Bulletin of Applied Economics, 2022, 9(2), 223-237
https://doi.org/10.47260/bae/9213

External Debt Default and Foreign Direct Investments

Nachiket Thakkar[1] and Kiran Ambreen Ayub[2]

Abstract

We analyze the effect of a country's defaults and restructuring its' official and private external debt on its ability to attract foreign direct investment. We use different types of foreign direct investments: FDI Flows, Horizontal FDI, vertical FDI, cross-border mergers & acquisitions, and greenfield FDI. Using the Poisson-Pseudo Maximum Likelihood (PPML) estimation method, which has never been used in the literature to do a similar analysis, we find that external debt default decreases all types of FDIs. Furthermore, we also conduct a more granular sensitivity analysis by analyzing the effect of political risk ratings, effect on non-advanced economies, and effect on highly indebted poor countries (HIPC). We find that cross-border mergers and acquisitions (M&A) decrease as corruption risk decreases and increases as law and order improve. For HIPC countries, official external debt restructuring increases greenfield FDI.

JEL classification number: C1, C33, D72, F21, H63, O57.
Keywords: Debt Default, Restructuring, Foreign Direct Investment (FDI), External Debt, ICRG, Poisson-Pseudo Maximum Likelihood (PPML), Political Risk.

[1] Department of Accounting and Finance, Alabama A&M University, Huntsville, AL 35810.
nachiket.thakkar@aamu.edu
[2] Department of Economics, Lewis & Clark College, Portland, OR.

Article Info: Received: September 29, 2022. Revised: October 18, 2022. Published online: October 24, 2022.

1 Introduction

The major reasons for multinational enterprises (MNE) to invest in any country are to create value by providing capital to address liquidity problems faced by the domestic company or to take advantage of operational synergies. In this paper, we emphasize the liquidity motive for foreign direct investment (FDI) into a country going through an external debt crisis. Krugman (2000) had first coined the term Fire-Sale FDI during the Asian Financial Crisis in 1997-98, whereby using the anecdotal evidence from the financial press, he showed the evidence of local assets selling at discounted prices in the wake of credit constraints and worsening macroeconomic conditions. Since then, several studies have tested this hypothesis, but there is no consensus. Another[3] motivation for this study is the contradicting view presented by Reinhart and Rogoff (2009) in their seminal book *This Time is Different: Eight Centuries of Financial Folly*, where they show that multinational companies do pay close attention to the countries ability to exercise its' external debt obligation, as increasing external debt also raises the probability of sovereign debt default risk for a country. In which case, the MNEs look for investing in safer countries where the potential risk of expropriating their resources is low. Thus, investing less in countries having an economic crisis.

This paper analyzes the effect of official and private external debt default and restructuring on a country's ability to attract Foreign Direct Investment (FDI). To do this analysis, we use different types of FDI measures: 1) FDI Flows, 2) Horizontal FDI, 3)Vertical FDI, 4) Cross-Border Mergers & Acquisitions and 5) Greenfield FDI[4]. Our paper is certainly not the first paper to test the effect of the economic crisis on Foreign Direct Investments (FDI). However, it is to our knowledge the first to utilize the Poisson-Pseudo Maximum Likelihood (PPML), a more robust estimating method, and first to analyze the impact of external debt default and restructuring with private creditors. Furthermore, as a robustness check, we do a sensitivity analysis of our results by analyzing the effect on non- advanced economies and highly indebted poor countries (HIPC) and by controlling for different political risks a country faces.

Using our preferred estimation method (PPML) for our baseline results, we see a negative asso- ciation of external debt default and restructuring with FDI flows and FDI stocks. Both official and private external debt default and restructuring are negatively related to FDI, but the effect is more pronounced when a country defaults on its private external debt. All four types of FDIs (i.e., hor- izontal FDI, vertical FDI, cross-border mergers and acquisitions, and greenfield FDI) see a decline when a country defaults on its external debt, but the decline in cross-border mergers and acquisitions (M&A) is more significant than any other type of FDI.

There are quite a few papers closely related to ours which test the validity of the Fire-Sale FDI hypothesis. Stoddard and Noy (2015) is the closest to ours wherein they also come to the same con- clusion of rejecting the Fire-Sale FDI hypothesis using a sample of emerging market economies and only looking at the official external debt default and restructuring. Alquist et al. (2016) does analysis testing the fire-sale FDI hypothesis along with other hypotheses like, during the crisis period, the proportion of acquisition is lower in the same industry, smaller ownership stakes and duration of acquisition is also lower. Contrary to our result, they fail to reject the fire-sale FDI hypothesis for cross-border mergers and acquisitions. Their empirical analysis follows results from a theoretical model where they model the crisis event as a period of illiquidity[5].

There is a voluminous literature on the effect of various types of risk on different types of FDI. Kellard et al. (2020) show the effects of systemic financial risk on FDI for the Eurozone countries, and in particular, show that banking crisis risk is only present in the country of origin, whereas sovereign risk has an effect

[3]For studies looking at the Fire-Sale FDI hypothesis see: Hausmann and Fernandez-Arias (2000), Aguiar and Gopinath (2005), Lee and Makhija (2009), Athukorala (2003), Acharya et al. (2010), etc.

[4]For a detailed survey on the empirical and theoretical research done on foreign direct investment by the multinational enterprises (MNE) see Paul and Feliciano-Cestero (2021).

