

# The impact of economic sanctions on foreign direct investment: empirical evidence from global data

Economic  
sanctions and  
FDI

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## Abstract

**Purpose** – This study investigates the impact of global economic sanctions on foreign direct investment (FDI).

**Design/methodology/approach** – Data were gathered from several sources, including the United Nations Conference on Trade and Development, the Global Sanction and the World Bank database, to build a dataset that consists of 172 countries during the period 2003–2019. The panel ordinary least square with a fixed-effects estimator was exploited to achieve the research objective.

**Findings** – The research findings reveal that sanction exerts a detrimental effect on the total inflows of FDI and its components. Regarding different types of sanctions, while military and trade sanctions have little or even no impact on greenfield investment, they have more adverse and sizable effects on cross-border mergers and acquisitions (M&As). The authors further show that sanctions exert devastating influences through the infrastructure and economic development channels.

**Practical implication** – Overall, this study implies that a closer look at particular types of FDI is required when implementing policies as different types of FDI may be affected differently by changes in the economy, such as economic sanctions.

**Originality/value** – This paper is the first empirical study that critically investigates the impact of sanctions on the total inward FDI flows and its two components: greenfield investment and cross-border M&As. It then explores how the sanction–FDI nexus varies depending on several country-level economic factors to understand better how sanctions and different types of sanctions are related to international trade and relations.

**Keywords** Sanctions, FDI, Greenfield investment, Cross-border M&As

**Paper type** Research paper

## 1. Introduction

Foreign direct investment (FDI) significantly increased during the 1980s, surpassing 20% yearly and 40% in the late 1990s (UNCTAD, 2003). The mid-2000s saw the largest amounts of FDI ever seen, and despite the subprime mortgage crisis, foreign capital is still flowing (UNCTAD, 2009). Most host nations desire to attract FDI since these countries may benefit from the jobs, knowledge transfer and economic growth that multinational companies (MNCs) are anticipated to offer (Markusen and Venables, 1999; Garland and Biglaiser, 2009). In addition, throughout the past century, many countries worldwide have gone through periods of economic sanctions, during which foreign prohibitions on a nation's cross-border interactions were imposed (Hufbauer *et al.*, 2007). Accordingly, nations worldwide use



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economic sanctions as a common tool to accomplish various foreign policy goals, either unilaterally or with the support of multilateral organizations. Sanctions are often used to support democratic rights and freedoms, put an end to continuing civil wars, stop nuclear proliferation and punish state sponsors of terrorism.

Even though sanction is a frequently employed policy instrument in international diplomacy, it appears to be a contentious policy tool whose effectiveness is in question (e.g. [Hufbauer et al., 2007](#); [Biersteker et al., 2013](#)). Many scholars agree that targeted regimes are rarely persuaded to comply with the demands of punishing countries by external economic constraints ([Hufbauer et al., 2007](#)). They show that economic coercion may lead to the failure to obtain desired goals and promote political and humanitarian benefits in the target societies. As a result, sanctions may worsen political stability ([Allen, 2008](#); [Marinov, 2005](#)), public health and humanitarian situations ([Peksen and Drury, 2010](#); [Oechslin, 2014](#)), human rights and democratic freedom ([Allen and Lektzian, 2013](#)).

The existing work on the sanctions–FDI nexus mostly focuses on US sanctions and their corresponding effects ([Lektzian and Biglaiser, 2013](#); [Mao and Görg, 2020](#)). For instance, [Barry and Kleinberg \(2015\)](#) demonstrate how sanctions distort international trade and financial flows when firms and governments have to adapt to operate in a new working environment with more significant restrictions. Consequently, firms can relocate investment to states or nations that can offer them indirect access to the economy that has been sanctioned. In a different analysis, [Mirkina \(2018\)](#) shows that high-cost sanctions have a striking short-term decline in FDI but no long-term impact, using data for 184 countries from 1970 to 2010.

Although the link between sanctions and FDI has been documented in the existing literature, the vast majority of these studies have neglected the substantial variation between the various penetration tactics employed by foreign investors and have treated FDI as a homogenous capital flow ([Fortanier, 2007](#)). As a result, the evaluation of how sanctions affect FDI has not been examined rigorously and comprehensively. More recently, scholars worldwide have started to separate the total inward FDI flows into two main entrance strategies: greenfield investments and cross-border mergers and acquisitions (M&As) (e.g. [Meyer et al., 2009](#); [Gopalan et al., 2018](#)). The findings obtained from this line of research are that greenfield FDI and cross-border M&As are different in nature, and thus, when examining FDI inflows, there is a need to take into account these differences to fully reflect the characteristics of FDI and draw more accurate policy implications.

In particular, since the nature of greenfield FDI involves building everything from scratch, including the purchase of real estate and the construction of new facilities and equipment, greenfield investors often seek to penetrate markets that have well-established institutional systems to benefit from guaranteed business contract enforcements ([Meyer et al., 2009](#)). In addition, this type of inward FDI is often found to benefit the host countries by enhancing the recipient's physical capital formation. In contrast, since cross-border M&As merely represent the ownership transfer of existing assets and resources from domestic to foreign entities, it comes as no surprise that this investment strategy is often criticized as a speculative strategy seeking arbitrage profits with no value-adding contribution to the development of host countries, especially when M&A investors intentionally close down all the production lines after taking all the assets and resources from the local target counterpart [1]. To this end, ignoring the heterogeneity of different FDI strategies when assessing the impact of sanctions on the total FDI inflows would lead to incomplete and even misleading results.

Therefore, the purpose of this paper is to re-investigate the impact of sanctions on FDI by focusing on not only the total inward FDI flow in the host countries but also its two components, including greenfield investment and cross-border M&As. Using data gathered from several sources, including the World Bank and the United Nations Conference on Trade and Development (UNCTAD) databases for the period 2003–2019, we first find that global

economic sanctions are deterioration factors that reduce FDI inflows. This finding is unchanged when the two major components of FDI – greenfield investment and cross-border M&As – are examined separately, which further highlights the detrimental impact of sanctions. However, when we investigate the impact of different types of sanctions, such as the arm, military, trade, financial, travel and other sanctions, on the total inward FDI flows, we find that different types of sanctions exert different impacts on FDI inflows. More importantly, when two components of FDI are examined, we document that those sanctions yield different influences on greenfield investment and cross-border M&As. Specifically, while sanctions consistently discourage cross-border M&As over time, greenfield investments are found to be significantly less affected by sanctions. Our findings are robust across various model specifications and robustness tests. In our further analyses, we explore the channels through which sanctions exert detrimental effects on FDI activities to see how the sanction–FDI nexus varies depending on several country-level economic factors. We find that sanctions have devastating influences on FDI inflows by discouraging the development of the infrastructure and economies in the host countries.

