Corruption and FDI Market Selection: Evidence for Swedish Enterprises*

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Abstract

The aim of this paper is to identify mechanisms through which corruption influences the enterprise incentive to perform FDI in a particular market. We empirically investigate enterprise market selection based on enterprise-market data for the Swedish manufacturers. In so doing, we distinguish between legal and illegal ways to capture the 'rules of the game' through corruption. This novel approach allows us to uncover several corruption mechanisms that give rise to counteracting market effects working to favor or disfavor enterprise market investment. In this context, we also investigate how legal and illegal corruption constraints vary with enterprise characteristics. We find evidence of that legal and illegal corruption affect market investment constraints through different channels, which can contribute to explain discrepant evidence of corruption functioning as a 'helping hand' or 'grabbing hand' in the research field.

JEL Classification: F23; L20; P45.

Keywords: Enterprise market selection, Corruption, FDI,

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1. Introduction

Corruption is a major obstacle to making business in international markets.[1] While the corruption impact of undue policy, regulatory and judicial influence on market conditions are regularly studied on a contextual basis, and it has been established that corruption often forms a binding constraint to local business establishment and growth, little is known about the channels through which corruption affect investment incentives. This lack largely represents a one-dimensional focus in the literature on the total effect of corruption on domestic and/or foreign aggregate investment. The scarcity of systematic evidence at enterprise level, at which many corruption effects would be detected, is another contributing factor. The aim of this paper is to identify mechanisms through which corruption influences the enterprise incentive to perform FDI in a particular market. Our findings shed new light on how corruption influences market investment constraints, which provide further guidance of what targets need to be tackled to combat corruption.

Our investigation is performed using census data for Swedish manufacturing enterprises from (the Swedish Institute for) Growth Analysis. The data includes information on investment locations, which is used to construct a complete cross-section sample of enterprise-market observations. We run Probit regressions to identify corruption effects on the enterprise incentive to perform FDI in a particular market, which lets us use the data that contains complete information on enterprise market selection to its best advantage. This distinguishes our work from related research performed at enterprise level, which rely on survey data excluding information on limited market engagement, in that our results are void of market selection bias created by enterprise data sampling restrictions.

A two-stage approach is adopted where general market constraints to enterprise investment are established at the first stage and enterprise-market factors behind the enterprise investment incentive are found at the second stage. The market selection model retrieved at the first stage captures direct and indirect corruption effects while controlling for the impact of other (standard) factors explaining bilateral FDI. To find corruption mechanisms working at market level, we draw upon prior evidence on the implementation of tax and trade regulation and take account of the fact that corruption within legal realms (say, in form of undue influence through lobbying)

[1] See, e.g., Schwab, K., Sala-i-Martin, X. (2014).

can trigger different market effects from corruption outside legal realms (such as undue influence through illicit payments).[2] At the second stage, the market selection model is extended to comprise enterprise factors and indirect corruption effects working at enterprise level. Included enterprise factors are drawn from the research field investigating the enterprise decision to perform FDI (Antràs, 2003; Antràs, 2005; Antràs and Helpman, 2004; Helpman et al., 2004). Scarce related evidence gives us reason to expect these factors to play a role in explaining enterprise investment effects of corruption.

That corruption in the local business environment severely can restrict investment in productive activities is reflected in evidence of a negative relationship between the investment-to-GDP ratio and corruption.[3] Lambsdorff (2003) shows that corruption restricts national capital accumulation by deterring inward investment. Empirical evidence that corruption counteracts inward FDI is provided by Busse and Hefeker (2007) and Hines (1995). More research focus in the field has been placed on investigating the corruption impact on inward bilateral FDI. Results for this relationship are mixed, however, indicating that corruption functions both as a 'grabbing hand' deterring FDI (Egger and Winner, 2006; Habib and Zurawicki, 2002; Wei, 2000) and as a 'helping hand' conducing FDI (Barassi and Zhou, 2012; Egger and Winner, 2005). The contrasting evidence is coherent with the fact that corruption triggers counteracting market effects, which can work to favor or disfavor foreign investment.

