Shadow economy and FDI: the role of corruption and land resource

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Abstract

Purpose – This research examines how shadow economy affects foreign direct investment (FDI).
Design/methodology/approach – The study utilizes a panel dataset including 124 nations between 1997 and 2015. Information on shadow economy, FDI and macro-economic characteristics is obtained from the United Nations Conference on Trade and Development (UNCTAD) and World Bank database. Various econometric methods are employed, such as the panel ordinary least squares (OLS) with fixed-effect estimator and the two-step system generalized method of moments estimation.
Findings – The findings of the study illustrate that shadow economy negatively influences total FDI inflows, and this adverse impact is mainly driven by greenfield investments – a component of FDI. Moreover, the authors provide evidence that the shadow economy has more devastating influences on FDI inflows in countries with higher corruption levels and fewer land resources.
Practical implications – Overall, this research suggests an important policy implication that the shadow economy should be controlled more strictly since it harms the FDI inflows, especially greenfield investment.
Originality/value – This research is among the first attempt of evaluating the effect of shadow economy on different FDI types. Furthermore, it examines how the shadow economy–FDI inflows nexus is changed when considering factors including corruption and land resource.

Keywords Shadow economy, FDI, Greenfield investment, Cross-border M&As, Corruption
Paper type Research paper

1. Introduction

Shadow economy is often defined as all unreported economic activity that makes a contribution to the officially computed gross national product (Schneider and Enste, 2000). It is also commonly regarded as a major factor to the deterioration of tax and social security bases, which may result in enormous budget deficits that make governmental programs ineffective. Shadow economies are frequently viewed as a severe issue in many nations due to their associations with criminal activity (Schneider, 2004), drug trafficking (Ardizzi *et al.*, 2014), fiscal deficits (Dabla-Norris and Feltenstein, 2003) and violations of human rights. Naturally, shadow economies that are out of control have a negative impact on society since they cause resource allocation to be inefficient. Consequently, understanding the causes and consequences of shadow economies has been a crucial area of study in the social sciences, especially during the past ten years (Schneider and Enste, 2000).

Literature on the factors that influence foreign direct investment (FDI) inflows has received much attention. They frequently conclude that international investors should consider the trade-offs between cost and benefit related to numerous socioeconomic features of the

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domestic markets (Huynh *et al.*, 2020). However, earlier work has mainly neglected the possible influence of unreported business activities in the receiving countries when evaluating international investors' decisions. In fact, they are significant components of the economy and profoundly impact all the other aspects (Schneider, 2008). Therefore, omitting the consideration of shadow economy's influence when evaluating the causes of foreign investment flows might compromise the reliability and validity of findings. Although previous studies have documented the link between taxation policy and FDI (Boskin and Gale, 1987), the relationship between FDI inflows and a nation's shadow economy has not yet been thoroughly investigated. Thus, the aim of this research is to explore how the shadow economy affects FDI inflows while taking into account certain institutional factors, such as corruption.

Existing theories offer diverse perspectives on how the institutional strength of a host nation influences FDI. A big shadow economy and low institutional quality, such as increased corruption levels, undermine investor confidence, thus consequently discouraging FDI inward flows (Voyer and Beamish, 2004; Brouthers *et al.*, 2008). In contrast, economic theories predict that the tax burden and institutional quality are the critical determinants of how shadow economy would affect foreign capital flows. It might be argued that higher taxes are related to decreased earnings, which then induces multinational corporations (MNCs) to relocate their capital to nations featured by a strong shadow economy and more potential for tax evasion and avoidance (Haberly and Wójcik, 2015; Esteller-Moré *et al.*, 2020). As a result, it is assumed that FDI inflows and the scope of a shadow economy are positively associated. Furthermore, the argument is that taxes do not significantly attract FDI since international investors often look for other crucial factors, including commercial and regulatory benefits (Markusen, 1995). To this end, prior literature appears to not offer a clear picture of how a shadow economy influences FDI.