This research may contribute to the literature on several aspects of international economics and international relations. First, despite an increase in research on the causes and consequences of sanctions, few studies have focused on the relationship between sanctions and FDI on a global scale. Previous studies ([Lektzian and Biglaiser, 2013](#)) mainly highlight this association in the context of penalties enforced by a single sender, often the US, rather than all senders, as in our study. [Mirкина \(2018\)](#) is a rare exception, but this study does not examine the varied effects of sanctions on FDI across various forms of penalties and various periods. Second, it is hard to find any studies that explicitly explore the impact of sanctions on two main FDI components: greenfield investments and cross-border M&As. Prior research mostly treats FDI as a homogenous capital flow and fails to look at the substantial variations between the different penetration strategies employed by foreign investors. However, in this study, we attempt to fill this gap in the existing literature by disaggregating FDI into its two predominant forms – greenfield investments and cross-border M&As – and then explore whether various sanction types exert different influences on these two FDI components. Third, this research goes beyond the traditional studies of the economic sanction–FDI nexus that often find that sanctions prohibit FDI by further exploring the channels through which economic sanctions exhibit detrimental effects. In particular, we find evidence that economic sanctions have adverse impacts on the host countries’ infrastructure and overall economic development, consequently leading to a lower amount of attracted FDI inflows. As such, our study advances current research by allowing us to elicit the specific mechanisms through which sanction affects FDI in the host country. It also lets us see how this relationship may change depending on certain country-level factors. Finally, this paper investigates several countries spanning various time windows to obtain the most available and up-to-date data; it, therefore, captures the changing nature of societies over time. As a result, it is relevant for various countries and therefore enables academic scholars, business leaders and regulators to draw policy implications.

The remainder of the study is organized as follows. [Section 2](#) provides related literature, while [Section 3](#) presents the data and the methodology. The results are illustrated in [Section 4](#), and the conclusion is provided in [Section 5](#).

## 2. Related literature

This section expands on earlier theoretical work in the literature on sanctions and FDI by outlining two potential pathways for how sanctions can impact global FDI. The first focuses on the possible growth in opportunities for international businesses to invest in a nation under sanctions (that is, the opportunity argument). The second focuses on the sender

countries' capacity to depict the targeted nation as a dangerous environment (the risk argument). These disagreements lead to two contrasting predictions of how FDI flows change in the presence of economic sanctions in the recipient countries. According to the opportunity argument, the more stringent the restrictions a sender country tries to impose on a targeted country, the more the rents may be made from breaching sanctions, and the more the FDI will be attracted. In contrast, the risk argument contends that when the sender country tightens its sanctions and expresses its disapproval of the targeted nation, multinational firms would become warier about investing there and refrain from doing so. As a consequence, there will be a lower amount of FDI inflows.

Many scholars have evaluated the opportunity or risk associated with sanctions and obtained mixed findings. [Caruso \(2003\)](#) reveals that comprehensive sanctions cause other nations to reduce their trade, which he blames on the disruption of trade networks. However, he also finds that restricted (noncomprehensive) sanctions have a somewhat favorable impact on trade by third-party countries. [Early \(2009\)](#) contends that companies in the sender nation have more incentives to conduct business with the sanctioned state through nations that are close allies. These studies offer varying degrees of support for the opportunity argument, according to which commerce between the sender country and the targeted nation may decrease due to sanctions, but international firms will offset the losses. The literature on multilateral sanctions tends to support the notion that foreign firms are enticed to continue doing business with sanctioned governments to benefit from extra rents, notwithstanding the challenges in preventing defections within sanctioning coalitions ([Drezner, 2000](#); [Miers and Morgan, 2002](#)).

More recently, using data from the Threat and Imposition of Economic Sanctions (TIES) dataset, [Kim \(2013\)](#) found that FDI through joint ventures results in higher expenses for the host countries than the home country and its enterprises. In contrast, FDI through wholly owned subsidiaries causes higher costs for the sender's businesses than cross-border joint ventures with local firms. [Le and Bach \(2022\)](#) use the global sanction database to examine the impact of sanctions on FDI flows and find that sanctions exert an adverse influence on FDI flows. They further show that global value chains and bank linkages moderate the relationship between sanction and FDI.

In contrast, the study of [Lektzian and Biglaiser \(2013\)](#) provides evidence of how global FDI is influenced by sanctions using a panel dataset for over 170 countries between 1969 and 2000. They show that global FDI dramatically increases when US companies withdraw their investment while imposing US sanctions, as long as the target nation possesses a reliable source of capital replacement. Thus, these authors imply the limited effectiveness of sanctions in limiting financial flows to targeted nations and indicate that US corporates may eventually pay the costs for US-imposed restrictions. Similarly, [Shin et al. \(2016\)](#) employ a cross-national, time-series dataset spanning 133 nations between 1970 and 2005 to investigate the effects of sanctions on the economy of the targeted nations in three areas, including international trade, FDI and foreign portfolio investment. Their empirical findings demonstrate that sanctions rarely have a major negative impact on the economic health of target nations. More importantly, the findings of this study suggest that large sanctioning nations like the US should seriously explore creating new sanction measures if they want to utilize economic coercion in place of military action and if they consider destabilizing a target country's economy.

In brief, the existing literature has shed light on the effect of economic sanctions on many aspects of the targeted countries, including FDI inflows, but with mixed findings. In addition, the vast majority of these studies have neglected the substantial variation between the various penetration tactics employed by foreign investors and have treated FDI as a homogenous capital flow. Thus, the current literature lacks evidence of whether a sanction may influence different types of FDI. As such, in this study, we attempt to fill this gap in the

literature by providing more comprehensive empirical evidence on the sanction–FDI nexus by investigating two FDI components, namely greenfield investment and cross-border M&As. We also try to advance current research by exploring the channels through which sanctions influence the flows of FDI activities to see how the sanction–FDI nexus varies depending on these country-level factors.

### 3. Data and methodology

#### 3.1 Data and sample overview

The most recent and up-to-date data from 2003 to 2019 are used in this study to examine the impact of sanctions on FDI. Data for FDI, Greenfield and Merger are retrieved from the UNCTAD database, as mentioned in the previous section. Sanction data are obtained from the Global Sanction Database. Data for control variables are retrieved from the World Development Indicators database provided by the World Bank. After merging these three datasets, the final sample includes a maximum of 172 countries over the studied period between 2003 and 2019. [Table 1](#) provides the complete list of the names, descriptions and sources of all variables used in our study.

#### 3.2 Model specification

To investigate the impact of international sanctions on FDI, we use the following model:

$$FDI_{it} = \theta_0 + \theta_1 Sanction_{i,t-1} + \theta_2 \mathbf{X}'_{i,t-1} + v_j + \eta_t + \varepsilon_{jt}^1 \quad (1)$$

where  $FDI_{it}$  is measured as the natural logarithm of total inward FDI into country  $i$  at time  $t$  as suggested by prior studies (e.g. [Cuervo-Cazurra, 2008](#); [Eicher et al., 2012](#); [Mudambi et al., 2013](#)) due to its popular usage in the FDI literature [2]. FDI data are derived from the statistical

Variable	Definition and construction	Source
<i>FDI inflow</i>	Natural logarithm of FDI inflows into the country	UNCTAD
<i>Greenfield</i>	Natural logarithm of greenfield FDI in the host country	UNCTAD
<i>Merger</i>	Natural logarithm of cross-border M&A sales in the country	UNCTAD
<i>Sanction</i>	Equals 1 if there are any type of sanctions between country $i$ and $j$ , and 0, otherwise	Global Sanction Database
<i>Unemployment_ratio</i>	The share of the labor force that is without work but available for and seeking employment to gross domestic product	World Development Indicators database, World Bank (various years)
<i>Bank_branch</i>	The natural logarithm of the number of resident commercial banks and other resident banks that function as commercial banks per 100,000 adults	World Development Indicators database, World Bank (various years)
<i>Openness</i>	The ratio of (total exports + total imports) to GDP	World Development Indicators database, World Bank (various years)
<i>Government_size</i>	The ratio of government consumption to GDP	World Development Indicators database, World Bank (various years)
<i>Population_density</i>	Calculated as mid-year population divided by land area in square kilometers	World Development Indicators database, World Bank (various years)

**Table 1.**  
Variable description

annex of the World Investment Report 2021 provided by UNCTAD.  $Sanction_{i,t-1}$  is our key variable of interest that takes a value of 1 if there are any type of sanctions between country  $i$  and  $j$  and 0 otherwise. Following Felbermayr *et al.* (2020), we obtain data for economics sanction variable from the Global Sanction Database, which solely focuses on effective sanctions (excluding threats) and classifies sanctions into distinct categories (for example, trade sanctions against financial sanctions). We also consider the various types of sanctions, such as the arm, military, trade, financial, travel and other sanctions. All of them are dummy variables that equal 1 if there are any types of sanctions between countries  $i$  and  $j$  and 0 otherwise.