The corruption impact on enterprise FDI activity has been empirically investigated by Hakkala et al. (2008), Henisz (2000) and Javorcik and Wei (2009). Using survey data for Swedish manufacturing enterprises, Hakkala et al. (2008) provide evidence supporting the grabbing hand conjecture. They show that corruption restricts the level of market-seeking investment and that enterprises are reluctant to enter into more corrupt markets irrespective of grounds for investment. Concurrent support of the investment-deterrent effect of corruption is provided by Javorcik and Wei (2009), who find that enterprise investment is less likely in more corrupt Eastern and Central European markets. Their results also reveal that enterprises investing despite larger market infiltration of corruption are more prone to set up joint ventures with local affiliates. Evidence coherent with the helping hand conjecture is presented by Henisz (2000), who reveal that US enterprises are more prone to invest in more corrupt market environments.

[2] See Lambsdorff (2003, 2007) and Williams (1999) for accounts of the standard of defining corruption across the legal realm in the corruption research field.
[3] See, e.g., Knack and Keefer (1995) and Mauro (1995).

The rest of this paper is structured as follows. In section 2, the empirical approach is introduced together with a data description. The empirical results are presented and discussed in section 3. In the last section, the main conclusions of the paper are provided.

2. Empirical approach

A two-stage approach is adopted to identify the enterprise market selection model. The model's market determinants, which include standard explanatory factors as well as individual and interaction corruption variables, are identified at the first stage. Standard market determinants in the model are the tariff rate (in the industry), the corporate tax rate, the human/physical capital-labor ratio, the market size and the market distance (as a proxy for bilateral transport costs). The tariff rate, the corporate tax rate and the market distance are market factors expected to restrain FDI engagement.[4] Trade-theoretic fundaments devise that cost advantages in production can stem from national differences in relative factor endowments, which typically are captured by (human or physical) capital-labor ratios. A country with a larger capital-labor ratio offers a lower relative price on capital that is translated into lower capital-intensive production costs. As a result, a capital-abundant country is an attractive location for capital-intensive production. A larger market size provides enlarged sales opportunities and contributes to raise production efficiency in the presence of economies of scale, enhancing the incentive to invest in the location.

Using data from Kaufmann (2004), we distinguish between corruption that comply with legislation (legal corruption) and corruption in form of criminal activity (illegal corruption). These forms of corruption are legal and illegal ways to capture the 'rules of the game' that can have different effects on market investment constraints. The different impact of legal and illegal corruption on the enterprise investment incentive is foremost an empirical question, which we analyze by considering overall effects of identified corruption mechanisms.

The enterprise market selection model depicts the probability that enterprise i in industry j performs FDI in market k:

[4] It can be argued that trade costs, broadly defined as including tariff and transport costs, should have a positive impact on the enterprise decision of setting up production platforms to serve foreign consumers in line with Helpman et al.'s (2004) model prediction. As this expectation is often not borne out in practice, we rely on contrasting formal and empirical evidence provided by Keller and Yeaple (2013, pp. 1437-1439).

$$\text{Prob}(MNE_{ik} = 1) = \alpha_j + \beta_1 TAR_{jk} + \beta_2 TAX_k + \beta_3 KLR_k + \beta_4 HLR_k + \beta_5 MS_k + \beta_6 DIST_k + \beta_7 ICOR_k + \beta_8 LCOR_k + \beta_9 TAR_{jk} \cdot ICOR_k + \beta_{10} TAX_k \cdot ICOR_k + \beta_{11} TAX_k \cdot LCOR_k, \quad (1)$$

where α_j is an industry-specific effect, TAR_{jk} is the bilateral tariff rate on industry imports to the market, TAX_k is the corporate tax rate in the market, KLR_k is the physical capital-labor ratio in the market, HLR_k is the human capital-labor ratio in the market, MS_k is the market size, $DIST_k$ is the market distance, $ICOR_k$ and $LCOR_k$ captures the illegal and legal corruption infiltration in the market and $TAR_{jk} \cdot ICOR_k$, $TAX_k \cdot ICOR_k$ and $TAX_k \cdot LCOR_k$ are interaction variables capturing indirect corruption effects working through the impact on investment constraints imposed by tariff protection and corporate taxation. Bribes extraction in the customs and tax authority is a regular feature in economic systems infiltrated by illegal corruption and evidence abound of corporate circumvention of tax regulation through legally corrupt activities. Equation (1) is estimated as a Probit model using the maximum likelihood method with parameter coefficients obtained as semi-elasticities to report the individual effect of a percentage parameter change on the probability of enterprise market selection.