One main reason there is a shortage of study in this field lies in the challenge of gathering and measuring information on the shadow economy and measuring it. In addition, the inadequacy of the empirical model to consider the diverse features across various forms of FDI is arguably another explanation for this mixed conclusion. Greenfield investments and cross-border mergers and acquisitions (M&As) are the two main components of total FDI, according to recent research (Ashraf and Herzer, 2014). Accordingly, they are two distinct investment approaches with unique characteristics and cannot perfectly substitute for one another. In particular, while the former entails the establishment of new business establishments, the latter is merely the transmission of stock ownership. However, each of these two approaches has its own advantages and disadvantages. In market entry through the greenfield investment, foreign investors may be able to launch a completely new company that suits their demands and is suitable for their expertise. However, planning, building and market positioning take time and work with this investment method. While market entrance through the merger and acquisitions strategy can be expedited and provide benefits in terms of natural resources, established connections with the regional authorities, this strategy may suffer some risks arising from the misappraisal issue and the cultural mismatch problem after M&A process (Qiu and Wang, 2011).

Despite being somewhat limited, empirical studies recently showed two contrasting influences of shadow economy. For example, Huynh *et al.* (2020) discovered a reduction in the amount of FDI among nations with a greater shadow economy. This is because FDI inflows will be reduced if the latter is inversely correlated with domestic institutional qualities. However, according to Ali and Bohara (2017), FDI investors may be drawn to the unregistered business chances, giving them more of a reason to enter a market with more substantial unofficial economic activity.

Regarding FDI components, we anticipate that shadow economy may affect greenfield and M&A investments differently. In particular, since a larger shadow economy can significantly raise the cost of greenfield investment, it might hinder greenfield FDI inflows.

These expenses occur when local firms may take advantage of the ineffective judicial system and pay bribes to outperform foreign investors (Javorcik and Wei, 2009). In contrast, a larger shadow economy may promote cross-border M&A investment. The former is often related to higher levels of corruption as well as other poor institutional quality factors in the host nation (Huynh *et al.*, 2020), which consequently encourages the market entry of the latter. MNCs can obtain advantages such as having less time and expense for project procedures, quickly opening the door to rare resources as well as other benefits that MNCs can gain from long-lived connections with both municipal and district authorities (Peng, 2000; Meyer, 2001; Meyer and Nguyen, 2005). Additionally, cross-border M&A projects may be more tax-sensitive than greenfield investments, giving cross-border M&A investors an incentive to locate their businesses in tax-beneficial areas (Hebous *et al.*, 2011).

There are two main reasons why the gaps need to be further revisited in this research, in terms of both theoretical and empirical perspectives. First and foremost, it is crucial to research the channels through which the shadow economy might influence FDI. Second, it would be essential to dive deeper into how each type of FDI inflow is affected by the shadow economy and to explore which kind of FDI component is affected more by the shadow economy. Our findings from the analysis of a maximum of 124 countries between 1997 and 2015 reveal that the shadow economy does exert detrimental effects on the total FDI inflows.

Furthermore, by showing a more thorough analysis of various forms of FDI, this work illustrates that while a larger shadow economy dramatically reduces greenfield investments, it appears to exhibit no impact on cross-border M&A investment. We further demonstrate this devastating effect in higher corrupt business environment. Similar results were also found for greenfield FDI. On the contrary, this work points out that shadow economy and corruption do not impact cross-border M&As. Furthermore, empirical evidence of an adverse influence of shadow economy being stronger among countries with a lower level of land resources has been illustrated.

2. A brief of related literature

Although the direct impact of the shadow economy on the inward FDI flows has not yet been investigated in the existing literature, a line of research focuses on MNCs' behavioral responses (including FDI inflows) to international tax regulations. Accordingly, early studies show ambiguous findings. This led to the hypothesis that the sort of tax tools used by the government would be more important in attracting FDI flows than a lower tax rate (Markusen, 1995). Aldaba (2006) contends that even sizable tax savings will not increase FDI inflows for a developing nation with a poor investment climate. On the other side, economic theory would contend that because it lowers MNC earnings, the overall tax rate adversely affects the inward FDI flows.