$\mathbf{X}'_{it} = [Unemployment\_ratio, Bank\_branch, Trade\_ratio, Openness, Government\_size\ and\ Population\_density]$  is the vector of  $J$  covariates capturing other environmental factors that potentially affect FDI inflows and have often been used in FDI literature (e.g. Chakrabarti, 2001; Bevan and Estrin, 2004; Asiedu, 2006; Ashraf *et al.*, 2016). Specifically, *Unemployment\_ratio* is the share of the labor force that is without work but available for and seeking employment to the gross domestic product; *Bank\_branch* captures the financial depth of the host country and is measured as the natural logarithm of the number of resident commercial banks and other resident banks that function as commercial banks per 100,000 adults; *Openness* is measured as the share of the sum of exports and imports divided by GDP; *Government\_size* is calculated as the share of government consumption divided by GDP; *Population\_density* is calculated as mid-year population divided by land area in square kilometers.  $v_j$  and  $\eta_t$  are country and time-fixed effects, respectively, to account for the unobservable time-invariant and country-specific characteristics. Finally,  $\varepsilon_{jt}^1$  is the error term. To reduce the endogeneity concern, we lag all right-side variables for one year to use them as predetermined variables in the main model, followed by Iwasaki and Suzuki (2012).

To delve deeper into the effect of sanctions on FDI activities, we break down the aggregated inward FDI into its two major components: greenfield FDI and cross-border M&As. Thus, model (1) was amended by replacing the dependent variable  $FDI_{it}$  (the aggregated FDI level) by  $Greenfield_{it}$  and  $Merger_{it}$ , which captures the level of greenfield FDI and cross-border M&As, respectively. *Greenfield* is measured as the natural logarithm of greenfield investments in the host nation to capture the greenfield investment level and is derived from the statistical annex of the World Investment Report 2021 provided by UNCTAD database [3]. *Merger* is the value of cross-border M&A sales and is obtained from the same source of database.  $\mathbf{X}'$  vector is defined as in model (1). We also control for country and year-fixed effects ( $v_j$  and  $\eta_t$ , respectively). Finally,  $\varepsilon_{jt}^2$  and  $\varepsilon_{jt}^3$  are error terms.

$$Greenfield_{it} = \theta_0 + \theta_1 Sanction_{i,t-1} + \theta_2^J \mathbf{X}'_{i,t-1} + v_j + \eta_t + \varepsilon_{jt}^2 \quad (2)$$

$$Merger_{it} = \theta_0 + \theta_1 Sanction_{i,t-1} + \theta_2^J \mathbf{X}'_{i,t-1} + v_j + \eta_t + \varepsilon_{jt}^3 \quad (3)$$

## 4. Empirical results

### 4.1 Summary statistics

Table 2 presents descriptive statistics for all the variables of interest used in our study. First, the mean value of total FDI inflows (in natural log) into the country is 7.1027, while those of greenfield investment and cross-border M&As are 7.0200 and 5.6800, respectively. Regarding sanction variables, the mean value of *Sanction, Arms, Military, Trade, Financial, Travel and Other* are 0.6134, 0.1606, 0.2184, 0.2173, 0.2246, 0.1079 and 0.0465, respectively. Concerning control variables, the average unemployment rate is 7.76%. The mean values of financial



**Table 2.**  
Summary statistics

Variable	N	Mean	Std	p25	p50	p75	Min	Max
<i>FDI inflow</i>	2,564	7.1027	2.3113	5.6223	7.0319	8.6640	1.0022	12.4713
<i>Greenfield</i>	2,492	7.0200	2.1039	5.7548	7.0963	8.5124	1.5261	11.4878
<i>Merger</i>	1,567	5.6800	3.2512	3.4012	6.0351	8.0555	-3.1466	12.2000
<i>Sanction</i>	2,752	0.6134	0.4871	0	1	1	0	1
<i>Arms</i>	2,752	0.1606	0.3672	0	0	0	0	1
<i>Military</i>	2,752	0.2184	0.4132	0	0	0	0	1
<i>Trade</i>	2,752	0.2173	0.4125	0	0	0	0	1
<i>Financial</i>	2,752	0.2246	0.4174	0	0	0	0	1
<i>Travel</i>	2,752	0.1079	0.3103	0	0	0	0	1
<i>Other</i>	2,752	0.0465	0.2106	0	0	0	0	1
<i>Unemployment_ratio</i>	1,779	0.0776	0.0546	0.0412	0.0647	0.0946	0.0041	0.2824
<i>Bank_branch</i>	2,370	0.1732	0.1632	0.0478	0.1231	0.2419	0.0052	0.8298
<i>Openess</i>	2,525	0.8832	0.5322	0.5524	0.7822	1.0510	0.2470	3.5376
<i>Government size</i>	2,456	0.1577	0.0525	0.1157	0.1575	0.1918	0.0513	0.3181
<i>Population density</i>	2,737	2.5940	9.1277	0.2484	0.7283	1.3931	0.0267	70.4114

depth proxied by the number of commercial bank branches are 0.1732 and 0.8832, respectively. Finally, the average share of government consumption to GDP is 15.77%, while the mean value of *Population Density* is 2.5940.

Table 3 provides the correlation matrix of all control variables used in our analysis. As can be seen from the table, the correlation coefficients of the control variables were low, suggesting that our analysis is presumably not affected by multicollinearity issues.

#### 4.2 Baseline results

Table 4 provides the estimation results of models (1)-(2)-(3) to investigate the effect of global economic sanctions on FDI and its two components. As shown in Columns 1 and 3 of Table 4, the coefficients of the variable *sanction* are negative and strongly significant at the 1% level when total inward FDI flows (*FDI inflows*) and cross-border M&As (*Merger*) are used as the dependent variables. For greenfield investment, while we also find that the coefficient of *sanction* is negative and significant at the 5% level, the impact is not as strong as that of *Merger*, or in other words, sanctions exhibit fewer devastating effects on greenfield investment than on cross-border M&As. Thus, these results highlight the detrimental effects of sanctions since they may adversely affect not only the total inward FDI flows but also two components of FDI, including greenfield investment and cross-border M&As, with the most potent detrimental effect for cross-border M&As. In terms of economic significance, the

