Market Makes Investment
An Empirical Study on the Effect of Socioeconomic Pressure on Foreign Direct Investment

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Abstract

This paper analyzes the linkages between political risk, institutions, and foreign direct investment inflows. Using panel data of 117 countries from 1990 to 2008, the paper explores the effect of the market environment, including unemployment rate, consumer confidence, and poverty on multinational cooperation. Fixed effect models, sub-sample analysis, ANCOVA, and matched panels are implemented to analyze the positive impact of socioeconomic conditions on foreign direct investment inflows. This paper adds to different literature by analyzing how inherent differences in endowments and favorable initial economic conditions affect one country's attractiveness to multinational firms.

Keywords- *Endowment, Market Environment, Multinational Corporations*

1. INTRODUCTION

1.1. Background

There has been a general agreement that foreign direct investment (FDI) is beneficial to the receiving country in that it brings technology, job opportunities, and many more. Studies have shown a positive relationship between economic growth and FDI for developing countries, thus making how to attract more FDI to be an important topic [1] [2] [3]. Beyond providing new jobs and production capacity, FDI also provides a source of new technology, skills, and assets [4]. International agencies such as the World Bank considered FDI as the most effective tool to help an emerging economy. Thus, how to facilitate FDI is a crucial topic for policymakers.

Data from several studies suggest that macroeconomic instability, institutions, political risk, and trade openness greatly influence a country's ability to attract FDI. However, research on the influence of endowment on FDI is limited. Knowing which factor of endowment affects FDI is important for understanding key factors that influence FDI. Some factors are rather intuitive. For example, many people agree that China and India attract firms by their low labor cost, and many investments are motivated by their target to shift labor-intensive activities to lower-cost countries [5]. Yet, it is important to recognize that for a company to operate in a country, in addition to abundant labor forces and reduced costs, the local market conditions are also important. Factors representing consumer confidence and social stability such as the unemployment rate, consumer confidence, and poverty, could potentially affect how the MNCs operate. If the company also targeted a foreign market, it would want to locate in an area where there is enough buying power. With all those concerns, poorer countries are often not cheaper locations or better choices.

This paper therefore empirically investigates the relationship between various components of economic/market conditions on the host country's attractiveness to FDI. Empirical results from fixed-effect models, and several robustness checks, including sub-sample analysis, ANCOVA, and panel-match, indicate market conditions on both the supply and demand -- unemployment rate, consumer confidence, poverty-- have significant effects on foreign investment flows. Using a new set of measurements, this paper adds to different literature investigating factors of FDI by analyzing how market potential, economic environment, and labor affect one country's attractiveness to firms.

1.2. Existing Literature

There are four general types of FDI: natural-resource seeking, market seeking, efficiency-seeking, and static asset seeking [6]. Based on different types of investment aims, the determinate of a country's attractiveness might change. However, in general, it is agreed that economic and political conditions will influence multinational investment decisions. Factor-endowment theory suggests that "inherent differences in endowments and favorable initial conditions among countries explain the geographical pattern of inward FDI" [7]. The only way the host country can affect this pattern is to change economic fundamentals.

Many studies analyze the relationship between factors of political risk to FDI. For example, Brunetti and Weder [8] show a negative of institutional uncertainty on private investments. Other research shows that there is a positive link between the quality of intellectual property rights and FDI [9]. Corruption has also negatively influenced FDI inflows [10]. Moreover, research finds that lower corruption and better contract enforcement attract FDI, but the result might not be generalized to all countries due to its limited sample size [11]. Besides, there is not a consensus about how institution affects investment decisions. Some studies suggest that a democratic institution may leave a positive impact on FDI because it reduces arbitrary government intervention and has better protection of property rights [12] [13]. Other studies indicate that an autocratic government may be more attractive because it is easier to build a long-term relationship [14].

