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The impact of crime on foreign direct investment

Muhammad Mukhlis Afriyanto

Postgraduate Program in Economics, Universitas Indonesia, Jakarta, Indonesia.
E-mail: mukhlis.afriyanto@gmail.com

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Abstract

This study examines the impact of crime incidence on Foreign Direct Investment (FDI) in Indonesian provinces. This study uses panel data covering 31 provinces for the period 2005 to 2015. We involve Total Crime, Property Crime, Violence, Vandalism, Arson, Fraud, Homicides and Kidnapping as variable of crime. The results show that crime variables have significant impact on FDI. We find that for every increase in total crime incidence per 100,000 people by ten percent, FDI is expected to decrease by approximately 0.95 percent. The results of this study suggest that besides boosting economic growth, stimulating infrastructure development, and lowering the provincial minimum wages, government needs to pay attention to crime incidence in each province. Government should allocate adequate resources to minimize the crime rate.

Abstrak

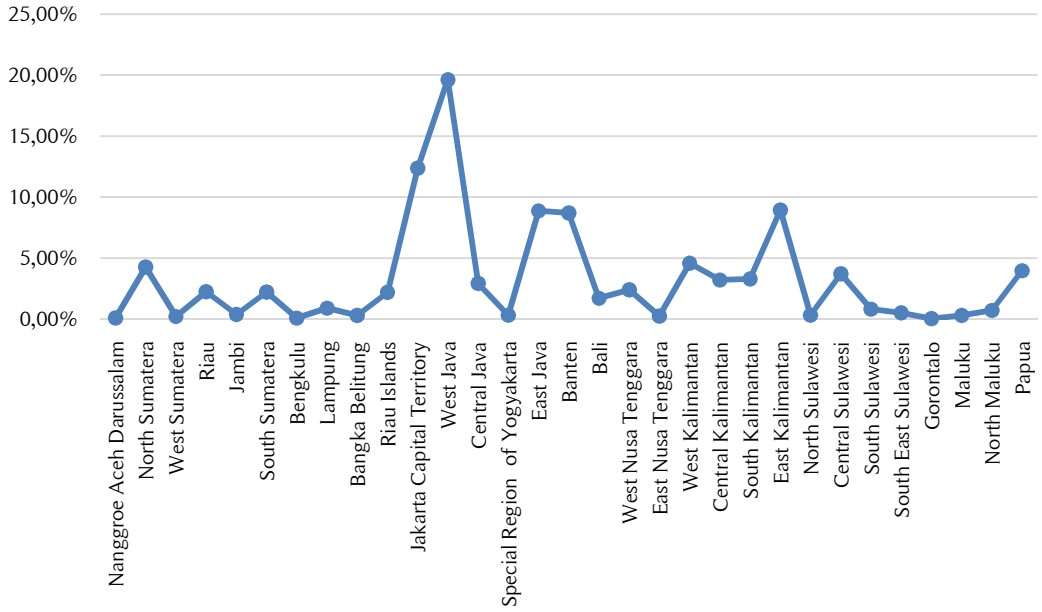
Studi ini mengkaji dampak kejadian kejahatan terhadap investasi asing (FDI) di provinsi-provinsi di Indonesia. Penelitian ini menggunakan data panel dari 31 provinsi yang mencakup periode 2005 sampai 2015. Kami melibatkan *Total Crime, Property Crime, Violence, Vandalism, Arson, Fraud, Homicides and Kidnapping* sebagai variabel kejahatan. Hasilnya menunjukkan bahwa variabel kejahatan berpengaruh signifikan terhadap FDI. Kami menemukan bahwa untuk setiap peningkatan jumlah kejadian kejahatan per 100.000 orang hingga sepuluh persen, FDI diperkirakan akan turun sekitar 0,95 persen. Hasil penelitian ini menunjukkan bahwa selain mendorong pertumbuhan ekonomi, merangsang pembangunan infrastruktur, dan menurunkan upah minimum provinsi, pemerintah perlu memperhatikan insiden kejahatan di setiap provinsi. Pemerintah harus mengalokasikan sumber daya yang memadai untuk meminimalkan tingkat kejahatan.