Studies that support these theoretical predictions have found a solid and adverse link between corporation tax rates and inward FDI flows (Becker *et al.*, 2012; Devereux *et al.*, 2002). In addition, evidence in earlier literature shows that MNCs use transfer pricing, royalty payments and other tax avoidance strategies to respond to higher tax ratios. Tax incentives often appeal to smaller size investors than their bigger counterparts, according to Coyne's (1994) study. This is explained by big investors having the expertise and resources to use tax avoidance strategies. Many studies (e.g. Grubert *et al.*, 1993; Collins *et al.*, 1998; Markle, 2016) conclude that the corporation tax ratio has a positive association with FDI. Work of Bartelsman and Beetsma (2003) further shows that these countries lose more due to the statistically significant income shifting these OECD (Organisation for Economic Co-operation and Development) nations suffer and mention that limited studies focus on income shifting to tax havens in the existing literature.

Only lately have economists begun empirically assessing how the shadow economy affects inward FDI flows (e.g. Huynh, 2022). These authors provide several contrasting

viewpoints. On the one side, the study by Huynh *et al.* (2020) discovered that the amount of FDI is reduced among nations with a greater shadow economy. The reason is that the latter is inversely associated with institutional quality, thus discouraging FDI inflows. Due to the feedback effect, where a strong shadow economy results in low institutional quality, which inhibits FDI, a negative link has been found. On the other hand, according to Ali and Bohara (2017), a positive linkage is supported due to benefit from tax evasion in nations where shadow economies are presented. Other scholars conclude that shadow economies' "unofficial" opportunities may significantly attract foreign investors since it motivates them to enter a market with more unofficial economic activities.

More recently, the work of Cuong *et al.* (2021) looks into how the shadow economy affects FDI. The outcome demonstrates that although there is no apparent impact of the shadow economy on the total FDI inflows, shadow economy exerts a beneficial impact on greenfield while produces an adverse impact on M&As. The findings of Canh *et al.* (2021) demonstrate the bicausal links between inward FDI, shadow economy as well as several factors such as economic integration and institutional quality. Notably, the findings indicate that FDI exerts a negative effect on shadow economy. In brief, greater FDI from the investor economy to the host economy should be encouraged by a bigger shadow economy difference. This might result from MNCs attempting to exploit implicit tax evasion chances brought on by the magnitude of shadow economy. Therefore, a larger size of this issue will entail more potential for tax avoidance, which is involved and reflected into shadow economy.

3. Data and methodology

We employ the following specification to investigate how the shadow economy affects FDI inflows:

$$FDI_{it} = \theta_0 + \theta_1 Shadow\_economy_{i,t-1} + \theta^J_2 \boldsymbol{X}'_{i,t-1} + \upsilon_j + \eta_t + \varepsilon^1_{jt} \quad (1)$$

where FDI_{it} is the natural logarithm of total FDI inflows and is collected from the United Nations Conference on Trade and Development (UNCTAD) database. *Shadow_economy* is calculated as the proportion of shadow economy to gross domestic product (GDP), and data for this variable are retrieved from Medina and Schneider (2018) – a recent and trustworthy database about shadow economy. Since data on the shadow economy are only accessible through 2015, our studied period is restricted to the years between 1997 and 2015. $\boldsymbol{X}'_{it}$ = [*Income, Trade openness, Urbanization, and Tax*] is a vector of control variables collected from the World Development Indicators database from the World Bank. Specifically, *Income* is calculated as the real per capita income, *Trade openness* is the total of exports and imports as the share of GDP, *Urbanization* is the proportion of people living in cities to the total population and *Tax* is calculated as the ratio of tax revenue to GDP (Table 1) [1]. υ_j, η_t and ε^1_{jt} are country, year fixed effects and the error term, respectively.