Economic factors including the country's economic ability, namely, GDP, exports to imports ratio, are considered as important determinants of FDI. GDP can reflect the market size, and the exports to imports ratio could estimate trade openness. Those two properties have been generally accepted as the main determinants of FDI in most empirical studies [15]. Another economic factor is natural resource rents. Resource-seeking FDI is motivated by the availability and size of natural resources. Historically natural recourse plays a vital role in attracting FDI, and it still plays an important role in many developing countries [16] [17]. Social factors include literacy rate, infrastructure, size of the middle class, the extent of urbanization, etc., which reflects how easily one company could operate in a given country. Policy factors include corporate tax, monetary union, and others that might influence a company's incentive to invest [18]. There has also been a negative effect of poverty and the unemployment rate with FDI, but the direction is ambiguous [19] [20].

A large number of analytical and empirical studies have emphasized the importance of uncertainty and risk management for investment decisions [8] [21] [22]. This paper then analyzes market conditions from a risk-management perspective and uses risk factors in the International Country Risk Guide (ICRG) to account for host countries' market environment. The factor chosen includes risk assessment for the unemployment rate, consumer confidence, and poverty. It is an assessment of the socioeconomic pressures at work in the host country that could potentially constrain government action or fuel social dissatisfaction and disorder [23].

The remainder of the paper is organized as follows: Section 2 describes the data and factors this paper is analyzing. Section 3 presents the empirical results, and section 4 concludes.

2. MATERIALS AND METHODS

2.1. Data and Variables

This paper uses data from 1990 to 2008 from 117 countries across the world. The sample covers countries from different income per capita levels. One independent variable and eighteen country-level controls are also being chosen. The post-soviet period is being selected to rule out the major political and economic shock of the Soviet collapse.
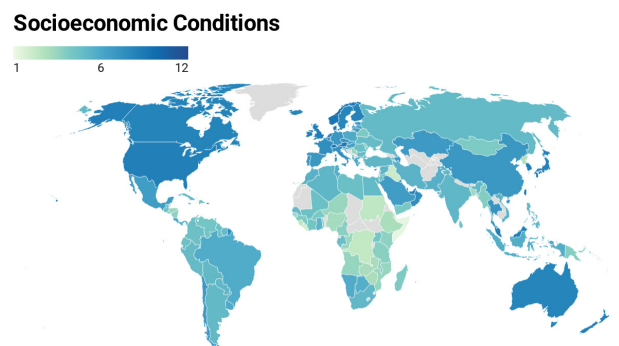

Figure 1. Distribution of Socioeconomic Ratings Worldwide

Information on political risk and institutions is taken from the International Country Risk Guide (ICRG), provided by the Political Risk Services (PRS) Group.

This guide is chosen for its investor point-of-view and its wide selection of political risk factors. Since 1984, PRS Group (2005a) has provided information on twelve risk

indicators including from socioeconomic status to institution and corruption.

The main independent variable in this paper is the socio-economic status in the ICRG guide, which quantifies socio-economic pressures at work in a society that might restrain government action or elevate social dissatisfaction and thus destabilize the political regime. A graph of the worldwide socioeconomic rating is drawn in Figure 1. The light color indicates a lower rating and large risk, while a darker color indicates a higher rating and less risk.

Other political risk variables such as government stability, corruption, external conflict are added to the empirical model as control variables. Besides political risk variables, other control variables include multiple economic indicators such as GNI per capita, corporate tax, import-export ratio, infrastructure, and natural resource rents. GNI per capita helps indicate market size and consumer buying power; corporate tax and import/export ratio represent the country's openness to trade and investment; infrastructure indicates how easy it is for a business to operate in a country; natural resource rent indicates whether the country is attractive towards exploitable FDI.

The summary statistics of all the control variables and the independent variable are shown in Table 1. The political risk variables come from the ICRG data set. The corporate tax data are collected from Tax Foundation [24], and all other economic variables including FDI are collected from the World Bank [25]. There are 1783 lines of data collected, with 117 countries and 18 years. There are eighteen control variables, where FDI is the response variable and socio-economic pressure is the independent variable. All data except for risk ratings are being log-transformed.