Introduction

The implementation of FDI in various regions in Indonesia is still facing difficulties. The approval FDI at the regional level is still unevenly distributed and it is mainly concentrated in specific provinces. By the end of 2015, provinces in Java Island dominated FDI acceptance at an around 55% of total FDI, and only 45% of it was received outside Java Island. As shown in Figure 1, West Java province received 19.60% of FDI, followed by Jakarta Capital Territory (12.36%), East Kalimantan (8.92%), East Java (8.86%), Banten (8.68%), leaving other provinces receiving only 1% to 3%.

A good investment climate is one of the essential factors needed to attract investors. We could assume that the internal situation in Indonesia is one of the considerations for investment decisions in Indonesia. Mukherjee, Wang, & Tsai, (2012) mentioned that some factors may affect the investment climates, namely the political stability, macro-economic situation, corruption, the easiness to get credit, crime rate, government regulation, law supremacy, infrastructures, labor regulation and telecommunication.

Security issues, like crime within the destination country, are an important consideration for investors. Generally, crime affects investment negatively through two main channels: direct channels and indirect channels as studied by Dadzie, Blanco, & Dony (2014). The direct impact of crime on investment is delivered through the cost of setting up a business. Indirect channels are carried by complementary factors related to human, social and institutional factors. A high level of crime, especially violence, causes damage or loss of property and infrastructure and creates insecurity resulting in investors' spending for additional security guards and equipment.



Source: Indonesia Investment Coordinating Board (2015)

Figure 1. FDI per-province in Indonesia (2015)

There has been little research specifically studying the relationship between FDI and criminal activities in Indonesia. Moreover, most of the studies on FDI in Indonesia tend to focus on national level analyses rather than disaggregating the analysis to the regional level. Some studies have confirmed that crime hinders investment in several countries. Brock (1998) finds that relatively higher FDI is attracted to the regions of Russia where the level of crime is lower. Another study by Madrazo-Rojas (2009) finds that violent organized crime has a negative impact on FDI in Mexican states. Lastly, Daniele & Marani, 2011, find a negative association between organized crime and FDI in Italian provinces. More recently, Albanese & Marinelli, 2013 find that in Italy, criminal acts significantly weaken productivity. According to their study, crime decreases FDI. Regions with lower crime rates tend to have higher productivity than areas with a high crime incidence. Therefore, a high crime rate could be considered as an additional risk or additional cost impairing an investor's decision to invest money.

Research Method

Data and variables

Due to data availability in Indonesia, there was difficulty in obtaining all the variables mentioned in previous studies. To circumnavigate this difficulty, this study attempts to answer the research questions listed in Chapter I, by optimizing the use of the available data from various relevant sources. This study uses provincial level data from 31 provinces in the years 2005 to 2015.

The dependent variable in this study is the FDI inflow received by the provinces of Indonesia. Data was obtained from the Indonesia Investment Coordinating Board (IICB) for the years 2006-2015. To avoid potential bias and to capture the real condition of investment in Indonesia, the FDI realization is used as the proxy. Additionally, this study employs cumulative FDI due to a strong correlation between FDI inflow and cumulative FDI. Related to fact that investors tend to invest in the regions with a high industrial concentration, this study uses the cumulative FDI (in US million dollars) as the proxy for industrial concentration. However, due to data availability, this variable is represented by the data from year 1990. This variable is expected to be positively significant to FDI inflow in Indonesian provinces. On the other hand, the independent variables in this study, as the determinants of FDI inflows are obtained from the (Statistics-Indonesia, 2006).

This study employs both the total crime rate and detailed or specific crime rate as the proxy of crime variables. Total crime is the sum of criminal activities in general on every 100,000 people in one year. Meanwhile, specific crime categories crime activities into arson, vandalism, theft, violence and kid-

napping per 100,000 people in one year. Data was obtained from 2007 to 2014 periods. In a highly insecure environment, individuals, firms, and governments must suffer significant security costs, making fewer resources available for investment. Thus, the crime rate could be considered as an additional risk or additional cost for doing business so it is expected to have negative nexus in determining FDI inflow

In terms of business related information, domestic investors tend to have wider access to information compared to foreign investors. In other words, there is asymmetric information. Therefore, in many cases, domestic investment could be used as the signaling indicator about the internal economic situation in the investment destination regions. Considering that assumption, it was expected that domestic investment has a positive effect in determining the FDI inflow. In this study, data of this variable, domestic investment (billion Rupiah) was obtained from, the Indonesia Investment Coordinating Board (IICB) in the years 2005-2014.