It is important to note that endogeneity may be a challenge of our study. The simultaneous determination of the shadow economy and FDI by other factors, such as a modification in economic development and investment regulations, is one potential cause of endogeneity. The issue of omitted variables is another potential cause of endogeneity. The lack of these factors will result in bias. Therefore, we estimate all of our empirical models using the two-step system generalized method of moments (GMM) panel approach developed by Blundell and Bond (1998) to overcome the endogeneity issue and guarantee the robustness and consistency of the estimated results. The two-step GMM method is more advantaged than other approaches since it uses available internal instruments (i.e. a suitable lag length). In contrast, the latter uses external instruments, which are not always available. Our final sample covers 124 nations between 1997 and 2015.

Variable	Definition and construction	Source
FDI	Natural logarithm of FDI inflows into the country	UNCTAD
Greenfield	Natural logarithm of greenfield FDI in the host country	UNCTAD
Merger	Natural logarithm of cross-border M&A sales in the country	UNCTAD
Shadow_economy	The share of the shadow economy to GDP	Medina and Schneider (2018)
Income	Natural logarithm of real per capita income	World Development Indicators database, World Bank (various years)
Trade openness	The ratio of (total exports + total imports) to GDP	World Development Indicators database, World Bank (various years)
GDP_growth	The annual growth rate of GDP	World Development Indicators database, World Bank (various years)
Urbanization	The ratio of urban population to total population	World Development Indicators database, World Bank (various years)
Tax	The ratio of tax revenue to GDP	World Development Indicators database, World Bank (various years)
Corruption	Indicator of the corruption level in the host country. It is the re-scaled index from the Control of Corruption index provided by the World Bank so that 0 representing non-corruption and 100 mean a hypothetical completely corruption	Worldwide Governance Indicators, World Bank (various years)
Land area	The natural logarithm of a country's total land area	World Development Indicators database, World Bank (various years)

Table 1.
Variable description

In the next step, we divide the total FDI flows into two subcomponents and re-estimate model (1) with the amended dependent variables $Greenfield_{it}$ and $Merger_{it}$. Data for these two compositions of FDI are also obtained from the UNCTAD database. *Merger* is the value of cross-border M&A sales and is obtained from the same source of database. All other control variables and fixed effects are kept unchanged as follows:

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

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

4. Empirical results

4.1 Summary statistics

The summary statistics of this research is illustrated in Table 2. The average amount of FDI in our study has a mean value of 6.6138, while that of *Greenfield* and *Merger* are 20.3878 and 12.1586, respectively. The average ratio of *Shadow Economy* to GDP is 0.3118. Additionally, the average national income ratio is 7.02%. The mean ratio of *Trade openness* and *GDP growth* ratio are 86.97 and 4.2%, respectively. Finally, the average ratio of *Urbanization* and *Tax* are 55.44 and 23.95%, respectively.

Next, we present the correlation matrix in Table 3. Since we observe that all the coefficients are low, we can conclude that our model does not suffer from multicollinearity concern.

Table 2.
Summary statistics

Variable	*N*	Mean	sd	p25	p50	p75	min	max
FDI	2,813	6.6138	2.4250	5.0409	6.6891	8.2894	−3.9120	12.8477
Greenfield	2,549	20.3878	2.1681	18.9480	20.4050	21.8928	11.5600	25.8477
Merger	2,661	12.1586	9.6891	0.0000	16.8015	20.5129	0.0000	26.4228
Shadow_economy	2,975	0.3118	0.1274	0.2205	0.3124	0.3963	0.0616	0.7133
Income	2,928	0.0702	1.6732	6.6507	8.0760	9.4846	4.4333	11.5522
Trade_openess	2,899	0.8697	0.5265	0.5472	0.7615	1.0450	0.0017	5.3174
GDPgrowth	2,949	0.0420	0.0593	0.0199	0.0399	0.0618	−0.6208	1.4997
Urbanization	2,971	0.5544	0.2373	0.3550	0.5618	0.7503	0.0741	1.0000
Tax	1,970	0.2395	0.1312	0.1477	0.2150	0.3122	0.0034	0.7954