TABLE I. SUMMARY STATISTICS

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Year	1,783	1,999.784	5.414	1,990	1,995	2,004.5	2,008
Corporate Tax	1,783	3.305	1.045	−4.605	3.305	3.556	4.318
Government Stability	1,783	8.188	2.014	1.000	6.792	9.833	12.000
Socioeconomic Conditions	1,783	5.838	2.268	0.000	4.312	7.167	11.000
Investment Profile	1,783	7.859	2.450	1.000	6.000	9.750	12.000
IntConf	1,783	9.278	2.212	0.000	8.000	11.000	12.000
External Conflict	1,783	10.209	1.606	2.583	9.417	11.500	12.000
Religion	1,783	4.657	1.341	0	4	6	6
Corruption	1,783	3.092	1.343	0	2	4	6
Military Involvement	1,783	3.960	1.759	0	3	5.5	6
Law	1,783	3.917	1.419	0	3	5	6
Democratic Accountability	1,783	4.078	1.599	0	3	5.5	6
Bureau	1,783	2.321	1.160	0	1.4	3	4
Ethnic	1,783	4.141	1.388	0	3	5	6
GNI	1,783	8.923	1.190	5.598	8.055	9.912	11.676
GROWTH	1,783	3.359	0.299	−6.956	3.295	3.452	4.071
Imports/Exports	1,783	0.092	0.356	−1.045	−0.107	0.248	2.070
FDI	1,783	24.297	0.382	19.586	24.130	24.284	27.362
Infrastructure	1,783	2.157	1.776	−5.118	1.075	3.708	4.278
Inflation	1,783	3.572	0.597	−11.846	3.356	3.647	8.746
Natural Resource Rents	1,775	0.149	2.484	−8.075	−1.113	1.985	4.088

2.2. Baseline Model and Key Assumptions

The basic model is specified as follows:

$$FDI_{it} = \beta_1 MarketEnvironment_{it} + \beta_2 Economic_{it} + \beta_3 Political_{it} + \lambda_i + \gamma_t + \epsilon_{it} \quad (1)$$

where FDI is the dependent variable; Market Environment is the independent variable; Economic and Political are control variables. λ, γ, are time and country fixed effects. In practice, "socioeconomic conditions" represents the market environment, and the other 18 control variables described in the previous section are the economic and political factors. Because this paper uses panel data, fixed-effect models are implemented. The model is also being checked with no perfect multicollinearity and it has few outstanding outliers. In

addition, all variables do not have a very large VIF value. To reduce heteroskedasticity, the model also implements cluster robust standard errors. The robustness of the baseline model is also being tested using several other tests or models, including sub-sample analysis, lagged model, ANCOVA, and PanelMatch.

3. RESULTS AND DISCUSSION

3.1. The Baseline Model

The baseline model is tested using country and year fixed effect with clustered robust standard errors on countries. From (1)-(4), control variables were gradually added. The first model only analyzes the impact of socioeconomic status, while (2) added several economic control variables such as exports/imports, which represent trade openness, and GNI, which represent the market size. (3) and (4) included political risk variables such as government stability, which represent government unity and legislative strength, corruption, military involvement in politics, etc.

The regression result in Table 2. shows a consistent positive effect of socioeconomic conditions on FDI. About a standard deviation increase in socioeconomic conditions rating increases FDI by around 0.05%. While foreign direct investments are often in millions of dollars, the increase is actually very obvious. This indicates that better socioeconomic conditions, such as lower unemployment rates, higher consumer confidence, etc., affect a multinational company's decision in investing. Control variables such as import/export ratio, government stability, and military involvement in politics also have a significant effect, which follows the general expectation.

3.2. Other Models

The robustness of the baseline specifications is checked by conducting four sets of robustness tests:

First, a sub-sample test is used to see if the effects remain on a continental level (shown in Table 3.). Four continents, Asia, North America, Africa, and Europe are selected because of data availability. Data available in South America and Oceania are less than 10 countries and therefore eliminated in the test. Using the two-way fixed effect model with standard error clustered on a country level, the result shows that in Asia and North America, there is still a significant effect of socioeconomic conditions. However, it also shows that socioeconomic conditions tend to be more influential to FDI in North America than in Asia, as indicated by the coefficient 0.099 and 0.028, respectively. While the coefficient in Europe and Africa is positive, the result is not significant. However, the political effect for those continents has become more significant. One of the possible reasons is that in Europe and Africa, there are many countries whose FDI inflows are negative. This means that there is more disinvestment than investment. The effect of market conditions might affect more on its attractiveness to new investments than on the withdraw of investment.