As discussed in Chapter II, several previous studies claimed that market size determines FDI inflow. Market size indicates the volume of the local market as well as consumer's purchasing power on that region. From the producer point of view, a large market size is crucial in maintaining the lower cost of production through a lower utility cost by producing and selling products at a larger scale. Therefore, market size is expected to have a positive correlation with FDI inflow in each region. In this study, the indicator of market size is represented by total population residing in each province and also provincial GDP per capita (in thousand Rupiah) in the period 2005-2014

Reliable infrastructure is crucial in supporting production activities. For instance, companies need roads to transport materials as production inputs. In this study, roads are used as proxies for infrastructure. ROAD measures the length of roads in a province (in kilometers) in the period 2005-2014, is expected to have a positive relationship with FDI inflow.

Unemployment rate indicates the availability of labor. An adequate labor supply improves the flexibility of companies to select and hire workers that suit their needs. However, a high labor supply in a region tends to relatively lower the regional minimum wage. Therefore, the variable of unemployment, using unemployment rate during period 2005-2014, was expected to have positive nexus in determining the FDI inflow. Moreover, wages are expected to have a negative effect on FDI inflows. A low wage tends to attract more investors since it potentially lowers the production costs. In this study, WAGE is provincial minimum wage per month in Rupiah during 2005-2014.

Empirical analysis

One of the objectives of this study is to examine the factors that determine FDI inflow at the provincial level in Indonesia. By employing panel data analysis, the economics model of this study is specified as the following:

$$FDI = f(Crime, X) \tag{1}$$

where dependent variable is realization of FDI inflow in the provinces and X is a set of control variables and Crime is a measure of crime incidence. FDI decisions are likely to be based on information from the previous year, so all the independent variables on the assumption are lagged by one year. The basic equation takes the following form:

$$\begin{aligned} \ln FDI_{i,t} = {} & \alpha + \beta_1 \ln Crime_{i,t-1} + \beta_2 \Delta \ln CFDI_{i,t-1} + \beta_3 \ln DI_{i,t-1} + \beta_4 \Delta \ln GDP_{i,t-1} \\ & + \beta_5 \ln POP_{i,t-1} + \beta_6 \ln ROAD_{i,t-1} + \beta_7 \ln PORT_{i,t-1} + \beta_8 \ln UNEM_{i,t-1} \\ & + \beta_9 \Delta \ln \mathrm{WAGE}_{i,t-1} + v_{i,t} \end{aligned} \tag{2}$$

where *i* represents 31 provinces in Indonesia, *t* time in years from 2006-2015. This study analyzes using a natural logarithm form for all variables that are consistent with previous studies with some changes. *CFDI* proxies the cumulative FDI; *DI* refers to domestic investment; *GDP* represents provincial GDP per capita; *POP* proxies the number of residents; *ROAD* refers to the length of road infrastructure; *UNEM* proxies the availability of labor; *Wage* is provincial minimum wage per month.

In estimating the model, Pooled-Least Squared method was used, followed by Fixed Effect and Random Effect Models. To choose the most appropriate estimator, Hausman test, F-tets and Breush-Pagan

test were used. Considering that in this panel data analysis, the data consists of cross section data with different data size and different variances, the Wald Test and Breusch-Pagan/Cook-Weisberg test are used to check for the existence of heteroscedasticity problem. The estimation results are analyzed derived in the next chapter.

