interest of investors to invest in the country. On the other hand FDI also causes to increase economic growth as well. In addition, FDI can be a source of valuable technology and skills, which can help local producers to increase productions.

Table 5 Random Effects Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-108.4493	42.5155	-2.5508	0.0129
LOG(EF)	29.6253	11.3358	2.6134	0.0110
LOG(SHE)	-1.5207	0.7278	-2.0893	0.0403
GDP_PC	1.7749	0.7139	2.4862	0.0153
LOG(IR)	18.3699	10.6824	1.7196	0.0899
FDI(-1)	-0.5258	0.1691	-3.1081	0.0027

Economic freedom is still significant with 1.2% of probability value. Coefficient value is equal to 29.62, which means that one percent increase in EF leads 29.62 FDI, increased.

We need to check Watson-Durbin quantity statistic to make sure that the serial correlation is not existed in the model. The value of Watson-Durbin quantity statistic is 2.19 which is very high value. It means that the serial correlation is not existed in the model.

South and North American Countries

TABLE 6 indicates the result of Hausman test. According to the result of Hausman test which shown in the following table, H_0 Hypothesis cannot be rejected because probability value is higher than 5%. It means that random effect model is better than fixed effect model. So random effect is used in the study.

Table 6 Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.0000	5	1.0000

According to the result of Random effect model which given in Table 7, it illustrated that variable coefficient of shadow economy is statistically significant and has a positive effect. In other words, increasing one percentage of shadow economy can cause to increase 1.34 FDI, which give opposite result of European countries. Consequently, we can say that dishonest investors may invest to these countries if they can secure extraordinary freedoms. Corrupted Government makes deal with foreign firms, by giving them the ability to work or do business in the favorable term. This kind of deal usually brings economically disadvantages to the local population. In addition, by increasing shadow economy and corruption in the country, government revenue will decrease because population prefers to work in shadow economy sectors. As a result, they are unwilling to pay tax to the government. As a consequence, it will leads to budget deficit. For compensating budget deficit government needs to attract FDI by giving special advantages to the investors. This is one of the main ways of dirty investment inflow for the country.

Economic freedom in South and North American countries is also statistically significant and positively affects FDI, the same as in European countries. The result indicates that increasing one percent of the economic freedom, 4.32 FDI increased. This means that Economic freedom plays essential role for decision making of investors in South and North American countries.

Variables such as Annual percentage growth rate of Gross domestic product (GDP.pc) and Investment Share of GDP Per Capita (IR) are not statistically significant. It means that these two variables do not have any impact on FDI inflow to the chosen countries.

Table 7 Random Effects Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-14.4251	4.3823	-3.2916	0.0015
LOG(EF)	4.3232	1.0267	4.2107	0.0001
LOG(SHE)	1.3435	0.3381	3.9735	0.0002
GDP_PC	0.0544	0.0193	2.8219	0.0061
LOG(IR)	2.1221	1.2707	1.6699	0.0992
FDI(-1)	0.4646	0.0834	5.5690	0.0000

Africa and Middle East Countries

Table 8 illustrated the result of Hausman test for 10 chosen countries in Africa and Middle East. According to result, probability value is 11.33 % which much higher than 5%. It means that our H_0 Hypothesis is failed to reject. Random effect is appropriate for the study.

Table 8 Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.8946	5	0.1133

The result of Random effect model suggests that there is no significant relationship between FDI and the shadow economy. Also other variables such as: economic freedom, Annual percentage growth rate of Gross domestic product (GDP.pc) and Investment Share of GDP Per Capita (IR) is not statistically significant with FDI. It means that shadow economy and economic freedom do not plays important role in attracting FDI for high-corrupted governments that have a lack of development. In this case, most of investors may make contract with government to create them a special environment for doing business. As a result, most of dirty investments and dishonest investors' inflow take places in the country. Dirty investment usually pollutes the environment and gives negative effects to population health. As a result, population health life style will decrease and different types of sickness will increase. Such investment cannot work in developed and well build system countries because they have a very strict regulation and environmental check. Investors have to spend a lot amount of money to follow the regulation, which is considered as high cost. So, they prefer to go to the high corrupted and not developed countries because such government has unstable economy and needs money to fulfill economic deficit. The government will agree to accept any type of investments that enter to the country. This is the main reason that variables are not statistically significant with FDI. In such situations, investors will not give attention to shadow economy, economic freedom and others factors before they investing in the country. This is because they do not have willingness to work with regulation.