In order to test if conditions in one year could affect investor's preference next year, and reduce autocorrelations, a new model is used to test if there are any lagged effects on FDI investments. Specifically, this lagged model is used to see if market conditions in the previous year affect FDI investment in the next year.

TABLE II. BASELINE MODEL REGRESSION RESULTS

FDI	(1)	(2)	(3)	(4)
Socioeconomic Condition	0.051***	0.048***	0.045***	0.045***
GNI		0.091	0.090	0.110
Imports/Exports		0.109***	0.102***	0.096***
External Conflict				-0.008*
Military Involvement			-0.011*	-0.015*
Government Stability			-0.018**	-0.018**
Other Controls	N	Y	Y	Y
Observations	1,783	1,775	1,775	1,775
Adjusted R^2	0.653	0.656	0.659	0.660
Residual Std. Error	0.225 (df = 1647)	0.224 (df = 1635)	0.223 (df = 1632)	0.223 (df = 1629)

Country and year fixed effects in all models, standard errors are clustered at country level. Y/N represents if there are other control variables being added to the model. Other country-level controls are: inflation, corporate tax, natural resource rents, investment profile, corruption and level of democracy. * represents significance at the 10 % level, ** represents significance at the 5% level, and *** represents significance at the 1% level.

TABLE III. SUB-SAMPLE REGRESSION RESULTS

FDI	EU	AS	AF	NO
Socioeconomic Condition	0.033	0.028***	0.003	0.099***
GNI	-0.256	0.176	0.034	-0.008
Imports/Exports	0.291	0.097*	0.020*	0.346
Inflation	0.058	-0.038	0.006	0.044
Corporate Tax	0.060**	0.013	-0.106	-0.177
Natural Resource Rents	0.035	0.001	0.004	0.095**
Investment Profile	-0.001	-0.002	-0.002	-0.015
External Conflict	0.011	0.007	-0.004**	-0.038**
Corruption	0.009	-0.009	0.000	0.059**
Democratic Accountability	-0.122***	0.009	-0.002	-0.041*
Military Involvement	0.036	-0.019	0.004*	-0.032**
Government Stability	0.003	0.013	-0.005**	-0.053***
Observations	472	411	434	221
Adjusted R^2	0.534	0.801	0.519	0.907
Residual Std. Error	0.360 (df = 409)	0.121 (df = 354)	0.028 (df = 374)	0.162 (df = 178)

Country and year fixed effects in all models, standard errors are clustered at country level. South America and Oceania were not selected because of data availability.

Therefore, the baseline model is modified to predict FDI in the current year based on both the current values of the explanatory and control variables and the lagged values of those variables. The results are shown in Table 4. One unit increase in socioeconomic condition rating increases about 0.04% of FDI. The results are similar to the result of the baseline model. This indicates means that there aren't many autocorrelations in the model, and the socio-economic variable remains significant across the models.

The ANCOVA test and panel matching are also implemented. In both of these two cases, the data is divided into several groups (i.e. the data is being clustered around the socioeconomic variable and some important control variables). In this case, socioeconomic conditions are transformed into a binary variable of 0 and 1. Specifically, 1 represents the rating is higher than average and 0 represents the rating is lower than average. The ANCOVA test is used to see if the effect of social-economic condition still remains when it interacts with all the other variables. The resulting output in the ANOVA (Table 5.) shows there is a significant interaction between socioeconomic conditions several other variables, namely, GNI, import/export, inflation, corporate tax, natural resource rents, external conflict, and corruption.