Table 1. Data description

Variable	Description	Expected Sign
LFDI	Logarithm form of FDI Inflow in the provinces from 2006-2015 (million $)	
LTCRIME	Logarithm form of Total crime is a measure of the incidence of crime association per 100,000 inhabitants, for the periods 2005-2014	negative
LVIOLENCE	Logarithm form of violence is a measure of the incidence of violence association per 100,000 inhabitants, for the periods 2007-2014	negative
LVANDALISM	Logarithm form of vandalism is a measure of the incidence of vandalism association per 100,000 inhabitants, for the periods 2007-2014	negative
LARSON	Logarithm form of arson is a measure of the incidence of arson association per 100,000 inhabitants, for the periods 2007-2014	negative
LPROPERTY_CRIME	Logarithm form of property crime is sum of arson and vandalism association per 100,000 inhabitants, for the periods 2007-2014	negative
LFRAUD	Logarithm form of fraud is a measure of the incidence of fraud association per 100,000 inhabitants, for the periods 2007-2014	negative
LHOMICIDES	Logarithm form of homicides is a measure of the incidence of homicides association per 100,000 inhabitants, for the periods 2007-2014	negative
LKIDNAPPING	Logarithm form of kidnapping is a measure of the incidence of kidnapping association per 100,000 inhabitants, for the periods 2007-2014	negative
LCFDI	Cumulative FDI (million $), calculation from 1990	positive
LDI	Logarithm form of domestic investment (billion Rp.), for the periods 2005-2014	positive
LGDPWO_CAP	Logarithm form of Per Capita Gross Regional Domestic Product at 2000 Constant Market Prices by provinces, 2005-2014 (thousand Rp.)	Positive
LPOP	Logarithm form of Population by provinces, 2005-2014	positive
LROAD	Logarithm form of length of road as proxy for infrastructure (KM), 2005-2014	positive
LWAGE	Logarithm form of Provincial Minimum wage per Month, 2005-2014 (Rp.)	negative
LUNEM	Logarithm form of unemployment, 2005-2014	positive

Results and Discussion

Table 2 displays the descriptive statistics of each variable. All the variables are in natural logarithm form, where the independent variables are lagged by one year. The data employed in this study is annual data. Currently, Indonesia consists of 34 provinces; however, due to data availability this study will use the data from 31 provinces in Indonesia during 2005 – 2015. The sampled provinces, along with the data of total crime incidence and FDI acceptance for each province are listed in Table 2.

As stated in the previous chapter, our sample is categorized into three groups: Outside Java and Bali Island; Java and Bali Island; and Full Sample. The sample size in each group varies. In the Outside Java and Bali Island group, sample size ranges from 176 to 220, the sample size ranges from 72 to 90 in the Java and Bali group, and the sample size ranges from 248 to 310 in the Full Sample group. FDI Inflow, Total Crime, Cumulative FDI, Domestic Investment, GDP per Capita, Population, Road, and Wage variables have a maximum sample size of 310. The sample size variation is due to the study period which also varies. FDI Inflow, Total Crime, Cumulative FDI, GDP per Capita, Population, Road, Unemployment and Wage variables are taken from the years 2005-2015; however, the remaining variables are sourced from 2007 to 2014 data.

Table 3 shows Descriptive Statistics of all variables that used in this study and with the Table 4. we can see the natural logarithm form of those Variables. The FDI Inflow variable has a mean value of 4.126 with a maximum value of 9.203 and a minimum value of -6.908. The largest total FDI inflow for a decade (2006 – 2015) was contributed by DKI Jakarta province, followed by West Java and Banten in the amounts of $47,679 million, $36,599 million, and $17,835 million, respectively. However, Gorontalo province and East Nusa Tenggara province received the lowest FDI inflow at $85.36 million and $121.358 million respectively. For the Crime variable, Total Crime scored 5.051 with a minimum value of 2.565 and a maximum value of 6.323. The lowest mean of the Crime variable is for the Kidnapping variable, with a

minimum value of -9.210 and a maximum value of 1.293. North Sulawesi and Gorontalo province, ranked as the region with the highest crime rate in the decade with crime incidence of 4068 and 3411 crimes for every 100,000 people respectively.