[5]Aguiar and Gopinath (2005) and Shin et al. (2011) have also presented a theoretical model for testing the fire-sale FDI. For similar research on emerging, economies see de Holan and Toulan (2006) and for similar research only looking at the United States see Ang and Mauck (2011).

on FDI for both host and origin countries. Herger and McCorriston (2014) analyze the strategies of horizontal, vertical, and conglomerate FDI from cross-border ac quisitions across countries and over time. Loayza et al. (2004) presents stylized facts on whether the greenfield investments follow mergers and acquisitions in a country and what is the time differ- ence between the two and find that higher M&A precedes higher greenfield investment. They also find that FDI does seem to increase with the increase in growth rate but does not precede economic growth. Odhiambo (2017) study the indirect effect of the global economic crisis in the developed countries in western Europe and the United States on the foreign direct investment (FDI) into four sub-Saharan African (SSA) countries and showed economic crisis in developed countries increased FDI inflows in SSA. Bano et al. (2019) shows the effect of terrorism, energy shortages, financial instability, and political instability on FDI inflows in Pakistan and find that apart from terrorism, other three factors do have a significant adverse effect on FDI inflows. Using our panel dataset, we also find a decline in FDI due to increasing corruption and the risk of losing investment. Tanna and Li (2018) investigates the effect of increasing external debt on the economic growth happening as a result of FDI and finds that high indebtedness can restrict a countries ability to benefit from FDI inflows.

Thus, to summarize, in this paper we test the hypothesis of does a country loses its ability to at- tract foreign direct investments (FDI) when it defaults and restructures its external debt obligations to either foreign governments (official external debt) or private foreign creditors (private external debt), as well as test the validity of the Fire-Sale FDI hypothesis. The rest of the paper has the following sections: Section 2 covers the data source and empirical methodology used for the analysis, section 3 has the results, section 4 has sensitivity analysis, and section 5 has a conclusion.

2 Data and Empirical Methodology

Our benchmark econometric model to test the effect of external debt restructuring and default on Foreign Direct Investment (FDI) is in equation 1. Using this equation, we test the FDI Fire Sale hypotheses. We estimate equation 1 using the panel data framework with fixed effects and Pseudo- Poisson Maximum Likelihood (PPML) estimation techniques.

$$LN(FDI)_{it}^{T} = \alpha_i + \beta_1 OfficialDebt_{it} + \beta_2 PrivateDebt_{it} + \beta_3 Z_{it} + \beta_4 X_{it} + \delta_t + \varepsilon_{it} \quad (1)$$

In equation 1, subscript i denotes the country, subscript t denotes the year, and superscript T denotes the type of FDI. Description for the rest of the variables is as below:

- $LN(FDI)^{T}_{it}$ denotes the log of foreign direct investment (FDI) for country i in year t and FDI type T.
- $OfficialDebt_{it}$ denotes the external debt restructuring & default for country i at time t which is owed to another country. It takes the value of 1 when country defaults and/or restructures its external debt with nations of the Paris Club and 0 otherwise.
- $PrivateDebt_{it}$ denotes the external debt restructuring & default for country i and time t which is owed to private creditor. It takes the value of 1 when the country defaults and/or restructures its private external debt and 0 otherwise.
- Z_{it} is the vector of control variables for country i at time t. We use the following macroe- conomics control variables: General government gross debt to GDP, inflation, population, domestic credit to the private sector, GDP per capita growth, gross fixed capital formation to GDP, life expectancy, and trade.
- X_{it} it is the vector of institutional variables for country i at time t. We use the following institu- tional variables: Investment Profile, Corruption and Law & Order. *Investment Profile assesses* the risk from expropriation, profit repatriation, and payment delays. *Corruption* measures the risk of corruption in the political system, which can be a threat to foreign investments. Furthermore, *Law & Order* is the risk rating assessing strength & impartiality of the legal system as well as the observance of law by the

general public. The higher is the political risk rating, the lower is the political risk. The risk rating range for the measures we use here is: Investment Profile (0-12), Corruption (0-6), and Law and Order (0-6)[6].

- α_i denotes the country fixed effects, δ_t denotes the time fixed effects and ε_{it} is the error term.

We use multiple measures of Foreign Direct Investment (FDI) - FDI flows, FDI stock, horizontal FDI, vertical FDI, greenfield FDI and cross-border mergers and acquisitions. Data for FDI Flows, FDI Stock, Greenfield FDI, and Cross-Border Mergers and Acquisitions (M&A) are from United Nations Conference on Trade and Development UNCTAD (2020). As the data for FDI flows, FDI stock, Greenfield FDI, and cross-border mergers and acquisitions contain source and destination data, we have used the sum of the source and destination data as the total for the before mentioned FDI types[7]. Data for Vertical FDI and Horizontal FDI are from the Bureau of Economic Analysis (BEA) BEA (2020). For vertical and horizontal FDI, we follow Stoddard and Noy (2015), and Aizenman and Marion (2004) and use the affiliate sales either back to the USA or other countries as vertical FDI, and horizontal FDI is the affiliate sales in the local market of the affiliate. Data for official external debt restructuring and the default has been taken from the Paris club (2020), and that of private external debt restructuring and the default is taken from Cruces and Trebesch (2013). Finally, all the data for macroeconomic control variables are from World Banks' World Development Indicators (WDI).