Therefore, in order to analyze the main effect of socioeconomic conditions, the data is grouped by each of the above-mentioned variables. The result shows that the effect of socioeconomic status remains significant. Two of the results, namely, results grouped by corporate tax and import/export are shown in Table 6. and Table 7. In Table 6, import/export ratio is divided into High, Low, and Medium, while the main effect of corporate tax, government stability is not consistent across all three groups, the effect of socioeconomic conditions remains. In Table 7, corporate tax is divided into High, Low, and Medium, and the effect of socioeconomic conditions remains significant.

PanelMatch is also implemented. This is a "nonparametric generalization of the difference-in-differences estimator" proposed by Imai, Kim, and Wang [26]. The method is used to match data with different control variable levels and identical independent variable levels up to a selected number of lags. Fig. 2 shows the result after 4 lags of the GNI variable and the socioeconomic variable, where the effect of socioeconomic conditions remains positive and significant. Thus, all of the four tests above show a consistent positive effect of socioeconomic conditions on FDI.
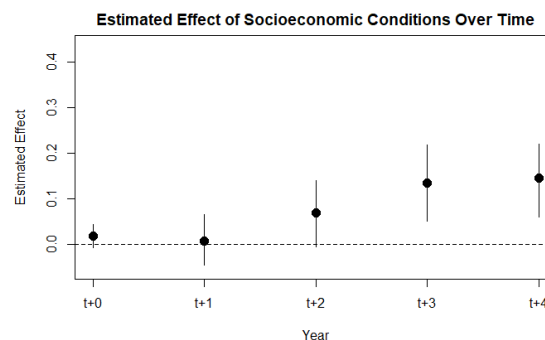

Figure 2. Results Using PanelMatch

TABLE IV. LAGGED REGRESSION RESULTS

FDI	(1)	(2)	(3)	(4)
Socioeconomic Condition	0.046***	0.043***	0.039***	0.038***
GNI		0.146*	0.140	0.165*
Imports/Exports		0.082***	0.071***	0.066***
External Conflict				-0.007
Military Involvement			-0.009	-0.013
Government Stability			-0.018*	-0.018*
Other Controls	N	Y	Y	Y
Observations	1,666	1,544	1,544	1,544
Adjusted R^2	0.652	0.665	0.668	0.668
Residual Std. Error	0.231 (df = 1532)	0.233 (df = 1409)	0.232 (df = 1406)	0.232 (df = 1403)

Lagged country and year fixed effects in all models, standard errors are clustered at country level Variables in (1)-(4) are added the same way as in the baseline model.

TABLE V. ANOVA TABLE

	Effect	DFn	Dfd	F	p	p<.05	ges
1	SocioBinary	1	1,751	29.927	0.00000	*	0.017
2	GNI	1	1,751	21.884	0.00000	*	0.012
3	Imports/Exports	1	1,751	3.472	0.063		0.002
4	Inflation	1	1,751	0.969	0.325		0.001
5	Corporate Tax	1	1,751	27.390	0.00000	*	0.015
6	Natural Resource Rents	1	1,751	3.397	0.065		0.002
7	Investment Profile	1	1,751	9.435	0.002	*	0.005
8	External Conflict	1	1,751	8.673	0.003	*	0.005
9	Corruption	1	1,751	0.001	0.971		0.00000
10	Democratic Accountability	1	1,751	4.462	0.035	*	0.003
11	Milititary Involvement	1	1,751	0.036	0.850		0.00002
12	Government Stability	1	1,751	1.310	0.253		0.001
13	SocioBinary:GNI	1	1,751	5.111	0.024	*	0.003
14	SocioBinary: Imports/Exports	1	1,751	14.331	0.0002	*	0.008
15	SocioBinary:Democratic Inflation	1	1,751	4.647	0.031	*	0.003
16	SocioBinary: Corporate Tax	1	1,751	4.394	0.036	*	0.003
17	SocioBinary: Natural Resource Rents	1	1,751	3.957	0.047	*	0.002
18	SocioBinary: Investment Profile	1	1,751	13.729	0.0002	*	0.008
19	SocioBinary: External Conflict	1	1,751	23.109	0.00000	*	0.013
20	SocioBinary:Corruption	1	1,751	0.977	0.323		0.001
21	SocioBinary:Democratic Accountability	1	1,751	2.504	0.114		0.001
22	SocioBinary:Milititary Involvement	1	1,751	0.521	0.471		0.0003
23	SocioBinary:Government Stability	1	1,751	0.631	0.427		0.0004

Five significant interaction were detected. The interaction variable are then put into the regression model to test the main effect of socioeconomic conditions.