Table 2. Descriptive statistics 1

Variables	Outside Java and Bali Island			Java and Bali Island			Full sample		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Dependent variable									
FDI	220	276.8	448.7	90	1,420	1,987	310	608.7	1,245
Independent variable									
Crime variable									
Total Crime	220	206.6	97.51	90	137.1	91.54	310	186.5	100.8
Property Crime	176	6.987	6.032	72	2.972	2.881	248	5.821	5.612
Violence	176	26.79	19.26	72	13.52	14.05	248	22.94	18.87
Vandalism	176	6.465	5.883	72	2.789	2.673	248	5.397	5.419
Arson	176	0.522	0.575	72	0.200	0.183	248	0.424	0.528
Fraud	176	15.222	10.442	72	16.57	21.23	248	15.614	14.396
Homicides	176	1.153	0.935	72	0.455	0.334	248	0.950	0.867
Kidnapping	176	0.325	0.549	72	0.230	0.264	248	0.298	0.485
Control variable									
Cumulative FDI	220	1,349	1,830	90	12,251	15,598	310	4,514	9,850
Domestic Investment	220	1,233	2,195	90	4,270	6,820	310	2,115	4,327
GDP per Capita	220	9,004	6,895	90	10,157	11,241	310	9,339	8,389
Population	220	3.973e+06	2.963e+06	90	1.659e+07	1.533e+07	310	7.636e+06	1.033e+07
Road	220	14,534	9,343	90	16,366	12,315	310	15,066	10,308
Wage	220	949,388	347,469	90	798,895	349,475	310	905,697	354,158
Unemployment	220	6.961	2.707	90	7.363	3.882	310	7.078	3.093
Number of region		**22**			**9**			**31**	

Table 3. Descriptive statistics 2

Variables	Outside Java and Bali Island			Java and Bali Island			Full sample		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Dependent variable									
FDI	220	3.521	3.536	90	5.604	2.509	310	4.126	3.402
Independent variable									
Crime variable									
Total Crime	220	5.199	0.565	90	4.691	0.722	310	5.051	0.655
Property Crime	176	1.207	2.140	72	0.393	1.385	248	0.970	1.983
Violence	176	2.962	0.955	72	2.019	1.122	248	2.688	1.092
Vandalism	176	0.980	2.475	72	0.301	1.455	248	0.783	2.246
Arson	176	-1.762	2.632	72	-2.928	2.271	248	-2.100	2.583
Fraud	176	2.280	1.727	72	2.240	1.027	248	2.268	1.554
Homicides	176	-0.101	0.708	72	-1.064	0.785	248	-0.380	0.851
Kidnapping	176	-2.873	3.044	72	-2.474	2.054	248	-2.758	2.795
Control variable									
Cumulative FDI	220	6.194	1.694	90	7.793	2.457	310	6.658	2.074
Domestic Investment	220	4.957	2.963	90	6.116	3.191	310	5.294	3.071
GDP per Capita	220	8.898	0.615	90	8.895	0.718	310	8.897	0.646
Population	220	14.95	0.698	90	16.16	0.978	310	15.30	0.961
Road	220	9.372	0.682	90	9.410	0.775	310	9.383	0.709
Wage	220	13.70	0.357	90	13.51	0.419	310	13.64	0.385
Unemployment	220	2.015	0.359	90	2.02	0.464	310	2.016	0.391
Number of region		**22**			**9**			**31**	

Noted: All the variables are in natural logarithm form. For the variables that have zero values, we do the natural log transformation in the following way: $Ln(x) = \ln(x+0.0001)$ if $x \geq 0$

Table 4. Correlation matrices

Variable	FDI Inflow	Cumulative FDI	Domestic Investment	GDP per Capita	Population	Road	Wage	Unem-ployment	Total Crime	Property Crime	Violence	Vandalism	Arson
FDI Inflow	1												
Cumulative FDI	0.746***	1											
Domestic Investment	0.681***	0.749***	1										
GDP per Capita	0.545***	0.695***	0.555***	1									
Population	0.491***	0.670***	0.573***	0.230***	1								
Road	0.301***	0.357***	0.401***	0.073	0.689***	1							
Wage	0.296***	0.207***	0.257***	0.30***	-0.138**	0.058	1						
Unemployment	0.003	0.244***	0.094	0.27***	0.257***	0.002	-0.18***	1					
Total Crime	-0.128**	-0.227***	-0.186***	0.17***	-0.481***	-0.21***	0.152**	-0.088	1				
Property Crime	-0.18***	-0.240***	-0.281***	-0.033	-0.327***	-0.069	0.171***	-0.125*	0.614***	1			
Violence	-0.22***	-0.293***	-0.323***	0.027	-0.446***	-0.060	0.188***	-0.036	0.762***	0.635***	1		
Vandalism	-0.147**	-0.216***	-0.261***	-0.011	-0.310***	-0.09***	0.152**	-0.111*	0.608***	0.954***	0.627***	1	
Arson	-0.147**	-0.147**	-0.180***	-0.065	-0.169***	0.135**	0.118*	-0.146**	0.431***	0.652***	0.471***	0.562***	1