Table 1: Sovereign Debt Restructuring and FDI: Descriptive Statistics

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Paris Club Debt	5826	0.04	0.20	0.00	1.00
Private Debt	5826	0.01	0.11	0.00	1.00
General Government Gross Debt	3871	56.05	45.03	0.00	566.62
Inflation	5314	9.00e+10	1.41e+12	0.00	3.44e+13
Population	5370	40.37	139.38	0.07	1400.05
Domestic Credit to Private Sector	4775	45.54	44.07	0.16	361.76
GDP per Capita Growth	5387	1.94	5.99	-64.99	140.37
Gross Fixed Capital Formation to GDP	4900	22.15	7.39	-2.42	93.55
Life Expectancy	5721	67.65	10.16	26.17	85.08
Trade	5059	81.31	53.40	0.02	442.62
FDI Flow	5334	10873.41	41957.66	-1.27e+05	7.61e+05
FDI Stock	5332	1.56e+05	7.18e+05	0.00	1.72e+07
Vertical FDI	1080	15601.01	29422.23	8.00	2.27e+05
Horizontal FDI	1114	26357.02	53050.38	84.00	4.41e+05
Greenfield FDI	1829	14726.18	28988.82	8.10	3.03e+05
Cross-border M&A	2546	9495.32	33884.83	-5.27e+04	4.52e+05
Investment Profile	3157	7.32	2.53	0.00	12.00
Corruption	3157	3.04	1.33	0.00	6.00
Law and Order	3157	3.71	1.47	0.00	6.00

[6] For more details on the ICRG political risk rating methodology, see Howell (2011).
[7] Wang and Sunny Wong (2009) have constructed the Greenfield FDI by subtracting the cross-border MAs from FDI inflows. A similar approach is taken by Stoddard and Noy (2015).

Table 1 has the descriptive statistics. We use a panel dataset from 1984 to 2019. In our dataset, we have 246 instances where a country has restructured its external debt with its official creditors (i.e., other countries) and 75 times with its private creditors, and there are seven instances where a country restructured its external debt with both official and private creditors. On average, FDI flows in our sample is $10 billion, vertical FDI is $15 billion, horizontal FDI is $26 billion, greenfield FDI is $14 billion, and cross-border M&A FDI is $9.5 billion. For the political risk ratings, all the indicators, on average, are between 50% to 60% of the maximum possible rating, which puts each one in a high-risk category as per the International Country Risk Guide (ICRG).

3 Results

3.1 FDI Flows and FDI Stocks

Table 2 reports the baseline results for our empirical analysis. We have presented results for both FDI Flows and FDI Stocks using OLS and PPML estimation techniques. Models 1 through 4 show results for the effect of official external debt restructuring and default on FDI, and models 5 through 8 show results for the effect of private external debt restructuring and default on FDI. For both OLS and PPML estimation, we have used country and year fixed effects. Using OLS estimation in models 1 and 5, we see the total FDI flow increases by $1.8 billion and $4.2 billion for official and private external debt restructuring. The effect of external debt restructuring is similar on controlling for different macroeconomic variables (see models 2 and 6).

Table 2: Effect of external debt restructuring and default on FDI Flows and FDI Stocks

		Official External Debt				Private External Debt		
		OLS		PPML		OLS		PPML
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Dependent Variable: FDI Flows								
Debt Restructuring	1709.094**	2000.138*	-0.867***	-0.718**	4235.333**	-2247.372	-1.400***	-1.406***
	(750.180)	(1035.568)	(0.204)	(0.335)	(1705.229)	(4668.766)	(0.258)	(0.336)
General Govt		68.095***		-0.001		69.240***		-0.002
Gross Debt		(16.112)		(0.001)		(16.126)		(0.001)
Inflation		0.000**		0.000*		0.000**		0.000*
		(0.000)		(0.000)		(0.000)		(0.000)
Population		225.031***		0.004***		225.158***		0.005***
		(52.114)		(0.001)		(52.088)		(0.001)
Domestic Credit		34.651		0.001		34.993		0.001
to Private Sector		(36.672)		(0.001)		(36.687)		(0.001)
GDP per Capita		235.157		0.048***		239.463		0.047***
Growth		(197.087)		(0.016)		(196.694)		(0.016)
Gross Fixed Capital		83.721		0.029***		79.072		0.029***
formation to GDP		(59.631)		(0.007)		(59.622)		(0.0060
Life Expectancy		-1395.781***		0.038		-1407.815***		0.042
		(263.905)		(0.030)		(265.092)		(0.030)
Trade		5.845		-0.001		6.375		-0.001
		(29.488)		(0.001)		(29.472)		(0.001)
Constant	11674.810***	94472.24***	11.150***	6.634***	11699.29***	95364.25***	11.149***	6.310***
	(385.389)	(17879.86)	(0.019)	(2.363)	(389.108)	(17945.59)	(0.019)	(2.353)
R^2	0.596	0.750	0.930	0.928	0.611	0.750	0.930	0.928
Observations	4976	2957	4976	2957	4976	2957	4976	2957
Dependent Variable: FDI Stocks								
Debt Restructuring	60547.26***	54212.66***	-0.802***	-0.521***	96844.7***	17430.03	-0.558***	-0.444
	(10767.42)	(12577.99)	(0.183)	(0.174)	(20796.49)	(46980.42)	(0.323)	(0.408)
General Govt		1209.957***		-0.004***		1217.392***		-0.004***
Gross Debt		(221.336)		(0.001)		(222.874)		(0.001)
Inflation		0.000***		0.000		0.000***		0.000
		(0.000)		(0.000)		(0.000)		(0.000)
Population		2195.255***		0.003**		2195.471***		0.002**
		(669.799)		(0.001)		(668.924)		(0.001)
Domestic Credit		425.269		0.002***		436.890		0.002***
to Private Sector		(340.139)		(0.000)		(340.300)		(0.001)
GDP per Capita		17.068		0.014**		210.278		0.013**
Growth		(1205.344)		(0.006)		(1198.4)		(0.006)
Gross Fixed Capital		-840.140		0.008		-936.883		0.008
formation to GDP		(793.483)		(0.006)		(795.593)		(0.006)
Life Expectancy		-31009.47***		0.054***		-31546.45***		0.055***
		(4878.318)		(0.018)		(4934.208)		(0.018)
Trade		591.165*		0.002		583.735***		0.002
		(352.453)		(0.001)		(352.819)		(0.001)
Constant	159573.7***	2152109***	14.133***	8.955***	161064.7***	2192943***	14.133***	8.842***
	(6358.997)	(329624.4)	(0.011)	(1.399)	(6508.941)	(333573.5)	(0.011)	(1.398)
R^2	0.642	0.836	0.981	0.983	0.624	0.836	0.981	0.983
Observations	4988	2952	4988	2952	4988	2952	4988	2952

Notes: Robust standard errors in parentheses. *p<0.10, **p<0.05 and ***p<0.01. For PPML the reported R2 are pseudo R2.