	1	2	3	4	5	6	7	8	9	10	11	12
1 <i>Sanction</i>	1											
2 <i>Arms</i>	0.2059	1										
3 <i>Military</i>	0.3221	0.1374	1									
4 <i>Trade</i>	0.5009	-0.0488	-0.2065	1								
5 <i>Financial</i>	0.3505	0.0932	-0.0628	-0.0996	1							
6 <i>Travel</i>	0.2028	0.2216	0.0424	0.0623	0.2739	1						
7 <i>Other</i>	0.1464	0.0287	-0.0447	0.0739	-0.0179	0.3624	1					
8 <i>Unemployment_ratio</i>	0.0938	-0.0663	-0.0711	0.0882	0.1282	0.1771	0.0136	1				
9 <i>Bank_branch</i>	0.1344	-0.2059	0.0039	0.2249	-0.1213	0.0124	-0.0751	0.1221	1			
10 <i>Openess</i>	-0.0556	-0.1242	-0.0864	0.1029	-0.1055	-0.0276	-0.0336	-0.0577	0.1888	1		
11 <i>Government size</i>	0.1779	-0.1614	-0.1026	0.3556	-0.0987	0.0689	-0.0223	0.2803	0.3079	0.0123	1	
12 <i>Population density</i>	-0.2217	-0.0542	-0.0748	-0.0977	-0.0881	-0.0608	-0.0404	-0.1501	0.018	0.5409	-0.2618	1

**Table 3.**  
Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)			(7)	(8)	(9)
	FDI inflow	Baseline Greenfield	Merger	FDI inflow	GMM estimation Greenfield	Merger	FDI inflow	Greenfield	Merger	
<i>Sanction</i>	-0.223*** (0.072)	-0.250** (0.097)	-0.674*** (0.236)	-0.215*** (0.328)	-0.280*** (0.298)	-0.850*** (1.177)				
<i>Arms</i>							0.387*** (0.128)	0.201 (0.208)	0.463 (0.433)	
<i>Military</i>							-0.204*** (0.077)	-0.166 (0.098)	-0.899*** (0.229)	
<i>Trade</i>							-0.224** (0.088)	-0.209 (0.108)	-0.695*** (0.200)	
<i>Financial</i>							0.135 (0.099)	0.225 (0.161)	0.148 (0.348)	
<i>Travel</i>							-0.032 (0.158)	-0.154 (0.187)	-0.042 (0.454)	
<i>Other</i>							-0.142 (0.135)	-0.026 (0.170)	-0.874** (0.430)	
<i>Unemployment_ratio</i>	-0.460 (0.877)	-2.316** (1.047)	-3.307 (2.225)	-7.041*** (2.093)	-4.006* (2.256)	-9.677* (5.107)	-0.589 (0.871)	-2.432** (1.054)	-3.421 (2.232)	
<i>Bank_branch</i>	1.789*** (0.504)	-0.033 (0.679)	-0.829 (1.139)	2.929*** (1.128)	0.752 (0.988)	1.847 (1.770)	1.795*** (0.509)	-0.051 (0.696)	-0.734 (1.124)	
<i>Openess</i>	-0.289 (0.179)	-0.239 (0.220)	0.679 (0.467)	0.249 (0.396)	-0.386 (0.364)	-0.863 (0.633)	-0.282 (0.179)	-0.231 (0.219)	0.636 (0.469)	
<i>Government_size</i>	-3.384** (1.472)	-4.536*** (1.692)	2.815 (4.395)	-2.557*** (3.762)	-1.951 (3.053)	-5.038*** (5.322)	-3.431** (1.479)	-4.515*** (1.733)	2.838 (4.413)	
<i>Population_density</i>	0.102*** (0.030)	0.046 (0.028)	0.178*** (0.061)	0.006*** (0.014)	0.005*** (0.016)	0.051** (0.033)	0.102*** (0.031)	0.045 (0.028)	0.189*** (0.062)	
Constant	8.296*** (0.359)	8.699*** (0.416)	5.427*** (0.998)	7.252*** (0.735)	7.933*** (0.602)	4.226*** (1.114)	8.224*** (0.361)	8.591*** (0.418)	5.348*** (1.000)	
Observations	1,357	1,399	1,040	1,551	1,601	1,188	1,357	1,399	1,040	
R-squared	0.893	0.836	0.774				0.894	0.837	0.778	
AR(1) ( <i>p</i> -value)				0.000	0.000	0.000				
AR(2) ( <i>p</i> -value)				0.271	0.482	0.361				
Durbin-Wu-Hausman test ( <i>p</i> -value)				0.000***	0.000***	0.000***				
Sargan statistic ( <i>p</i> -value)				0.173	0.249	0.214				
Country FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	
Year FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	

**Table 4.**  
The impact of sanction  
on FDI, greenfield  
and M&A

**Note(s):** Robust standard errors in parentheses  
\*\*\**p* < 0.01, \*\**p* < 0.05, \**p* < 0.1

global economic sanctions reduce the amount of inward foreign investment, greenfield investment and cross-border M&As by approximately 22%, 25% and 67%, respectively. Overall, our finding that sanction has a detrimental effect on FDI activities supports the strand of literature on the negative consequences of economic sanctions. In particular, this line of research demonstrates that economic coercion worsens the economic development of sanctioned countries due to the reduction in foreign market access and other costs, such as uncertainty and increased conflict.

Regarding other variables, we find evidence that the host country's unemployment rate negatively affects greenfield FDI since the coefficient of the variable *Unemployment\_ratio* is negative and statistically significant in model (2) when greenfield investment (*Greenfield*) is used as the dependent variable. This result is, therefore, consistent with the view that since greenfield FDI often has a beneficial impact on the host countries by enhancing the recipient's physical capital formation as well as providing jobs and knowledge transfer, a higher level of unemployment will act as a barrier to hinder FDI flows, partly due to the low absorption of the host countries. We also find that increasing government consumption results in lower FDI inflows. Finally, we provide some evidence that the coefficients of *Bank\_branch* and



*Population density* are positive and significant, which implies that an increase in the level of financial depth and overpopulation would lead to higher FDI inflows.

Although we lagged behind all right-hand side variables to reduce the potential endogeneity problem, there remains an endogenous issue caused by the bidirectional causality between FDI and sanction. Thus, to further mitigate endogeneity, we also employ the GMM estimation. Our findings are then reported in Columns 4, 5 and 6 of Table 4. As shown in the table, the coefficient on *sanction* is negative and strongly significant, confirming that our results are consistent and robust. In addition, the test statistics for the two-step GMM estimator (Sargan statistics) indicate further that the instruments selected are valid.

To yield a more in-depth analysis of the impact of sanctions on FDI activities, we separately break down both the sanction into its six sub-components (including arm, military, trade, financial, travel and other sanctions) and total FDI into its two major sub-types (including greenfield investment and cross-border M&As). Our results for investigating the sanction–FDI nexus conditional on the sanction types and FDI types are then provided in Columns 7, 8 and 9 of Table 4.

As shown in Column 7 of Table 4, the coefficients of military sanctions (*Military*) and trade sanctions (*Trade*) are negative and statistically significant. Thus, this finding implies that military and trade sanctions impede the total inward FDI flows. In terms of economic significance, the military and trade sanctions reduce the amount of inward foreign investment by nearly 21% and roughly 22%, respectively. Travel and other sanctions also negatively influence FDI inflows, but they are statistically insignificant.