In 2014, West Java province had a GDP (real GDP, constant 2000) of 408,320 billion IDR, making it one of the top-three with the highest GDP, while Gorontalo province with a GDP of only 3917 billion IDR ranked in the bottom-three. Furthermore, in the *Population* variable which is measured by the number of residents as proxy for market size, West Java is the most populated region, leaving Gorontalo with the smallest population.

Table 3 shows the difference between Java and Bali Island, and Outside Java and Bali Island for all variables. There is a statistically significant difference between these two group. Java and Bali Island receive FDI inflows greater than Outside Java and Bali Island. The difference is about 2.08 and it is statistically significant at 0.01level. Java and Bali Island have fewer crime incidents compared to the regions Outside Java and Bali. The mean of total crime rate in Java and Bali Island is 4.7 crimes. The difference between both groups is 0.50 and it is statistically significant at 0.01 level. These statistics confirm our assumption that a region with a high crime rate would have small FDI inflows.

Furthermore, the total of Cumulative FDI, Domestic Investment and Population variable in Java and Bali Island is higher than in the other groups. Meanwhile, Outside Java and Bali Island has a larger total minimum provincial wage. The difference is about 0.193 and it is statistically significant at 0.01 level. Thus, it implies that a region would have a larger FDI inflow, if a region has a higher population and domestic investment while maintaining a lower minimum wage.

Table 4 identifies the correlation significances and the signs of each independent variable with the dependent variable. The variable Crime (Total Crime, Violence, Arson, Vandalism, and Property Crime) and control variable (Wage) are negatively statistically significant and correlated with FDI Inflow. On the other hand, the variables Cumulative FDI, Domestic Investment, GDP per Capita, Road and Unemployment are positively statistically significant and correlated with FDI Inflow. Furthermore, the small value of VIFs (less than 4.0) indicate no presence of multicollinearity.

Since panel data also consists of cross sectional data, the heteroscedasticity problem occurred. Therefore, several tests to select the most consistent model were conducted. This study used the basic equation proposed in Chapter III. The result of the Wald Test, Breush-Pagan/ Cook-Weisberg Test for heteroscedasticity and Wooldridge test for autocorrelation in panel data test clearly reject the H_0 hypothesis, implying that our data has a heteroscedasticity and autocorrelation problem. To alleviate this problem, this study employs Driscoll-Kraay standard errors. Additionally, Table 5 shows a small value of the p-value of Breusch-Pagan Lagrangian Multipier Test. It indicates that the Random effect model is consistent, over the Pooled least squared. In addition, from F-test and Hausman Test, the Fixed effect model is consistent over the Pooled least squared and Random effect models. From the Breusch-Pagan Lagrangian Multipier, F-test and Hausman Test, we can conclude that in general, the Fixed effect model is consistent and adequate, therefore our analysis will use the Fixed effect model with Driscoll-Kraay standard errors.

Table 5. Test for model selection

Test	Result
Wald Test	Chi(31)=2037.75; p-value=0.0000
Breusch-Pagan / Cook-Weisberg Test for heteroscedasticity	F(1, 277)=8.14; p-value=0.0047
Wooldridge Test for autocorrelation in panel data	F(1, 30)=12.592, p-value=0.0013
Breusch-Pagan Lagrangian Multiplier Test	Chibar(01)==72.75; p-value=0.0000
F-test	F(30, 240) =12.44; Prob>F=0.0000
Hausman Test	Chi(8)=260.72; p-value=0.0000

Note:
: The null is homoscedasticity; : The null is constant variance; :The null is no first order autocorrelation; :The null hypothesis that the Pooled-OLS is consistent, over the Random Effect model; :The null hypothesis that the Pooled-OLS is consistent, over the Fixed Effect model; :The null hypothesis that the Random Effects model is consistent, over the Fixed Effects model.