Among the control variables, general government gross debt and population have a positive and statistically significant association with FDI flows, whereas increasing life expectancy has a negative and statistically significant effect. The results are similar for FDI stock as well. Countries that do external debt restructuring increase their FDI stock by $60 billion and $98 billion for official external debt and private external debt, respectively.

The results using the PPML estimation method are opposite to OLS results, which may be because OLS results are biased, as there are multiple missing values and zero values give rise to heteroscedasticity. The results for PPML estimation are in models 3-4 for official external debt and models 7-8 for private external debt. The interpretation of PPML results is similar to log-level regression model, i.e., $(e^{\beta}-1)*100$. Here, the country experiences a decline in FDI flows by 58% when it restructures its official external debt and by 75% when it restructures its private external debt. Thus, rejecting the FDI fire sale hypothesis. Our results are in line with Stoddard and Noy (2015) who also find a negative relation between different types of crisis and FDI. From the control variables, the general government gross debt does not affect FDI flows but has a negative effect on FDI stock, increasing population has a similar effect as OLS, but the magnitude is much smaller. An increase in income indicated by GDP per capita growth also positively affects both FDI flows and FDI stocks.

3.2 Vertical FDI and Horizontal FDI

In table 3, we present the results for external debt restructuring and default on vertical FDI and horizontal FDI. The results are from using PPML estimation. For vertical FDI, when a country decides to restructure its' official external debt, it negatively affects its' vertical FDI, which decreases by 42%, and when it defaults on private external debt, vertical FDI declines by 30%. The overall effect of control variables on vertical FDI stays the same for both official and private external debt restructuring. An increase in general government gross debt and GDP per capita growth also have a negative impact on vertical FDI. The most significant increase in vertical FDI comes from increasing life expectancy resulting in a 27% increase in vertical FDI. For horizontal FDI, in models 5 to 8, we do not find any official or private external debt restructuring effect. Nevertheless, similar to vertical FDI, horizontal FDI also increases with an increase in the population and life expectancy.

Table 3: Effect of external debt restructuring and default on Horizontal FDI and Vertical FDI

	Vertical FDI				Horizontal FDI			
	Official Debt		Private Debt		Official Debt		Private Debt	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Debt Restructuring	-0.545***	-0.201**	-0.357*	-0.070	-0.047	0.150	-0.140	-0.172
	(0.109)	(0.092)	(0.183)	(0.143)	(0.091)	(0.129)	(0.141)	(0.109)
General Govt		-0.005***		-0.005***		-0.001***		-0.001***
Gross Debt		(0.001)		(0.001)		(0.000)		(0.000)
Inflation		0.000***		0.000***		-0.000		-0.000
		(0.000)		(0.000)		(0.000)		(0.000)
Population		0.011***		0.010***		0.012***		0.013***
		(0.001)		(0.001)		(0.001)		(0.002)
Domestic Credit		0.001*		0.001*		0.001*		0.001*
to Private Sector		(0.000)		(0.000)		(0.000)		(0.000)
GDP per Capita		-0.015***		-0.015***		-0.011*		-0.011*
Growth		(0.004)		(0.004)		(0.006)		(0.006)
Gross Fixed Capital		-0.001		-0.001		-0.004		-0.004
Formation to GDP		(0.004)		(0.004)		(0.004)		(0.004)
Life Expectancy		0.238***		0.238***		0.077***		0.076***
		(0.031)		(0.031)		(0.025)		(0.025)
Trade		0.004***		0.004***		-0.000		0.000
		(0.000)		(0.001)		(0.001)		(0.001)
Constant	10.667***	-8.670***	10.667***	-8.663***	11.217***	4.458**	11.217***	4.503**
	(0.0120)	(2.425)	(0.012)	(2.430)	(0.008)	(1.979)	(0.141)	(1.976)
R^2	0.965	0.982	0.965	0.982	0.978	0.988	0.978	0.988
Observations	1079	711	1079	711	1113	717	1113	717

Notes: Robust standard errors in parentheses. *p<0.10, **p<0.05 and ***p<0.01. For PPML the reported R^2 are pseudo R^2.

3.3 Mergers & Acquisitions and Greenfield FDI

Table 4 shows the effect of external debt restructuring and default on Mergers & Acquisitions (M&A) and Greenfield FDI. If the FDI fire-sale hypothesis has to be accurate, then the expected sign for the debt restructuring variable should be positive, indicating that as a country defaults on its debt obligation, its assets get taken over by other foreign firms at a discount. However, we get the opposite results, where on defaulting and restructuring external debt, investment in the country in the form of mergers and acquisitions decreases by 62% and 92% for official external debt and private external debt, respectively. Similarly, the Greenfield FDI investments also declined by 36% for official external debt default and by 48% for private external debt default. Increasing population and domestic credit availability increase investment by mergers and acquisitions (M&A) and greenfield FDI, respectively, whereas gross capital formation increases M&A by 7% and greenfield FDI by 1.3%.