Table 3.
Correlation matrix

	Variable	1	2	3	4	5	6
1	*Shadow_economy*	1					
2	*Income*	−0.249	1				
3	*Trade_openess*	−0.185	0.211	1			
4	*GDPgrowth*	0.1064	−0.2198	0.074	1		
5	*Urbanization*	−0.4981	0.364	0.1913	−0.1838	1	
6	*Tax*	−0.2693	0.2779	−0.01	−0.0328	0.1088	1

4.2 Baseline results

Our baseline regression findings are shown in Table 4. The calculated coefficient on *Shadow_economy* provided in Column 1 is negative and statistically significant, suggesting that the shadow economy negatively influences FDI. In the greenfield model, we also observe a negative and strongly significant coefficient and thus this finding indicates that greenfield

Variables	(1) FDI	(2) Greenfield	(3) Merger
Shadow_economy	−2.505***	−2.609***	10.391
	(0.899)	(0.902)	(8.360)
Income	0.734***	0.521***	0.895
	(0.113)	(0.120)	(0.868)
Trade_openess	0.100	0.054	−0.268
	(0.145)	(0.153)	(1.071)
GDPgrowth	2.845***	3.129***	10.316**
	(0.007)	(0.007)	(0.048)
Urbanization	5.305***	3.670***	−11.196
	(1.038)	(1.021)	(8.445)
Tax	0.962***	0.786**	3.994
	(0.313)	(0.347)	(3.265)
Constant	−1.736	14.812***	9.562
	(1.286)	(1.297)	(10.064)
Observations	1,753	1,616	1,682
R-squared	0.884	0.858	0.658
Country FEs	YES	YES	YES
Year FEs	YES	YES	YES

Table 4.
Baseline results

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

investors are more reluctant to invest in nations affected by shadow economy. In this regard, our results are consistent with what Canh *et al.* (2021) found, which illustrates a negative link between the shadow economy and FDI inflows. In contrast, our model (3) results depict an insignificant finding. Therefore, these results imply that the shadow does not affect this type of FDI.

We also employ the GMM estimation [2] to mitigate the concern that our crucial variable of interest *Shadow_economy* is endogenous. This test is also conducted as a robustness check for our earlier results. Our findings are then reported in Table 5, with a significantly negative coefficient of *Shadow_Economy* being observed. As such, we can conclude that our findings are strongly consistent and robust. Furthermore, the Durbin–Wu–Hausman test for endogeneity in Table 5 confirms that shadow economy is an endogenous variable, meaning that the baseline model using a simple ordinary least squares (OLS) estimator above could be biased, and it is necessary to perform the 2-step GMM estimator. Besides this, the Sargan test also verifies the validity of the chosen instruments.

4.3 Further analyses

4.3.1 Role of corruption. According to previous studies (e.g. Wei, 1997), corruption is seen as a detrimental factor to FDI. People argue that corruption is viewed as a tax which increases business costs, operational inefficiency as well as escalates uncertainty, exposing the company with potential losses and failure. Therefore, in this section, we are encouraged to examine how the earlier found linkage differs across countries with different levels of corruption. In addition, we are not yet clear about whether the effect of shadow economy on two FDI compositions is changed under the presence of corruption. Since greenfield FDI is associated with starting from scratch in all areas, including acquiring real estate and