Table 6 shows the main results of this study, estimating the logarithm form of FDI Inflow with lag of logarithm form of Total Crime and lag of logarithm form of control variables for the period 2005-2015. Meanwhile, columns 2-8 present the results of regressing lag of logarithm form of certain crimes (Property Crime, Violence, Vandalism, Arson, Fraud, Homicides, and Kidnapping) and lag of logarithm form of control variables. All of the results use the fixed effect model with Driscoll-Kraay standard errors.

In Table 6, the Fixed effect model fits the data well at the 0.05 significance level (prob > F(8,6) = 0.000). The value of R-squared is 0.622. It indicates that this model can explain 62.2 percent of the total

sample variation in logarithm of FDI Inflow across provincial Indonesia. Most of the parameters of independent variables (Total Crime and control variable) are statistically significant. Total Crime and GDP per Capita at the 0.1 significance level; Cumulative FDI at the 0.05 significance level; and Domestic Investment, Population, Road, and Unemployment at the 0.01 significance level. On the other hand, only the variable Wage is statistically insignificant.

It is undeniable that market size is approximated by the logarithm form of number of provincial residents and the logarithm form of provincial GDP per capita, have significant positively related to FDI inflow. For every one percent increase in the provincial population and GDP per capita, FDI inflow is expected to increase by 7.25 and 8.07 percent respectively, holding all other variables constant. Furthermore, when cumulative FDI, domestic investment and road as proxy for infrastructure increase by ten percent, FDI inflow will increase by 9.2, 1.0, and 20.7 percent respectively, holding all other variables constant. On the other hand, if unemployment increases by ten percent, provincial Indonesia will lose FDI inflow on average by 9.5 percent, holding all other variables constant. This finding confirms Constantinou (2011) that a large pool of unemployed may imply cheap labor costs and is likely to encourage location, but high unemployment might, also, imply powerful unions which hinder inflows.

Table 6. Estimation results (Model 1)

VARIABLES	*FDI Inflow*	
	Coeff	Std. error
Total Crime	-0.0951*	0.0477
Δ *Cumulative FDI*	0.916**	0.330
Domestic Investment	0.102***	0.0285
Δ *GDP per Capita*	7.251*	3.258
Population	8.075***	0.842
Road	2.075***	0.471
Δ *Wage*	-0.146	0.139
Unemployment	-0.954***	0.215
Constant	-137.2***	15.33
Observations	279	
Number of groups	31	
R-Squared	0.622	
F overall model (Prob>F)	0.0000	

Note: *** p<0.01, ** p<0.05, * p<0.1

The focus variable in this study is the variable Crime. As seen on the Table 6, logarithm form of Total Crime is significantly negatively related to FDI Inflow. Every increase of crime incidence per 100,000 people by ten percent, FDI inflow is expected to decrease by approximately 0.95 percent. Setting the crime rate at the zero level or considering that there is no crime incidence per 100,000 people during period 2005-2014, there will be an additional FDI inflow to Indonesia of about 151.1 million dollars. However, when we set the crime rate in its mean value, the results show that there will be an additional FDI inflow to Indonesia of about 93.46 million dollars. Thus, crime incidence leads to losing an additional 57.64 million dollars of FDI inflow.

Moreover, Table 7 shows that not every type of crime significantly affects FDI inflow. Only property crime and violence are negatively significantly correlated with FDI inflow in Indonesia. In contrast to model 1, labor cost in models 2 and 3 are statistically significant; however, unemployment is not statistically significant. Both models 2 and 3 fit the data well at the 0.05 significance level with the value of R-squared at 0.455 and 0.456 respectively. As seen in both equations, for every increase of both property crime and violence incidence per 100,000 people by ten percent, FDI inflow is expected to decrease by 0.82 and 1.64 percent respectively, holding all other variables constant.