Columns 8 and 9 of Table 4 show the model's result investigating the impact of different sanction types on greenfield investment and cross-border M&As. As seen from Column 8, the coefficients of military sanctions (*Military*) and trade sanctions (*Trade*) are negative but not significant. Thus, this result indicates that military and trade sanctions have a less detrimental impact on greenfield investment. In contrast, we find that the coefficients of military sanctions (*Military*) and trade sanctions (*Trade*) are negative and strongly significant at the 1% level in Column 9 of Table 4, where cross-border M&As (*Merger*) is the dependent variable. Therefore, our finding suggests that military and trade sanctions have much more devastating and sizable effects on cross-border M&As. Economically significant, the military and trade sanctions reduce the amount of inward foreign investment by nearly 90% and roughly 70%, respectively. Interestingly, we find that arm sanction positively affects FDI inflow. Thus, our results are somehow in line with Shin *et al.* (2016), who find that sanctions do not significantly impact target countries' economies. In other words, these authors contend that sanctions have no adverse effect on the economic conditions of targeted nations.

#### 4.3 Robustness checks

In this section, we conduct several sensitivity analyses to ensure the robustness of our results and present the findings of these tests in Table 5.

First, in Panel A, we exclude all the control variables. Second, in Panel B, we test whether our main results remain unchanged after excluding any observations in the dotcom bubble crisis (we remove any observations during the 2003–2004 period since we assume that the crisis exerted its negative influence in the following years) to reduce the concern that our results are affected by the dot-com crisis. Finally, in Panel C, we incorporate more control variables that reflect country-level economic conditions, including *GDP per capita growth*, which is the annual growth rate of GDP per capita; *Monetary credit to the private sector* is the domestic credit to the private sector that refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities and trade credits and other accounts receivable as a share of GDP;

Variables	(1) FDI inflow	(2) Greenfield	(3) Merger	(4) FDI inflow	(5) Greenfield	(6) Merger
<i>Panel A</i>						
<i>Sanction</i>	-0.150** (0.059)	-0.180** (0.089)	-0.571*** (0.202)	<i>No control variables</i>		
<i>Arms</i>				0.088* (0.113)	-0.137 (0.158)	0.499 (0.374)
<i>Military</i>				-0.044*** (0.057)	-0.079 (0.087)	-0.605*** (0.200)
<i>Trade</i>				-0.199*** (0.069)	-0.097 (0.095)	-0.509*** (0.188)
<i>Financial</i>				0.077 (0.084)	0.177 (0.121)	-0.256 (0.290)
<i>Travel</i>				-0.135 (0.135)	-0.230 (0.177)	-0.082 (0.425)
<i>Other</i>				-0.165 (0.119)	-0.126 (0.180)	-0.499 (0.372)
Constant	7.260*** (0.041)	7.125*** (0.060)	6.105*** (0.138)	7.209*** (0.034)	7.061*** (0.048)	6.020*** (0.107)
Observations	2,402	2,344	1,478	2,402	2,344	1,478
R-squared	0.896	0.775	0.754	0.896	0.775	0.755
Country FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES
<i>Panel B</i>						
<i>Sanction</i>	-0.223*** (0.072)	-0.250** (0.097)	-0.674*** (0.236)	<i>Exclude crisis years</i>		
<i>Arms</i>				0.387* (0.128)	0.201 (0.208)	0.463 (0.433)
<i>Military</i>				-0.204*** (0.077)	-0.166 (0.098)	-0.899*** (0.229)
<i>Trade</i>				-0.224** (0.088)	-0.209 (0.108)	-0.695*** (0.200)
<i>Financial</i>				0.135 (0.099)	0.225 (0.161)	0.148 (0.348)
<i>Travel</i>				-0.032 (0.158)	-0.154 (0.187)	-0.042 (0.454)
<i>Other</i>				-0.142 (0.135)	-0.026 (0.170)	-0.874** (0.430)
<i>Unemployment_ratio</i>	-0.460 (0.877)	-2.316** (1.047)	-3.307 (2.225)	-0.589 (0.871)	-2.432** (1.054)	-3.421 (2.232)
<i>Bank_branch</i>	1.789*** (0.504)	-0.033 (0.679)	-0.829 (1.139)	1.795*** (0.509)	-0.051 (0.696)	-0.734 (1.124)
<i>Openess</i>	-0.289 (0.179)	-0.239 (0.220)	0.679 (0.467)	-0.282 (0.179)	-0.231 (0.219)	0.636 (0.469)
<i>Government_size</i>	-3.384** (1.472)	-4.536*** (1.692)	2.815 (4.395)	-3.431** (1.479)	-4.515*** (1.733)	2.838 (4.413)
<i>Population_density</i>	0.102*** (0.030)	0.046 (0.028)	0.178*** (0.061)	0.102*** (0.031)	0.045 (0.028)	0.189*** (0.062)
Constant	8.296*** (0.359)	8.699*** (0.416)	5.427*** (0.998)	8.224*** (0.361)	8.591*** (0.418)	5.348*** (1.000)
Observations	1,357	1,399	1,040	1,357	1,399	1,040
R-squared	0.893	0.836	0.774	0.894	0.837	0.778
Country FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES
<i>Panel C</i>						
<i>Sanction</i>	-0.214** (0.114)	-0.241** (0.107)	-0.846*** (0.256)	<i>Add more control variables</i>		

**Table 5.**  
Robustness checks

(continued)

Variables	(1) FDI inflow	(2) Greenfield	(3) Merger	(4) FDI inflow	(5) Greenfield	(6) Merger
<i>Arms</i>				0.505 (0.142)	0.143 (0.294)	0.318 (0.668)
<i>Military</i>				-0.110*** (0.107)	-0.037 (0.099)	-1.022*** (0.277)
<i>Trade</i>				-0.209*** (0.121)	-0.078 (0.120)	-0.821*** (0.232)
<i>Financial</i>				0.266 (0.198)	-0.066 (0.205)	0.113 (0.384)
<i>Travel</i>				0.046 (0.226)	-0.122 (0.222)	0.208 (0.629)
<i>Other</i>				-0.310 (0.209)	0.005 (0.166)	-1.141*** (0.524)
<i>Unemployment_ratio</i>	-0.426 (1.287)	-1.645 (1.095)	-3.902 (2.465)	-0.862 (1.267)	-1.779 (1.189)	-3.591 (2.749)
<i>Bank_branch</i>	1.216* (0.682)	0.790 (0.625)	-2.464* (1.357)	1.397** (0.686)	1.245* (0.666)	-1.460 (1.484)
<i>Openess</i>	-0.320 (0.239)	0.048 (0.262)	-0.077 (0.516)	-0.298 (0.238)	-0.126 (0.249)	-0.179 (0.500)
<i>Government_size</i>	-3.957* (2.336)	-0.603 (1.976)	5.972 (6.067)	-3.405 (2.371)	-0.459 (2.193)	1.656 (5.966)
<i>Population_density</i>	0.113*** (0.036)	0.079*** (0.027)	0.174*** (0.058)	0.108*** (0.035)	0.072*** (0.027)	0.154*** (0.057)
<i>GDP per capital growth</i>	-0.883 (1.144)	0.140 (0.983)	4.989 (3.163)	-0.712 (1.165)	0.325 (1.040)	5.624* (3.159)
<i>Monetary credit to private sector</i>	0.018 (0.254)	-0.554*** (0.209)	-0.013 (0.469)	-0.004 (0.259)	-0.455** (0.218)	-0.021 (0.519)
<i>ATM</i>	-0.342* (0.198)	-0.175 (0.201)	-1.012* (0.601)	-0.373* (0.195)	-0.284 (0.221)	-0.776* (0.452)
<i>Research</i>	-8.459 (15.994)	-13.627 (11.811)	64.379* (33.644)	-8.775 (16.166)	-6.288 (12.268)	60.317* (35.374)
Constant	9.237*** (0.577)	8.304*** (0.473)	6.444*** (1.365)	9.073*** (0.598)	8.351*** (0.502)	6.490*** (1.408)
Observations	911	962	770	911	909	736
R-squared	0.864	0.880	0.769	0.865	0.888	0.778
Country FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES

Table 5.