Variables	(1) FDI	(2) Greenfield	(3) Merger
Shadow_economy	−2.410***	−2.047**	3.188
	(0.868)	(0.902)	(3.182)
Income	0.520***	0.512***	2.714***
	(0.063)	(0.065)	(0.261)
Trade_openess	−0.291**	−0.105	−1.908***
	(0.121)	(0.107)	(0.416)
GDPgrowth	3.264***	3.647***	5.172***
	(0.004)	(0.004)	(0.017)
Urbanization	2.134***	1.644***	5.187***
	(0.358)	(0.422)	(1.487)
Tax	3.713***	3.465***	9.790***
	(0.378)	(0.357)	(1.128)
Constant	1.653**	15.440***	−13.230***
	(0.788)	(0.778)	(2.975)
Country FEs	YES	YES	YES
Year FEs	YES	YES	YES
Number of countries	126	124	124
AR(1) (*p-value*)	0.000	0.000	0.000
AR(2) (*p-value)*	0.474	0.950	0.693
Durbin–Wu–Hausman test *(p-value)*	0.000***	0.000***	0.000***
Sargan statistic (*p*-value)	0.194	0.242	0.204
Observations	1,828	1,694	1,758

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

Table 5.
GMM estimation

developing factors and equipment, investors employing this investment strategy may look to enter countries with strong institutional governance to take advantage of ensured project enforcements (Meyer *et al.*, 2009).

In contrast, international investors tend to invest in countries with a highly corrupt environment through cross-border M&A strategy. This is because multinational companies may benefit from reduced costs and energies related to redundant tangled processes, lower business risk, and greater access to the limited local natural resources thanks to the long-established relationships between their targeted companies and the domestic governmental authorities (Meyer and Estrin, 2001; Meyer and Nguyen, 2005). Based on these arguments, we expect that the negative influence of the shadow economy on FDI activities might be stronger in countries where the corruption level is more severe.

To test this proposition, we include in the baseline model the interaction term between corruption and shadow economy (*Shadow_Economy* × *Corruption*). Our results are presented in Table 6. Column 1 reports the regression result for the total FDI inflows. Columns 2 and 3 present the result for the greenfield FDI and cross-border M&As, respectively.

Overall, the estimated coefficients of the interaction term *Shadow_Economy* × *Corruption* are significantly negative (except for the model of cross-border M&As), indicating that the adverse effect of shadow economy on FDI is more severe in countries with highly corrupt environments. This result thus validates the idea that corruption acts as "sand in the wheel of trade," which harms FDI. Furthermore, corruption acts not only as a further unofficial tax that raises operating expenses but also as a source of business instability and inefficiency that jeopardizes the firm's long-term performance and growth. We also find that in the presence of corruption, while the shadow economy still has detrimental effects on greenfield

Variables	(1) FDI	(2) Greenfield	(3) Merger
Shadow_economy × *Corruption*	−5.022***	−5.253**	−20.330
	(1.863)	(2.064)	(15.560)
Shadow_economy	−0.264	0.154	21.181
	(1.378)	(1.453)	(12.878)
Corruption	2.178***	1.873**	9.027
	(0.791)	(0.865)	(5.806)
Income	0.632***	0.492***	0.702
	(0.139)	(0.149)	(0.983)
Trade_openess	0.006	−0.072	−0.041
	(0.152)	(0.158)	(1.196)
GDPgrowth	2.237***	2.378***	9.204*
	(0.007)	(0.007)	(0.052)
Urbanization	5.043***	3.992***	−13.350
	(1.173)	(1.187)	(9.985)
Tax	0.905**	0.715*	4.504
	(0.353)	(0.400)	(3.553)
Constant	−1.386	14.270***	8.231
	(1.538)	(1.552)	(11.775)
Observations	1,515	1,396	1,451
R-squared	0.888	0.863	0.661
Country FEs	YES	YES	YES
Year FEs	YES	YES	YES

Table 6.
Role of corruption

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

FDI, it does not impact cross-border M&As. This is compared to cross-border M&A investors; greenfield investors might not have the necessary knowledge, experience or local insight to deal with local corruption (Hennart and Reddy, 1997). As a result, they are hesitant to make significant investments and conduct long-term business in a setting marked by the high operating costs and uncertainty associated with corruption as well as by institutional systems that are underdeveloped and ineffective.