TABLE VI. SIMPLE MAIN EFFECT OF SOCIOECONOMIC CONDITIONS (1)

	Imports/Exports	Effect	DFn	DFd	F	p	p<.05	ges
1	High	GNI	1	504	11.066	0.000944	∗	0.021
2	High	Corporate Tax	1	504	5.532	0.019	∗	0.011
3	High	SocioBinary	1	504	60.981	3.37e-14	∗	0.108
4	High	Government Stability	1	504	4.776	0.029	∗	0.009
5	Low	GNI	1	527	0.012	0.912		0.072
6	Low	Corporate Tax	1	527	3.534	0.061		0.072
7	Low	SocioBinary	1	527	40.834	3.65e-10	∗	0.072
8	Low	Government Stability	1	527	2.458	0.116		0.072
9	Medium	GNI	1	737	10.325	0.001	∗	0.014
10	Medium	Corporate Tax	1	737	11.451	0.000752	∗	0.015
11	Medium	SocioBinary	1	737	64.588	3.67e-15	∗	0.081
12	Medium	Government Stability	1	737	4.007	0.046	∗	0.005

The data is grouped by low, medium, high level of import/export ratio. The effect remains significant across all levels.

TABLE VII. SIMPLE MAIN EFFECT OF SOCIOECONOMIC CONDITIONS (2)

	Corporate Tax	Effect	DFn	DFd	F	p	p<.05	ges
1	High	GNI	2	688	52.201	7.82e-22	∗	0.132
2	High	Corporate Tax	1	688	3.175	0.075		0.005
3	High	SocioBinary	1	688	17.164	3.86e-05	∗	0.024
4	High	Government Stability	1	688	8.599	0.003	∗	0.012
5	Low	GNI	2	541	16.25	1.4e-07	∗	0.057
6	Low	Corporate Tax	1	541	28.632	1.29e-07	∗	0.05
7	Low	SocioBinary	1	541	9.268	0.002	∗	0.017
8	Low	Government Stability	1	541	0.87	0.351		0.002
9	Medium	GNI	2	536	1.25	0.287		0.005
10	Medium	Corporate Tax	1	536	20.495	7.37e-06	∗	0.0037
11	Medium	SocioBinary	1	536	12.224	0.000511	∗	0.022
12	Medium	Government Stability	1	536	2.268	0.133		0.004

The data is grouped by low, medium, high level of import/export ratio. The effect remains significant across all levels.

4. CONCLUSION

Foreign direct investments create more jobs and business opportunities as investors build new companies in the targeted country. FDI are valuable capital inflows to developing countries because they are less susceptible to crises and sudden stops [22].

The goal of this paper was to explore the role of market conditions and socioeconomic pressure as a significant determinant of foreign direct investment. The main contribution of this paper is to add to the literature on how endowments explain one country's attractiveness toward FDI.

Accordingly, the results of the paper can be summarized as follows: In the cross-country two-way fixed effect panel data analysis over 1990-2008,

socioeconomic conditions are closely associated with FDI. Moreover, using sub-sample tests, lagged model, ANCOVA, and matched panel, the result of the fixed-effect model is being checked and the effect remains significant.

Indeed, there are several things to be considered further. For example, there are a large number of missing data in corporate tax, and the missing data is replaced by estimated trends or median value overall. Also, I assumed that both the control variables and the socioeconomic variable are exogenous. In the case of the export/import ratio, FDI inflows are potentially likely to influence the overall trading volume. In addition, FDI may increase a country's GNI because it would bring technologies based on specific conditions. These problems are to be considered for further research using instrumental variables instead. Also, for the sub-sample

analysis, further research would be done to analyze Continental differences to explain the situations in Europe and Africa mentioned in section 4.

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