*ATM* is the number of automated teller machines that provide clients of a financial institution with access to financial transactions in a public place divided by population; *research* is the gross domestic expenditures on research and development (R&D) as a percent of GDP. They include capital and current expenditures in the four main sectors: business enterprise, government, higher education and private non-profit, and thus, this variable covers basic research, applied research and experimental development. Data for these additional time-varying variables are retrieved from the same source of the database, namely the World Bank Indicators database [4].

As can be seen from these three panels, our results are consistent with our baseline results. In particular, we find that the coefficients of *sanction* remain negative and significant across different types of FDI activities. Regarding the impacts of distinct types of sanctions on the components of FDI inflows, we also document evidence that the military and trade sanctions exhibit more adverse and sizable effects on the flows of cross-border M&As as compared to the flows of greenfield investment. Overall, the results of these tests imply that our results are robust and consistent.

#### 4.4 Further analysis

**4.4.1 Infrastructure channel.** The existing literature has shown that the degrees of economic, social and political development are essential factors that affect the inflows of FDI into host countries (Asiedu, 2002; Buckley *et al.*, 2018). As a result, nations that have these characteristics may have a greater chance of attracting FDI to improve their economic growth. In contrast, if these countries lack these factors, they may struggle to attract and maintain the FDI inflows. For instance, the quality of the infrastructure can significantly affect FDI inflows since it may boost investment productivity and encourage FDI flows (Cheng and Kwan, 2000). Based on these arguments, in this section, we are motivated to explore further the mechanisms through which economic sanctions influence the FDI inflows in the host countries. In particular, we investigate whether economic sanction deters the inward FDI flows by decreasing infrastructure development in the host countries. By doing so, we can see how the sanction–FDI nexus may change through certain economic, social and political factors.

To do so, we first use several different indicators to proxy for the infrastructure variable. Prior research often used several infrastructure indicators to represent the stock of transportation facilities (such as roads and sea transport capacity) and communication infrastructure (such as telephone lines and Internet access points). Asiedu (2002), for instance, uses just one indicator – the proportion of telephones per 1,000 people – to capture the importance of infrastructure for FDI flows into African nations. In this study, we follow some previous studies (e.g. Randolph *et al.*, 1996; Calderón and Servén, 2010; Shi *et al.*, 2017) and measure the degree of infrastructure development in a country as one of four different sets of indicators, namely electricity, telecommunication, transportation and finance. Precisely, *transportation* is measured as a natural logarithm of total air and rail transportation; *Telecommunication* is defined as the total number of telephone lines (fixed and mobile) per 100 people; *Electricity* is calculated as the percentage of households with access to electricity and finally, *finance* is calculated as the sum of the total value of shares traded divided by GDP and the private credit provided by banks in financial infrastructure ratio (Donaubauer *et al.*, 2015). Our results are then provided in Table 6.

Columns 1–2 of Table 6 report the regression result for the impact of sanctions and six different types of sanctions on electricity infrastructure development. Columns 3–4 of the table present the result for the telecommunication infrastructure. Columns 5–6 illustrate the findings of the transportation infrastructure, whereas Columns 7–8 show the estimation results for the financial infrastructure. As can be seen from Table 6, the coefficients of the variable *sanction* are negative and strongly significant at the 1% level when infrastructure variables are used as the dependent variables. Thus, these results support the argument that by exhibiting detrimental effects on the development of infrastructure in the host countries, sanctions adversely influence the FDI inflows.

**4.4.2 Economic development channel.** Previous studies (Morgan *et al.*, 2014) also point out that although sanctions are used against developed countries equally as often as against developing ones, the total impact of sanctions may be more significant in developing countries. The lack of sufficient domestic financial resources is the cause of this. As such, in the next step, we are motivated to explore whether sanction negatively affects the level of economic development in the host countries and, thereby, deters the FDI inflows into these countries. To test this conjuncture, we use the natural logarithm of GDP per capita of a country (PPP adjusted, at constant 2017 US\$) and market capitalization ratio to proxy for a country's economic development level. We then re-run the baseline models, using these indicators as the dependent variables. Our results are presented in Table 7 accordingly.

As seen from Table 7, we find that sanctions result in a lower level of economic development, consequently leading to fewer FDI inflows. Overall, our findings provide evidence supporting the view that by exhibiting an adverse impact on the economic

Variables	Electricity		Telecommunication		Transportation		Finance	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Sanction</i>	-0.575** (0.494)		-0.160*** (0.042)		-0.341*** (0.092)		-0.160*** (0.042)	
<i>Arms</i>		-0.032 (1.078)		-0.142 (0.109)		0.258 (0.157)		-0.142 (0.109)
<i>Military</i>		-1.083** (0.437)		-0.039*** (0.046)		-0.169*** (0.092)		-0.039*** (0.046)
<i>Trade</i>		-1.154*** (0.340)		-0.120*** (0.039)		-0.143*** (0.077)		-0.120*** (0.039)
<i>Financial</i>		0.933 (1.009)		-0.170* (0.080)		0.432 (0.160)		-0.170** (0.080)
<i>Travel</i>		1.585 (1.102)		-0.011 (0.096)		-0.143 (0.124)		-0.011 (0.096)
<i>Other</i>		-1.191** (0.541)		-0.005 (0.082)		0.015 (0.157)		-0.005 (0.082)
<i>Unemployment_ratio</i>	-0.212 (4.176)	-0.584 (4.158)	-0.542 (0.567)	-0.465 (0.563)	-1.405 (0.948)	-1.713* (0.480)	-0.542 (0.567)	-0.465 (0.563)
<i>Bank_branch</i>	2.352*** (2.557)	2.875*** (2.522)	2.245*** (0.223)	2.269*** (0.227)	-0.515 (0.480)	-0.406 (0.490)	2.245*** (0.223)	2.269*** (0.227)
<i>Openess</i>	-1.506* (0.773)	-1.491* (0.789)	-0.343*** (0.099)	-0.346*** (0.102)	-0.189 (0.214)	-0.181 (0.218)	-0.343*** (0.099)	-0.346*** (0.102)
<i>Government_size</i>	-18.248** (7.581)	-20.078** (7.843)	-2.303*** (0.858)	-2.333*** (0.869)	-3.714** (1.573)	-3.809** (1.610)	-2.303*** (0.858)	-2.333*** (0.869)
<i>Population_density</i>	-0.079 (0.164)	-0.053 (0.167)	-0.032** (0.014)	-0.038*** (0.014)	1.519*** (0.291)	1.779*** (0.313)	-0.032** (0.014)	-0.038*** (0.014)
Constant	2.665*** (1.757)	2.933*** (1.794)	7.786*** (0.208)	7.783*** (0.209)	3.483*** (0.520)	2.949*** (0.543)	7.786*** (0.208)	7.783*** (0.209)
Observations	1,433	1,433	1,428	1,428	781	781	1,428	1,428
R-squared	0.968	0.969	0.953	0.954	0.984	0.984	0.953	0.954
Country FEs	YES	YES	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES	YES	YES

**Note(s):** Robust standard errors in parentheses  
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

**Table 6.**  
Infrastructure channel

development of recipient countries, sanctions hinder the flows of FDI investment into host countries. In brief, our results in [Table 6](#) and [Table 7](#) are consistent with previous studies (e.g. [Lopez and Cortright, 1997](#); [Weiss, 1999](#); [Drury and Li, 2006](#)), which contend that economic sanctions worsen economic conditions in targeted countries.