4.3.2 High/low land size. As suggested by Woodward (1992), the probability of attracting FDI increases with land area and the level of infrastructure. In this section, we further examine whether the link between shadow economy and FDI holds across countries with different sizes of land. As the premise suggests, countries with larger land resources should attract more FDI inflows than smaller ones, ceteris paribus. Previous empirical evidence suggests that FDI is positively related to land area. In this regard, we expect that the effect of shadow economy will be less prominent in countries having larger land sizes due to the positive impact of land area on FDI. We test our proposition by separating our sample into two subsamples with a large and small size of land, of which, the natural logarithm of a country's total land area is employed to proxy for the land size of a nation. Our findings for these two subsamples are illustrated in Table 7.

Table 7 demonstrates that the negative impact of shadow economy holds for countries with lower land resources only. Overall, our findings support the view that since countries with larger land resources should attract more FDI inflows than smaller ones, the adverse influence of shadow economy will be stronger in countries with smaller land sizes.

5. Conclusion

In this study, we look into how the shadow economy affects FDI inflows by using a dataset of 124 countries worldwide during the 1997–2015 period. The findings of the research demonstrate that the shadow economy negatively influences total FDI inflows, and this adverse impact is mainly driven by greenfield investments – a component of FDI.

	(1)	(2)	(3)	(4)	(5)	(6)
		High land size			Low land size	
Variables	FDI	Greenfield	Merger	FDI	Greenfield	Merger
Shadow_economy	−1.102	−1.162	13.965	−3.950***	−3.796***	6.072
	(1.284)	(1.276)	(11.398)	(1.212)	(1.218)	(11.736)
Income	1.234***	0.906***	3.050***	0.221	0.145	−0.685
	(0.138)	(0.150)	(1.022)	(0.163)	(0.177)	(1.354)
Trade_openess	0.378	0.583**	3.722*	−0.062	−0.176	−2.245
	(0.261)	(0.254)	(1.972)	(0.176)	(0.187)	(1.375)
GDPgrowth	3.646***	3.991***	10.369	2.475**	2.513**	9.609
	(0.009)	(0.009)	(0.070)	(0.011)	(0.011)	(0.066)
Urbanization	5.812***	4.451**	3.181	4.588***	2.427**	−19.538
	(1.772)	(1.750)	(10.340)	(1.217)	(1.211)	(12.607)
Tax	0.426	0.086	3.428	1.669***	1.792***	3.346
	(0.368)	(0.409)	(3.967)	(0.608)	(0.653)	(5.771)
Constant	−5.867***	11.226***	−18.705	2.841	18.587***	30.337*
	(1.719)	(1.687)	(11.905)	(1.792)	(1.925)	(16.321)
Observations	842	778	805	911	838	876
R-squared	0.895	0.872	0.723	0.857	0.834	0.592
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 7.
Role of land size

Given that we have established these negative associations between shadow economy and different types of FDI, we further explore various channels through which the influences of the shadow economy are manifested. In particular, we mention that the shadow economy has more devastating influences on FDI inflows in more corrupt countries. Similar results are also found for the greenfield investment type. On the contrary, we point out that shadow economy and corruption do not impact cross-border M&As. Furthermore, evidence that the adverse influence of shadow economy is stronger among countries with a lower level of land resources has also been provided in this research.

A vital policy recommendation that can be drawn from this work is that the shadow economy should be controlled more strictly since it harms the FDI inflows, especially greenfield investment. The main limitation of our study lies in the measurement of shadow economy. The existing literature has documented many studies using a variety of approaches to determine the scope and growth of shadow economy; unfortunately, it remains challenging to evaluate the validity of these methods, including our study. Therefore, future studies should dive deeper into developing a more advanced method of measuring the shadow economy, which could provide more reliable and accurate data.

Notes

1. Table 1provides the definitions and measurements of all variables used in our study.
2. It is worth noting that in our study, a lag length of one year was chosen.

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