Table 9 Random Effects Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.5917	3.7021	0.1598	0.8734
LOG(EF)	0.9492	1.2559	0.7558	0.4522
LOG(SHE)	0.0273	1.2352	0.0221	0.9824
GDP_PC	0.0542	0.0533	1.0163	0.3128
LOG(IR)	-0.4636	1.0002	-0.4635	0.6443
FDI(-1)	0.7204	0.0821	8.7728	0.0000

Asia and Oceania

TABLE 10 indicates the result of Hausman test. According to the result of Hausman test which shown in the following table, H_0 Hypothesis cannot be rejected because probability value is higher than 5%. It means that random effect model is better than fixed effect model. Thus, random effect is applied.

Table 10 Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.3089	4	0.0538

The result suggests that there is no significant relationship between FDI and shadow economy except economic freedom and annual percentage growth rate of Gross domestic product (GDP.pc) which indicated in Table 11. It means that economic freedom plays important role in attracting FDI for Asia and Oceania countries because it covers important variables such as: financial freedom, property rights, business freedom and other, which can create very good environment for doing business. Investors can measure the risk of investment by using it as well. Therefore, the increase of one percent of economic freedom, 11.37 FDI increased. Also one percentage increase of annual percentage growth rate of - Gross domestic product (GDP.pc), 0.56 FDI increased.

In addition, according to the result, it shows that shadow economy is not significant with FDI because the group covers emergency market countries and countries with very high populations such as: China, India, Indonesia, Bangladesh and others. These countries has very huge market and cheap labor supply. So investors do not give attention to shadow economy as long as government provides them sufficient business environment.

Table 11 Random Effects Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-18.8122	9.2194	-2.0404	0.0444
LOG(EF)	11.3716	4.4067	2.5805	0.0116
LOG(SHE)	-0.5687	1.9817	-0.2920	0.7710
GDP_PC	0.5611	0.1331	4.2139	0.0001
IR	-0.0473	0.0840	-0.5636	0.5745

CONCLUSION

The present paper examines the link between shadow economy and FDI using the panel data random effect model. To my knowledge, this is the first research that investigates the relationship between FDI and shadow economy. For that purpose I use the shadow economy and FDI data for 40 countries over 9 year's period from 2000 to 2008.

The panel data of random effect model result did not support FDI and Shadow economy and has no any relationship for 40 chosen countries. However, we identify the relationship between FDI and economic freedom. So, it may be said that investors give more attention to economic freedom compare to shadow economy. In other words, investors have a lack attention to shadow economy.

The second test examines the regional effect of shadow economy on FDI by using panel data random effect model. We divided the world into four different groups such as, South and North America, Europe, Africa and Middle East and Asia and Oceania, each group consisted from 10 chosen countries period of 9 years. Interesting result was obtained based on the region. European countries has statistically significant and negative relationship between shadow economy and FDI. However South and North America countries result shows statistically significant and positive relationship between them. Whereas, other groups' result illustrated that there is no any relationship between shadow economy and FDI. In addition, Economic freedom is statistically significant and has positive result to FDI in Europe, South and North America and Asia and Oceania groups. These results indicate that there is lack attention of shadow economy compare to economic freedom.

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Appendix

Table 1 List of countries.

Europe	Asia and Oceania	Africa and Middle East	North and South America
Austria	Australia	Algeria	Argentina
Belgium	Bangladesh	Bahrain	Brazil
France	India	Egypt	Canada
Germany	Indonesia	Iran	Chile
Italy	China	Kuwait	Colombia
Luxembourg	Japan	Libya	Mexico
Netherlands	Malaysia	Qatar	Peru
Norway	New Zealand	Saudi Arabia	Uruguay
Russia	Singapore	South Africa	United States
United Kingdom	Thailand	United Arab Emirates	Venezuela