Table 4: Effect of external debt restructuring and default on Cross-Border Mergers & Acquisitions and Greenfield FDI

	Mergers and Acquisitions				Greenfield FDI			
	Official Debt		Private Debt		Official Debt		Private Debt	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Dependent Variable: Mergers and Acquisitions				Dependent Variable: Greenfield FDI			
Debt Restructuring	-0.977**	-0.783	-2.587***	-2.654***	-0.450**	-0.339*	-0.651***	-0.571***
	(0.532)	(0.758)	(0.274)	(0.358)	(0.180)	(0.185)	(0.182)	(0.194)
General Govt		0.002		0.003		-0.001		-0.001
Gross Debt		(0.002)		(0.002)		(0.001)		(0.001)
Inflation		0.000		0.000		-0.000***		-0.000***
		(0.000)		(0.000)		(0.000)		(0.000)
Population		0.010***		0.011***		0.002		0.002
		(0.002)		(0.002)		(0.001)		(0.001)
Domestic Credit to		-0.000		0.000		0.003***		0.003***
Private Sector		(0.002)		(0.001)		(0.001)		(0.001)
GDP per Capita		0.030		0.029		0.010*		0.010*
Growth		(0.031)		(0.032)		(0.005)		(0.005)
Gross Fixed Capital		0.069***		0.069***		0.013**		0.013**
Formation to GDP		(0.011)		(0.011)		(0.005)		(0.005)
Life Expectancy		0.009		0.013		-0.013		-0.012
		(0.057)		(0.057)		(0.024)		(0.024)
Trade		0.003*		0.003*		-0.000		-0.001
		(0.001)		(0.001)		(0.001)		(0.001)
Constant	10.823***	6.205	10.823***	5.886	10.541***	10.703***	10.540***	10.630***
	(0.025)	(4.583)	(0.025)	(4.554)	(0.010)	(1.873)	(0.010)	(1.869)
R^2	0.892	0.892	0.893	0.893	0.934	0.940	0.934	0.939
Observations	2134	1586	2134	1586	1824	1432	1824	1432

Notes: Robust standard errors in parentheses. *p<0.10, **p<0.05 and ***p<0.01. For PPML the reported R^2 are pseudo R^2.

Our results are more aligned towards rejecting the Fire-Sale FDI hypothesis similar to Stoddard and Noy (2015) who also find a negative impact of crisis on FDI, similarly Alquist et al. (2016) also find no difference in foreign acquisitions in the emerging markets between crisis period and non- crisis period. Other well known studies coming to similar conclusions: Weitzel et al. (2014) rejects the Fire-Sale FDI hypothesis using a panel of 27 EU countries; Chari et al. (2010) comes to same conclusion using a panel of emerging market economies. The results are same even when we use different types of FDI. Furthermore, the significant negative impact of external debt crisis on vertical FDI and not on horizontal FDI, is in line with Aizenman and Marion (2004).

4 Sensitivity Analysis

We conduct sensitivity analysis by estimating the effect of external debt restructuring on FDI for non-advanced economies and Highly Indebted Poor Countries (HIPC). Using World Bank (2021) dividing countries based on their income level. The World Bank categorizes each country as low income, lower-middle income, upper-middle income, and high income based on their GNI. Instead of using each classification, we re-classify the low income, lower-middle income, and upper-middle income as non-advanced economies. Table 6 has the results for non-advanced economies, and table 7 has results for HIPC economies. We also test the effect of political risk ratings on FDIs, the results for which are in table 5.
Table 5 has the results for external debt default and restructuring on different types of FDI when controlling for different political risk ratings. As shown by Deseatnicov and Akiba (2016), investors do pay close attention to the effect of local politics on economic affairs before investing in foreign countries, more in

developing countries than developed countries[8]. As witnessed earlier, the overall effect of debt restructuring has a negative impact on all the types of FDI. Restructuring official external debt only has a statistically significant negative effect on vertical FDI, decreasing by 18%.

Furthermore, on restructuring private external debt, horizontal FDI decreases by 17%, greenfield FDI decreases by 43%, and cross-border merger and acquisitions investment decreases by 85%. The magnitude of the decline in different FDI types is lower after controlling for political risk than before. It is evident from the positive effect of lower political risk on different types of FDI. Decreasing risk to investment in the form of decreasing delays in payments and decreasing hassles in repatriating profits has a positive and significant effect on FDI from cross-border mergers and acquisitions by 8.5%. The effect of the investment profile risk indicator is identical for both official and private external debt restructuring.

Similarly, decreasing corruption increases greenfield FDI by 13%, but there are statistically significant decreases in cross-border mergers and acquisition activities by 13%. Moreover, finally, better law and order increases all types of FDI. As a result, horizontal FDI increases by 9%, vertical FDI increases by 6%, and greenfield FDI increase by 29%.

Table 5: External debt restructuring and default and institutional ratings

	Official External Debt				Private External Debt			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Dependent Variable	HFDI	VFDI	Greenfield	CBMNA	HFDI	VFDI	Greenfield	CBMNA
Debt Restructuring	0.111	-0.203*	-0.190	-0.182	-0.194*	-0.077	-0.569***	-1.925***
	(0.137)	(0.105)	(0.206)	(0.617)	(0.107)	(0.147)	(0.174)	(0.402)
Investment Profile	-0.022**	-0.001	-0.007	0.081**	-0.022**	-0.001	-0.005	0.080**
	(0.011)	(0.013)	(0.053)	(0.036)	(0.011)	(0.013)	(0.052)	(0.036)
Corruption	0.000	-0.000	0.121***	-0.136**	-0.000	0.000	0.124***	-0.137**
	(0.0187)	(0.019)	(0.040)	(0.059)	(0.018)	(0.019)	(0.039)	(0.059)
Law and Order	0.086***	0.054**	0.256**	0.087	0.087***	0.053**	0.255**	0.090
	(0.021)	(0.023)	(0.112)	(0.076)	(0.021)	(0.023)	(0.113)	(0.076)
Constant	4.539**	-9.687***	15.101***	0.853	4.586**	-9.681***	14.984***	0.138
	(2.035)	(2.710)	(3.769)	(6.282)	(2.036)	(2.717)	(3.779)	(6.287)
R^2	0.989	0.982	0.950	0.917	0.989	0.982	0.950	0.917
Observations	678	672	684	1019	678	672	684	1019

Notes: Robust standard errors in parentheses. *p<0.10, **p<0.05 and ***p<0.01. For PPML the reported R^2 are pseudo R^2.