The identified model of market determinants is extended to include enterprise determinants at the second stage. There is stark evidence that the enterprise decision to perform FDI depends on its domestic production characteristics. Only large enterprises in an industry gain from incurring the high set-up costs of multinational activity (Antràs and Helpman, 2004; Helpman et al., 2004).[5] Amongst multinational enterprises, the largest ones expand their production networks into smaller and less popular markets (Eaton et al., 2011). Enterprises with capital-intensive production are more prone to perform FDI, which is attributed to their lower transaction costs from foreign market engagement (Antràs, 2003).[6] Enterprises with advanced production techniques are reluctant to perform FDI because uncertainty increases costs of monitoring and protecting intellectual property rights (Antràs, 2005).

Limited evidence indicates that these characteristics also affect the corruption impact on enterprise market conditions. Larger enterprises that exert stronger bargaining power can be less susceptible to bribes extraction (Svensson, 2003) and may face different legal corruption

[5] There is a direct link between enterprise size and productivity in these models. For our purposes, it is more useful to focus on enterprise size since this variable features in prior research on corruption effects on enterprise market constraints.

[6] Recent evidence validates this argument empirically (Corcos et al., 2013; Thede, 2015).

constraints. Illegal corruption can increase the enterprise capital intensity required for market investment in line with the Antràs and Helpman (2004) model.[7] Enterprises with advanced production technologies have direct access to specialized judicial expertise that gives them better legal maneuvering capabilities (Cohen et al., 2000), which are likely to reduce the market impediments that they face in legally corrupt systems.

Extending the model to include enterprise determinants yields:

$$\text{Prob}(MNE_{ik} = 1) = \alpha_j + \boldsymbol{X}'_{jk}\boldsymbol{\beta} + \delta_1 SIZE_i + \delta_2 CAPI_i + \delta_3 TECH_i + \delta_4 SIZE_i \cdot ICOR_k + \delta_5 SIZE_i \cdot LCOR_k + \delta_6 CAPI_i \cdot ICOR_k + \delta_7 TECH_i \cdot LCOR_{k,} \quad (2)$$

where $\boldsymbol{X}_{jk}$ is the vector of identified market determinants, $SIZE_i$ is the enterprise size, $CAPI_i$ is the enterprise capital intensity, $TECH_i$ is the enterprise technological capacity and $SIZE_i \cdot ICOR_k$, $SIZE_i \cdot LCOR_k$, $CAPI_i \cdot ICOR_k$ and $TECH_i \cdot LCOR_k$ are interaction variables capturing corruption effects that vary with enterprise characteristics.

Our sample is restricted by data availability. As legal and illegal corruption indices are provided only for the year 2004, our purpose restricts us to perform a cross-country investigation. Since corruption or the lack thereof makes up an integral part of a country's institutions that typically change slowly over time, this limitation should not affect the applicability of our results.[8] Other market variables are based on data sets that are incomplete for the year of observation. Missing observations are approximated by interpolated values if comparable data exists for preceding and subsequent years.

Our enterprise data includes Swedish-owned manufacturers with foreign affiliations, which are identified by at least 50 percent shareholder value in Sweden and at least one employee in a foreign country. Enterprises are categorized according to the standard industrial classification SNI, which corresponds to NACE Rev 1.1 2-digit industry categories. Enterprise variables are constructed from production characteristics of domestic affiliated firms; size is measured by total sales (in natural logarithms of thousand SEK); capital intensity is measured by the sales-weighted firm average of capital stocks per employee (in natural logarithms of thousand SEK); technological capacity is measured by the sales-weighted firm average of technician employment shares. We access census data on firm sales, capital stocks and employment. Firm technician

[7] Empirical support of this conjecture is provided by Corcos et al. (2013) and Nunn and Trefler (2008).
[8] That the market infiltration of corruption is persistent can be observed for general corruption indices (such as the Control of Corruption governance indicator provided by the World Bank).

employment data is obtained from an overarching Swedish labor-market survey, which mildly restricts enterprise data availability.[9] The firm data has been provided by (the Swedish Institute for) Growth Analysis under a strict confidentiality agreement.

Our measurement of standard market determinants is as follows. The bilateral tariff rate is measured by the ad-valorem tariff equivalent of trade barriers levied on industry imports from Sweden. The corporate tax rate is measured by the percentage tax share levied on (taxable) profits. The physical capital-labor ratio is measured by the estimated capital stock divided by the labor force (in natural logarithms of USD). The human capital-labor ratio is measured by secondary education attainment of working-age population.[10] The market size is measured by the GDP level (in natural logarithms of million USD). The market distance is measured by the great circle formula from population-weighted latitudes and longitudes of main cities/agglomerations. Data sources for these market variables are as follows. Ad-valorem tariff equivalents are extracted from the UNCTAD TRAINS data base, corporate tax rates are obtained from the KPMG's Corporate and Indirect Tax Rate Survey (2009), data on estimated capital stocks, labor force and GDP levels comes from the World Bank, educational attainment levels are obtained from the Barro and Lee human captal data set and market distances comes from the CEPII GeoDist data set.