## 5. Conclusion

This paper examines how sanction affects different types of FDI in the recipient country. Our empirical analysis was conducted based on a large cross-country sample from 2003 to 2019 for over 170 countries worldwide. The results reveal that sanction exerts a detrimental effect on the total inflows of FDI. However, not all types of FDI activities are equally affected by sanctions, and not all types of sanction exhibit the same negative impact on FDI activities. In particular, we show that while military and trade sanctions have little or no impact on greenfield investment, they have more adverse and sizable effects on cross-border M&As. The plausible explanation is that greenfield investments involve the direct construction of new equipment and facilities, whereas M&A is more likely to be a speculative strategy involving the transfer of ownership between foreign and domestic firms. Thus, it is affected more severely. In our further analyses, we provide evidence that sanctions have devastating influences on FDI inflows by discouraging the development of the infrastructure and economies in the host countries.

By demonstrating the link between sanctions and FDI, our study makes significant contributions to the strand of literature examining the development impact of sanctions on FDI. By decomposing total FDI into its two major components, greenfield investment and

Variables	Level of economic development			
	(1)	(2)	(3)	(4)
	GDP per capital		Market capitalization	
<i>Sanction</i>	-0.097*** (0.016)		-0.299*** (0.061)	
<i>Arms</i>		0.056 (0.035)		0.005 (0.181)
<i>Military</i>		-0.089*** (0.017)		-0.330*** (0.061)
<i>Trade</i>		-0.090*** (0.017)		-0.322*** (0.060)
<i>Financial</i>		-0.021 (0.020)		-0.085 (0.108)
<i>Travel</i>		-0.046 (0.034)		-0.273* (0.158)
<i>Other</i>		0.021 (0.025)		0.048 (0.137)
<i>Unemployment_ratio</i>	-1.762*** (0.180)	-1.760*** (0.181)	-3.178*** (0.615)	-2.987*** (0.598)
<i>Bank_branch</i>	0.769*** (0.103)	0.770*** (0.101)	1.124*** (0.392)	1.127*** (0.372)
<i>Openess</i>	-0.397*** (0.040)	-0.398*** (0.040)	-0.323*** (0.101)	-0.355*** (0.096)
<i>Government_size</i>	-3.194*** (0.293)	-3.252*** (0.298)	-0.460 (1.129)	-0.464 (1.136)
<i>Population_density</i>	0.013* (0.007)	0.013* (0.007)	0.100*** (0.020)	0.102*** (0.021)
Constant	1.026*** (0.081)	1.018*** (0.081)	2.760*** (0.269)	2.765*** (0.268)
Observations	1,433	1,433	813	813
R-squared	0.991	0.992	0.985	0.985
Country FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES

**Table 7.**

Economic development channel

**Note(s):** Robust standard errors in parentheses  
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ 

cross-border M&As, and then evaluating the effect of sanction on these two FDI sub-components, we also join the line of work that deepens knowledge about the differences between greenfield investment and M&A. An important policy implication of our study is that a closer look at particular types of FDI is required when implementing policies as different types of FDI may be affected differently by changes in the economy, such as economic sanctions.

### Notes

1. See [Kim \(2009\)](#) and [Gopalan et al. \(2017\)](#) for more discussion.
2. In our study, any observation that has zero value is excluded from the sample.
3. UNCTAD only started collecting data on Greenfield investment by countries in 2003.
4. It is worth noting that we further conduct an additional analysis to check the robustness of our baseline results by including more macro-economic variables to control for the institutional qualities of the host countries. Please see [Table A1](#) of the supplement file for more details. Furthermore, we also test with different combinations of sanctions in [Tables A2–A4](#) of the supplement file. Overall, we find that our results remain unchanged after controlling for institutional quality factors and with different combinations of types of sanction, which indicates that our results are robust and consistent.

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(The Appendix follows overleaf)

Supplementary material

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Variables	(1) FDI inflow	(2) Greenfield	(3) Merger	(4) FDI inflow	(5) Greenfield	(6) Merger
<i>Sanction</i>	-0.407*** (0.189)	-0.173*** (0.225)	-0.524*** (0.734)			
<i>Arms</i>				0.859* (0.286)	0.172 (0.774)	2.771 (0.983)
<i>Military</i>				-0.294*** (0.263)	-0.263 (0.403)	-4.164*** (1.393)
<i>Trade</i>				-0.256*** (0.178)	-0.165 (0.307)	-0.062*** (0.416)
<i>Financial</i>				0.186 (0.157)	0.148 (0.273)	0.111 (0.531)
<i>Travel</i>				0.436 (0.183)	0.011 (0.452)	-0.839 (0.641)
<i>Other</i>				0.747 (0.277)	0.026 (0.285)	0.660 (0.621)
<i>Unemployment_ratio</i>	-5.270** (2.309)	-6.922** (2.814)	-13.062 (8.316)	-5.617** (2.364)	-6.765** (3.106)	-11.103 (9.030)
<i>Bank_branch</i>	0.090 (1.633)	-0.080 (2.096)	0.984 (4.236)	0.025 (1.645)	-0.376 (2.167)	-2.364 (4.097)
<i>Openness</i>	-0.232 (0.521)	2.000*** (0.687)	-1.256 (1.271)	-0.120 (0.521)	1.942*** (0.702)	-1.517 (1.295)
<i>Government_size</i>	5.790 (4.008)	6.408 (4.164)	-5.444 (11.268)	5.441 (4.008)	6.385 (4.203)	-4.484 (11.287)
<i>Population_density</i>	-0.312 (0.369)	0.536 (0.666)	1.945 (1.751)	-0.294 (0.367)	0.535 (0.677)	1.915 (1.798)
<i>Regulatory Quality</i>	0.023* (0.019)	0.006 (0.019)	0.073** (0.055)	0.018* (0.019)	0.006 (0.019)	0.084 (0.056)
<i>Rule of Law</i>	0.001** (0.014)	0.009 (0.016)	0.027* (0.049)	0.026* (0.014)	0.010 (0.016)	0.044 (0.051)
<i>Government Effectiveness</i>	0.019** (0.012)	0.016** (0.012)	0.037 (0.034)	0.019* (0.012)	0.017 (0.013)	0.030 (0.035)
<i>Corruption</i>	-0.118 (1.010)	0.523 (0.323)	-0.111 (0.130)	-0.490 (1.000)	0.517 (0.338)	-0.165 (0.130)
<i>Political stability</i>	0.048* (0.016)	-0.016 (0.005)	0.009 (0.002)	0.058* (0.015)	-0.013 (0.005)	0.009 (0.002)
Constant	8.533*** (1.594)	3.995* (2.182)	5.669 (6.200)	8.280*** (1.599)	4.023* (2.214)	6.146 (6.272)
Observations	1,357	1,399	1,040	1,357	1,399	1,040
R-squared	0.914	0.883	0.810	0.917	0.883	0.818
Country FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES

**Table A1.**  
Robustness check –  
adding more control  
variables accounting  
for institutional quality

**Note(s):** Robust standard errors in parentheses  
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	FDI inflow					
<i>Arms</i>	0.360*** (0.124)	0.368*** (0.122)	0.397*** (0.131)	0.301** (0.126)		0.310** (0.126)
<i>Military</i>	-0.196** (0.077)	-0.200*** (0.077)	-0.198*** (0.077)	-0.127*** (0.075)	-0.164*** (0.075)	
<i>Trade</i>	-0.204*** (0.085)	-0.225** (0.089)	-0.222*** (0.088)		-0.179** (0.085)	-0.145*** (0.085)
<i>Financial</i>		0.134 (0.095)	0.146 (0.099)	0.075 (0.091)	0.104 (0.100)	0.126 (0.100)
<i>Travel</i>			-0.085 (0.159)	-0.057 (0.156)	0.102 (0.154)	-0.061 (0.156)
<i>Other</i>				-0.135 (0.132)	-0.168 (0.135)	-0.113 (0.133)
<i>Unemployment_ratio</i>	-0.534 (0.873)	-0.555 (0.868)	-0.548 (0.868)	-0.875 (0.877)	-0.603 (0.878)	-0.610 (0.876)
<i>Bank_branch</i>	1.813*** (0.506)	1.793*** (0.509)	1.795*** (0.509)	1.828*** (0.500)	1.772*** (0.508)	1.832*** (0.502)
<i>Openess</i>	-0.288 (0.179)	-0.278 (0.179)	-0.276 (0.179)	-0.313* (0.182)	-0.285 (0.180)	-0.281 (0.179)
<i>Government_size</i>	-3.510** (1.481)	-3.560** (1.485)	-3.489** (1.485)	-3.155** (1.460)	-3.552** (1.495)	-3.125** (1.470)
<i>Population_density</i>	0.101*** (0.031)	0.102*** (0.031)	0.102*** (0.031)	0.101*** (0.031)	0.101*** (0.031)	0.092*** (0.030)
Constant	8.247*** (0.361)	8.230*** (0.359)	8.217*** (0.361)	8.163*** (0.356)	8.258*** (0.364)	8.148*** (0.356)
Observations	1,357	1,357	1,357	1,357	1,357	1,357
R-squared	0.893	0.893	0.893	0.893	0.893	0.893
Country FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES

**Note(s):** Robust standard errors in parentheses  
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Economic  
sanctions and  
FDI

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**Table A2.**  
Robustness check of  
different combinations  
of types of sanction –  
FDI inflow

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Greenfield					
<i>Arms</i>	0.132 (0.190)	0.150 (0.191)	0.203 (0.207)	0.121 (0.191)		0.138 (0.197)
<i>Military</i>	-0.162 (0.098)	-0.170 (0.097)	-0.165 (0.097)	-0.089 (0.086)	-0.146 (0.093)	
<i>Trade</i>	-0.186 (0.107)	-0.216 (0.107)	-0.209 (0.108)		-0.188 (0.101)	-0.144 (0.095)
<i>Financial</i>		0.206 (0.158)	0.228 (0.160)	0.173 (0.161)	0.207 (0.160)	0.218 (0.162)
<i>Travel</i>			-0.164 (0.171)	-0.184 (0.193)	-0.090 (0.176)	-0.178 (0.190)
<i>Other</i>				-0.022 (0.173)	-0.038 (0.170)	-0.003 (0.171)
<i>Unemployment_ratio</i>	-2.391** (1.047)	-2.445** (1.050)	-2.426** (1.054)	-2.647** (1.057)	-2.423** (1.051)	-2.443** (1.052)
<i>Bank_branch</i>	-0.011 (0.690)	-0.054 (0.695)	-0.051 (0.696)	0.038 (0.694)	-0.052 (0.695)	-0.011 (0.700)
<i>Openess</i>	-0.243 (0.220)	-0.231 (0.219)	-0.229 (0.219)	-0.247 (0.221)	-0.230 (0.220)	-0.225 (0.219)
<i>Government_size</i>	-4.641*** (1.704)	-4.687*** (1.705)	-4.531*** (1.722)	-4.320** (1.737)	-4.602*** (1.725)	-4.297** (1.724)
<i>Population_density</i>	0.044 (0.028)	0.045 (0.028)	0.045 (0.028)	0.044 (0.028)	0.044 (0.028)	0.037 (0.028)
Constant	8.641*** (0.418)	8.618*** (0.416)	8.591*** (0.418)	8.513*** (0.421)	8.608*** (0.418)	8.527*** (0.415)
Observations	1,399	1,399	1,399	1,399	1,399	1,399
R-squared	0.836	0.836	0.837	0.836	0.836	0.836
Country FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES

**Table A3.**  
Robustness check of  
different combinations  
of types of sanction –  
greenfield investment

**Note(s):** Robust standard errors in parentheses  
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Variables	(1)	(2)	(3)	(4)	(5)	(6)
			Merger			
<i>Arms</i>	0.395 (0.406)	0.386 (0.408)	0.542 (0.434)	0.289 (0.458)		0.161 (0.459)
<i>Military</i>	-0.885*** (0.231)	-0.884*** (0.232)	-0.882*** (0.232)	-0.600*** (0.190)	-0.858*** (0.224)	
<i>Trade</i>	-0.706*** (0.210)	-0.722*** (0.203)	-0.710*** (0.202)		-0.663*** (0.199)	-0.295*** (0.158)
<i>Financial</i>		0.173 (0.362)	0.214 (0.350)	-0.010 (0.367)	0.147 (0.352)	0.162 (0.362)
<i>Travel</i>			-0.459 (0.419)	-0.077 (0.442)	0.129 (0.418)	-0.093 (0.441)
<i>Other</i>				-0.926** (0.434)	-0.924** (0.427)	-0.795* (0.429)
<i>Unemployment_ratio</i>	-3.089 (2.230)	-3.145 (2.234)	-3.150 (2.229)	-4.421* (2.254)	-3.385 (2.233)	-4.264* (2.235)
<i>Bank_branch</i>	-0.692 (1.145)	-0.740 (1.140)	-0.753 (1.138)	-0.717 (1.106)	-0.746 (1.123)	-0.807 (1.101)
<i>Openess</i>	0.653 (0.470)	0.661 (0.471)	0.640 (0.473)	0.543 (0.473)	0.646 (0.468)	0.652 (0.471)
<i>Government_size</i>	2.214 (4.374)	2.197 (4.378)	2.617 (4.452)	3.515 (4.449)	2.574 (4.404)	4.613 (4.430)
<i>Population_density</i>	0.191*** (0.063)	0.191*** (0.063)	0.190*** (0.063)	0.186*** (0.061)	0.189*** (0.062)	0.151** (0.059)
Constant	5.395*** (0.999)	5.381*** (1.001)	5.348*** (1.012)	5.153*** (0.999)	5.379*** (0.999)	4.988*** (0.979)
Observations	1,040	1,040	1,040	1,040	1,040	1,040
R-squared	0.776	0.777	0.777	0.775	0.777	0.773
Country FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES

**Note(s):** Robust standard errors in parentheses

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

**Table A4.**  
Robustness check of  
different combinations  
of types of sanction –  
cross-border M&A

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