In our sample, there are 174 instances out of 246 where a non-advanced economy has restruc- tured its official external debt and 34 instances out of 75 of restructuring private external debt. Sim- ilarly, for the political risk indicators, on average, the non-advanced economies can be considered to be having very high risk as for each of the three risk indicators we use, the average risk rating is around 50% of the overall risk rating.For example, if the risk rating for corruption is below 3 out of 6, then it is considered to be very high risk. The overall effect of both official and private exter- nal debt restructuring is still negative on all different types of FDI. It is only significant for vertical FDI on official external debt restructuring and total FDI flow and greenfield FDI when restructured private external debt. For the non-advanced economies, lower risk to investment, as indicated by the investment profile political risk indicator, has a positive and significant effect on total FDI flows. Whereas with lower risk due to corruption decreases total FDI, which might be because there will be fewer opportunities for "greasing the wheels" with lower corruption. Similar to the results for the entire sample, better law and order increases different types of FDIs. Furthermore, for the control variables,

[8] For similar studies showing a decline in FDI because of political risk see Jiang et al. (2019) for the effect of political risk on FDI in infrastructure, Guerin and Manzocchi (2009) for the effect of democracy and political risk on FDI, Busse and Hefeker (2007) also show a negative effect of increased political risk on FDI. Azman-Saini et al. (2010) shows the importance of economic freedom on attracting FDI.

an increase in population and life expectancy has a positive association with FDIs, and increasing general government debt has a negative association.

Table 6: Effect of external debt restructuring and default on FDI for non-advanced economies

Dependent Variable	Model 1 FDI Flow	Model 2 VFDI	Model 3 HFDI	Model 4 CBMNA	Model 5 Greenfield	Model 6 FDI Flow	Model 7 VFDI	Model 8 HFDI	Model 9 CBMNA	Model 10 Greenfield
Debt Restructuring	-0.056	-0.225***	0.137	0.296	-0.091	-0.407*	-0.229	-0.079	-0.814	-0.484**
	(0.183)	(0.079)	(0.150)	(0.437)	(0.207)	(0.219)	(0.152)	(0.085)	(0.623)	(0.202)
Investment Profile	0.074***	0.003	-0.047***	-0.111*	0.091	0.073**	0.007	-0.052***	-0.115*	0.092
	(0.028)	(0.020)	(0.013)	(0.069)	(0.064)	(0.028)	(0.019)	(0.013)	(0.069)	(0.063)
Corruption	-0.105*	-0.037	-0.025	-0.239	0.127	-0.107*	-0.032	-0.026	-0.253*	0.129
	(0.062)	(0.035)	(0.023)	(0.156)	(0.086)	(0.063)	(0.035)	(0.022)	(0.157)	(0.085)
Law and Order	0.160***	0.046	0.059**	0.311**	0.075	0.161***	0.043	0.062***	0.323**	0.074
	(0.056)	(0.032)	(0.024)	(0.144)	(0.132)	(0.056)	(0.031)	(0.024)	(0.143)	(0.132)
Gen. Govt. Gross Debt	-0.009***	-0.002**	-0.005***	-0.021***	-0.005*	-0.008***	-0.002	-0.004***	-0.019***	-0.005*
	(0.001)	(0.001)	(0.001)	(0.005)	(0.003)	(0.002)	(0.001)	(0.001)	(0.006)	(0.003)
Inflation	0.000	0.000**	-0.000**	-0.000	0.000*	-0.000	0.000**	-0.000**	-0.000	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population	0.003***	0.008***	0.008***	0.013***	0.001	0.003**	0.008***	0.008***	0.013***	0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Dom. Credit to Pvt. Sector	0.006***	-0.000	-0.001	0.002	0.003	0.006***	-0.000	-0.001	0.002	0.003
	(0.002)	(0.001)	(0.001)	(0.004)	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.002)
GDP per Capita Growth	0.006	-0.006	-0.010***	-0.013	-0.000	0.005	-0.009	-0.011***	-0.011	-0.000
	(0.008)	(0.005)	(0.003)	(0.018)	(0.008)	(0.008)	(0.006)	(0.004)	(0.018)	(0.008)
Gross Fixed Capital Formation	0.025***	0.001	0.006	0.035**	0.011	0.025***	0.003	0.006	0.035**	0.010
	(0.006)	(0.005)	(0.005)	(0.017)	(0.011)	(0.006)	(0.005)	(0.005)	(0.017)	(0.011)
Life Expectancy	0.072**	0.209***	0.124***	0.100	-0.120**	0.078**	0.212***	0.124***	0.105	-0.119**
	(0.034)	(0.058)	(0.029)	(0.101)	(0.057)	(0.035)	(0.058)	(0.030)	(0.101)	(0.057)
Trade	-0.006**	0.011***	0.002	-0.014**	0.001	-0.005**	0.011***	0.002	-0.013**	0.001
	(0.002)	(0.001)	(0.001)	(0.006)	(0.003)	(0.002)	(0.001)	(0.001)	(0.006)	(0.003)
Constant	1.996	-8.603**	-0.449	-3.004	16.274***	1.541	-8.911**	-0.450	-3.447	16.217***
	(2.338)	(4.087)	(2.103)	(6.935)	(4.055)	(2.358)	(4.146)	(2.115)	(7.029)	(4.057)
R^2	0.949	0.977	0.986	0.789	0.929	0.949	0.977	0.986	0.789	0.929
Observations	1178	301	301	520	415	1178	301	301	520	415

Notes: Robust standard errors in parentheses. *p<0.10, **p<0.05 and ***p<0.01. For PPML the reported R2 are pseudo R2.