Our corruption variables are modified indices based on Kaufmann's (2004) corresponding legal and illegal corruption components constructed from corporate responses to the World Economic Forum 2004 executive opinion survey. The survey, which comprises the responses of 7284 enterprises in 104 countries,[11] is conducted by national partner institutes to provide an informed assessment of local enterprise responses. Respondents are representing enterprises of varying characteristics in terms of size, ownership and industry classification but a larger sampling weight is placed on enterprises that are larger, privately owned and manufacturing producers. Corruption components are arithmetic averages of enterprise percentage responses agreeing with statements of a business environment void of corruption problems. The legal corruption component is based on survey questions about influence on legal political funding and undue political influence. Survey questions used to construct the illegal corruption component target administrative, capture and procurement bribery, corporate ethics, illegal political funding,

[9] The restriction reduces the enterprise-market data sample size by 2 percent.
[10] Working age is defined by standard global measurement as people that are more than 15 years old.
[11] See Kaufman and Vicente (2011) for more descriptives about this survey data.

state capture cost and banking money laundering and bribery. The components are modified into inverse, proportional, measures that increase with corruption. The resulting corruption indices are reported in Appendix A.

4. Estimation results

In Table 1, we present estimation results for enterprise market selection model specifications including market determinants from equation (1). Direct and indirect corruption effects are identified by gradually introducing individual and interaction variables into a model of standard determinants. Illegal corruption effects are examined in specification I, II and III and legal corruption effects are added in specification IV and V. The estimation results are stable with similar goodness-of-fit and parameter estimates obtain similar magnitudes and precision across specifications.

Specification I includes standard market determinants and the illegal corruption variable. Its parameter estimates are largely in line with expectations and statistically significant at the one percent level. Enterprises are deterred from establishing production in more distant and protected markets, which we attribute to the prominent role of trade in forging production networks. A higher corporate tax rate also deters market investment. Enterprises are more prone to set up affiliate production in human capital abundant countries but not in physical capital abundant countries. The unexpected latter result probably reflects the inverse positive impact of labor abundance whereby low-wage markets attract FDI. Enterprises are more inclined to invest in larger markets. Illegal corruption has a stark deterrent effect on the enterprise incentive to invest in a market.

In specification II, the model is extended to include illegal corruption interaction variables. This alteration leaves estimation results largely unchanged except for a loss of statistical support for the tariff protection variable. The illegal corruption interaction variable with tariff protection has the expected negative sign and receives moderate statistical support, indicating that illegal corruption exacerbates the restrictive tariff effect. This result is coherent with prior evidence provided by Dutt and Traca (2010), which shows that illegal corruption magnifies the trade restrictive effect of tariff protection in a predominant majority of cases (amounting to 95 percent

of their world-wide country sample).[12] Our results suggest that opportunist customs officials regularly take advantage of trade regulation to extract bribes. The illegal corruption interaction variable with corporate taxation receives no statistical support.

Table 1
Enterprise market selection model specifications with market determinants

Variable/Specification	I	II	III	IV	V
TAR	-0.008***	0.000			
	(0.003)	(0.005)			
TAX	-0.069***	-0.067***	-0.067***	-0.069***	-0.072***
	(0.013)	(0.022)	(0.013)	(0.013)	(0.013)
KLR	-0.167***	-0.174***	-0.174***	-0.166***	-0.171***
	(0.014)	(0.015)	(0.015)	(0.016)	(0.016)
HLR	0.065***	0.060***	0.060***	0.059***	0.050***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
MS	0.828***	0.832***	0.832***	0.834***	0.851***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
DIST	-0.654***	-0.666***	-0.666***	-0.645***	-0.671***
	(0.023)	(0.024)	(0.023)	(0.026)	(0.027)
ICOR	-0.134***	-0.131***	-0.131***	-0.115***	-0.083***
	(0.006)	(0.021)	(0.006)	(0.011)	(0.012)
LCOR				-0.027*	-0.072***
				(0.016)	(0.017)
TAR·ICOR		-0.011**	-0.011***	-0.011***	-0.069***
		(0.005)	(0.003)	(0.003)	(0.009)
TAX·ICOR		-0.000			
		(0.021)			
TAX·LCOR					0.057***
					(0.008)
Industry effects	Y	Y	Y	Y	Y
Nobs	23148	23148	23418	23148	23418
Pseudo R2	0.282	0.282	0.282	0.282	0.284
Log. Likelihood	-8343	-8341	-8342	-8340	-8318

Notes: Semi-elasticities are reported. Robust standard errors within parenthesis.
*** p < 0.01, ** p < 0.05, * p < 0.1.