In general, this study supports the result of the previous studies related to the determinants of FDI Inflow such as Tan & Tang (2016); Dadzie et al. (2014); Ashby & Ramos (2013); Madrazo-Rojas, (2009); and etc. From all of model specification proposed in this study, all control variables have a significant influence on FDI Inflow and the variable Crime is negatively significantly related to FDI Inflow. This finding confirms the study by Daniele & Marani (2011) that conducted a panel analysis using data from 103 provinces during the period 2002-2006, and found that foreign investors perceived organized crime "as a signal of a socio-institutional system unfavorable for FDI".

Table 7. Estimation results (Model 2-8)

VARIABLES	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	FDI Inflow	*FDI Inflow*	*FDI Inflow*	*FDI Inflow*	*FDI Inflow*	*FDI Inflow*	*FDI Inflow*
Property Crime	-0.0821*						
	(0.0373)						
Violence		-0.164*					
		(0.0790)					
Vandalism			-0.0579				
			(0.0467)				
Arson				-0.0103			
				(0.0179)			
Fraud					-0.0283		
					(0.0274)		
Homicides						0.278	
						(0.175)	
Kidnapping							-0.0374
							(0.0290)
Δ *Cumulative FDI*	0.822**	0.827**	0.818**	0.816**	0.808**	0.708*	0.850**
	(0.316)	(0.314)	(0.317)	(0.302)	(0.313)	(0.295)	(0.337)
Domestic Investment	0.159*	0.160*	0.161*	0.161*	0.161*	0.165*	0.155*
	(0.0740)	(0.0759)	(0.0743)	(0.0752)	(0.0747)	(0.0716)	(0.0707)
Δ *GDP per Capita*	6.339*	6.770*	6.358*	6.278*	6.338*	6.013*	6.246*
	(3.071)	(3.307)	(3.137)	(3.025)	(3.088)	(2.924)	(2.981)
Population	11.47***	11.75***	11.36***	11.37***	11.28***	11.80***	11.64***
	(0.863)	(1.071)	(0.824)	(0.799)	(0.779)	(1.023)	(1.177)
Road	3.432**	3.332***	3.405**	3.399**	3.415**	3.314**	3.335***
	(0.946)	(0.884)	(1.000)	(0.997)	(0.965)	(0.929)	(0.897)
Δ *Wage*	-0.284**	-0.278**	-0.282**	-0.277**	-0.278**	-0.239**	-0.274**
	(0.0975)	(0.0935)	(0.0947)	(0.0927)	(0.0936)	(0.0937)	(0.0897)
Unemployment	-0.473	-0.344	-0.455	-0.367	-0.387	-0.354	-0.302
	(0.378)	(0.481)	(0.361)	(0.420)	(0.409)	(0.363)	(0.436)
Constant	-203.6***	-206.9***	-201.7***	-202.2***	-200.7***	-207.7***	-205.8***
	(19.73)	(23.65)	(19.55)	(19.60)	(19.27)	(22.39)	(24.70)
Observations	217	217	217	217	217	217	217
Number of groups	31	31	31	31	31	31	31
R-Squared	0.455	0.456	0.454	0.452	0.452	0.460	0.455
F overall model (Prob>F)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Conclusion

The results support the current literature by confirming that Cumulative FDI, Domestic Investment, GDP per Capita, Population and Road significantly positively influence the FDI Inflow variable and Crime and Wage exert a significantly negative effect on FDI Inflow. It is found that for every increase in total crime incidence per 100,000 people by ten percent, FDI inflow is expected to decrease by approximately 0.95 percent. A high crime incidence in a region, could lead to that region being undesirable for investment due to its negative image. In general, the crime rate influences the investment decisions in terms of location.

This study suggests that besides boosting economic growth, stimulating infrastructure development, and lowering the provincial minimum wages, government needs to pay attention to crime incidence in each province. Government should allocate adequate resources to minimize the crime rate. When policies can successfully lower the incidence of crime, it is expected that the investors will respond positively and choose to invest in the province. Therefore, the effectiveness of policies related to crime, play an important role in foreign investment.

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