As of 2020, 37 countries are categorized as HIPC by International Monetary Fund [see IMF (2020)][9]. In our sample, out of 246 episodes of official external debt restructuring, 160 are done by HIPC countries and, similarly, 28 episodes of private external debt restructuring out of 75 total restructurings. Table 7 has results for Highly Indebted Poor Countries (HIPC). Contrary to our benchmark results on external restructuring debt owed to either official or private creditors, HIPC countries see an increase in FDI. From the three

[9] Countries considered as HIPC in 2019: Afghanistan, Benin, Bolivia, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Republic of Congo, Democratic Republic of Congo, Cote d'Ivoire, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nicaragua, Niger, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, and Zambia.

political risk indicators, having better law and order increases FDI substantially. With better law and order, total FDI flows increase by 127%, and greenfield investment increases by more than 300,000%.

Table 7: Effect of external debt restructuring and default on FDI for Highly Indebted Poor Countries

Official External Debt				Private External Debt		
Model 1		Model 2	Model 3	Model 4	Model 5	Model 6
Dependent Variable	FDI Flow	FDI Stock	Greenfield	FDI Flow	FDI Stock	Greenfield
Debt Restructuring	0.149	0.002	0.938***	1.385**	0.051	
	(0.132)	(0.049)	(0.352)	(0.560)	(0.135)	
Investment Profile	0.008	0.001	-0.671***	0.008	0.001	-0.417***
	(0.040)	(0.019)	(0.186)	(0.039)	(0.019)	(0.159)
Corruption	-0.285**	-0.094**	0.052	-0.262*	-0.094**	0.330
	(0.142)	(0.044)	(0.357)	(0.143)	(0.044)	(0.424)
Law and Order	0.820***	0.546***	12.805***	0.803***	0.546***	12.815***
	(0.196)	(0.092)	(3.278)	(0.193)	(0.093)	(3.676)
General Govt. Gross Debt	0.002**	-0.000	-0.125***	0.001*	-0.000	-0.093***
	(0.001)	(0.000)	(0.028)	(0.001)	(0.000)	(0.033)
Inflation	-0.001	0.000	0.114***	-0.000	0.000	0.108***
	(0.001)	(0.000)	(0.036)	(0.001)	(0.000)	(0.035)
Population	-0.040	0.075***	-2.841***	-0.036	0.075***	-2.864***
	(0.040)	(0.018)	(0.611)	(0.040)	(0.018)	(0.601)
Dom. Credit to Pvt Sector	0.054***	0.033***	0.002	0.052***	0.033***	-0.005
	(0.011)	(0.004)	(0.028)	(0.011)	(0.004)	(0.032)
GDP per Capita Growth	0.023*	0.000	0.091	0.023*	0.000	0.112
	(0.013)	(0.004)	(0.143)	(0.013)	(0.004)	(0.139)
Gross Fixed Capital Formation	0.021*	0.004	-0.089	0.020*	0.004	-0.047
	(0.012)	(0.007)	(0.067)	(0.011)	(0.007)	(0.062)
Life Expectancy	0.060	-0.015	3.399***	0.058	-0.015	3.422***
	(0.045)	(0.021)	(0.342)	(0.046)	(0.021)	(0.335)
Trade	-0.003***	-0.000	-0.065**	-0.003***	-0.000	-0.036
	(0.001)	(0.000)	(0.031)	(0.001)	(0.000)	(0.041)
Constant	0.450	5.640***	-157.744***	0.579	5.637***	-164.211***
	(2.581)	(1.241)	(19.165)	(2.599)	(1.235)	(21.769)
R^2	0.845	0.959	0.984	0.844	0.959	0.982
Observations	244	252	31	244	252	31

Notes: Robust standard errors in parentheses. *p<0.10, **p<0.05 and ***p<0.01. For PPML the reported R^2 are pseudo R^2.

5 Conclusion

In this paper, we empirically test the contemporaneous relationship between country undergoing external debt default and restructuring on its ability to attract different types of Foreign Direct Investments (FDI). We test the effect of both official external debt and private external debt. Along with this, we also test the fire-sale FDI hypothesis. To do this analysis, we use the never before used estimation technique in the FDI - crisis literature of Poisson Pseudo Maximum Likelihood (PPML).

We do not find any evidence in favor of the fire-sale FDI hypothesis for our entire sample analysis or non-advanced economies analysis, but we do find an increase in FDI for HIPC countries when they default on and/or restructure their external debt obligations. For all types of FDIs, we see a decline because of external debt crisis, but the decrease in FDI is lower when controlled for political risk factors. The effect of the control variable is in line with the extant literature, where we see FDI increasing with increasing

population, GDP per capita growth, life expectancy, domestic credit to private sector and increase in gross fixed capital formation.

From the results of this research, the most important policy advise will be to not let the external debt get out of hand that it becomes necessary to default and restructure, as a country cannot print its way out of external debt obligations. Another policy advice to increases the inflow of FDI will be to work towards keeping the inflation level low, invests in infrastructure as well as to have robust po- litical institutions which minimizes the political risks, as investors, especially the risk averse private investors, always want to invest in countries with low political risk.

As there is no consensus on the validity of Fire-Sale FDI hypothesis, more research is needed in this area. As future research, it will be interesting to see the effect of the interaction between the external debt crisis with the variables that increases FDI, like low inflation, GDP growth, etc., on FDI. Also, in order to know the longevity of the negative effect of external debt crisis on FDI, including lagged crisis variables to study these effect will be interesting as well.

References

Acharya, V. V., H. S. Shin, and T. Yorulmazer (2010). Fire-sale fdi. Available at SSRN 1548817.

Aguiar, M. and G. Gopinath (2005). Fire-sale foreign direct investment and liquidity crises. Review of Economics and Statistics 87(3), 439–452.

Aizenman, J. and N. Marion (2004). The merits of horizontal versus vertical fdi in the presence of uncertainty. Journal of International economics 62(1), 125–148.

Alquist, R., R. Mukherjee, and L. Tesar (2016). Fire-sale fdi or business as usual? Journal of International Economics 98, 93–113.

Ang, J. and N. Mauck (2011). Fire sale acquisitions: Myth vs. reality. Journal of Banking & Finance 35(3), 532–543.

Athukorala, P.-c. (2003). Foreign direct investment in crisis and recovery: Lessons from the 1997– 1998 asian crisis. Australian Economic History Review 43(2), 197–213.

Azman-Saini, W., A. Z. Baharumshah, and S. H. Law (2010). Foreign direct investment, economic freedom and economic growth: International evidence. Economic Modelling 27(5), 1079–1089.

Bano, S., Y. Zhao, A. Ahmad, S. Wang, and Y. Liu (2019). Why did fdi inflows of pakistan decline? from the perspective of terrorism, energy shortage, financial instability, and political instability. Emerging Markets Finance and Trade 55(1), 90–104.

BEA (2020). BEA. https://www.bea.gov/data/intl-trade-investment/ direct-investment-country-and-industry.

Busse, M. and C. Hefeker (2007). Political risk, institutions and foreign direct investment. European journal of political economy 23(2), 397–415.

Chari, A., P. P. Ouimet, and L. L. Tesar (2010). The value of control in emerging markets. The Review of Financial Studies 23(4), 1741–1770.

Cruces, J. J. and C. Trebesch (2013). Sovereign defaults: The price of haircuts. American economic Journal: macroeconomics 5(3), 85–117.

de Holan, P. M. and O. Toulan (2006). The antecedents and consequences of emerging market divestitures.

Deseatnicov, I. and H. Akiba (2016). Exchange rate, political environment and fdi decision. Inter- national economics 148, 16–30.

Guerin, S. S. and S. Manzocchi (2009). Political regime and fdi from advanced to emerging coun- tries. Review of World economics 145(1), 75–91.

Hausmann, R. and E. Fernandez-Arias (2000). Foreign direct investment: good cholesterol?

Herger, N. and S. McCorriston (2014). Horizontal, vertical, and conglomerate fdi: Evidence from cross border acquisitions. Technical report, Working Paper.

Howell, L. D. (2011). International country risk guide methodology. East Syracuse, NY: PRS Group.

IMF (2020). IMF HIPC. https://www.imf.org/en/About/Factsheets/Sheets/2016/08/ 01/16/11/Debt-Relief-Under-the-Heavily-Indebted-Poor-Countries-Initiative.

Jiang, W., I. Martek, M. R. Hosseini, C. Chen, and L. Ma (2019). Foreign direct investment in infrastructure projects: Taxonomy of political risk profiles in developing countries. Journal of Infrastructure Systems 25(3), 04019022.

Kellard, N. M., A. Kontonikas, M. J. Lamla, S. Maiani, and G. Wood (2020). Risk, financial stability and fdi. Journal of International Money and Finance, 102232.

Krugman, P. (2000). 2. fire-sale fdi. In Capital Flows and the Emerging Economies, pp. 43–60.

University of Chicago Press.

Lee, S.-H. and M. Makhija (2009). Flexibility in internationalization: is it valuable during an eco- nomic crisis? Strategic Management Journal 30(5), 537–555.

Loayza, N., C. A. Calderón, and L. Servén (2004). Greenfield foreign direct investment and mergers and acquisitions: Feedback and macroeconomic effects. Available at SSRN 636612.

Odhiambo, S. A. (2017). Economic crisis influence on fdi and foreign inflows in sub-saharan Africa economies.

Paris club (2020). Paris Club. https://clubdeparis.org/en/traitements?tid_1=All&tid_2=All&tid=All&field_treatment_date_value%5Bvalue%5D%5Byear%5D=.

Paul, J. and M. M. Feliciano-Cestero (2021). Five decades of research on foreign direct investment by mnes: An overview and research agenda. Journal of business research 124, 800–812.

Reinhart, C. M. and K. S. Rogoff (2009). This time is different. princeton university press.

Shin, H. S., V. Acharya, T. Yorulmazer, et al. (2011). Fire sale fdi. Korean Economic Review 27, 163–202.

Stoddard, O. and I. Noy (2015). Fire-sale fdi? the impact of financial crises on foreign direct investment. Review of Development Economics 19(2), 387–399.

Tanna, S. and C. Li (2018). Fdi and economic growth: An external debt threshold effect. Crisis 911, 0–0472.

UNCTAD (2020). UNCTAD. https://unctad.org/topic/investment/ investment-statistics-and-trends.

Wang, M. and M. C. Sunny Wong (2009). What drives economic growth? the case of cross-border m&a and greenfield fdi activities. Kyklos 62(2), 316–330.

Weitzel, U., G. Kling, and D. Gerritsen (2014). Testing the fire-sale fdi hypothesis for the European financial crisis. Journal of International Money and Finance 49, 211–234.

World Bank (2021). World Bank Income Level Country Classification. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.