Insignificant variables are dropped from the model in specification III. This alteration imposes negligible effects on the estimation results except for improving the precision of the interaction variable between illegal corruption and tariff protection. In specification IV, the legal corruption variable is added to the model. The estimation results are only marginally affected by this

[12] The authors show that illegal corruption leads to tariff evasion in a remainder of high-tariff countries. Despite using a sample including countries that levy high tariff rates on imports in some manufacturing industries, we cannot find statistical support of that this effect influences enterprise market investment.

alteration. The legal corruption parameter estimate receives a negative sign and is weakly significant, indicating that it has a deterrent effect on FDI market selection.

In specification V, the model is extended to include the legal corruption interaction variable with corporate taxation. The change marginally affects the estimation results except for the legal corruption parameter, which more than doubles in size and becomes highly significant. The added interaction variable receives a positive sign and is highly significant, indicating that tax regulation is more easily circumvented in legally corrupt markets. This result supports the common conception that the corporate world regularly exhausts available means to facilitate tax avoidance. As parameter coefficients take the form of semi-elasticities, the overall effect of a one percentage increase in legal corruption market infiltration at given corporate taxation can be directly assessed from the estimated direct and indirect legal corruption effects. This overall effect may be positive or negative so the results do not confirm that legal corruption deters enterprise investment in countries that exert a corporate tax (i.e. all countries except Bahrain in our sample).[13]

In Table 2, we present estimation results for enterprise market selection model specifications that include market and enterprise determinants from equation (2). The inclusion of enterprise determinants improves estimation goodness-of-fit and lead to a regular size reduction in standard market parameter estimates across specifications. Parameter estimates of enterprise determinants are moderately or highly significant in most cases. The enterprise market selection model is gradually extended to incorporate enterprise determinants in specification VI to X: Individual variables are added to the identified model of market determinants in the first specification, interaction corruption variables are then included in the following three specifications and the finalized model is introduced in the last specification.

In specification VI, individual enterprise variables in form of size, capital intensity and technological capacity are added to identified market determinants. The enterprise size parameter estimate receives the expected positive sign and is highly significant in support of the model implication that larger enterprises are more prone to perform FDI (Antràs and Helpman, 2004; Helpman et al., 2004). The capital intensity parameter estimate obtains the expected positive sign and is moderately significant in line with Antràs' (2003) conjecture that enterprises with higher

[13] To see this, recall that the 95 percent confidence interval for a parameter coefficient is roughly equal to (and slightly smaller than) its value +/- two standard errors.

Table 2
Enterprise market selection model specifications with market and enterprise determinants

Variable/Specification	VI	VII	IIX	IX	X
TAX	-0.043***	-0.044***	-0.043***	-0.043***	-0.043***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
KLR	-0.125***	-0.124***	-0.120***	-0.121***	-0.121***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
HLR	0.031***	0.032***	0.032***	0.032***	0.032***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
MS	0.479***	0.480***	0.470***	0.470***	0.470***
	(0.020)	(0.020)	(0.023)	(0.022)	(0.022)
DIST	-0.432***	-0.430***	-0.423***	-0.423***	-0.423***
	(0.022)	(0.022)	(0.024)	(0.024)	(0.024)
ICOR	-0.069***	-0.069***	-0.175***	-0.196***	-0.198***
	(0.008)	(0.008)	(0.038)	(0.040)	(0.038)
LCOR	-0.010	-0.062***	0.133*	0.144**	0.146**
	(0.010)	(0.014)	(0.070)	(0.070)	(0.070)
TAR·ICOR	-0.035***	-0.035***	-0.036**	-0.037***	-0.037***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
TAX·LCOR	0.026**	0.026***	0.028***	0.028***	0.028***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
SIZE	0.762***	0.760***	0.832***	0.831***	0.830***
	(0.026)	(0.026)	(0.054)	(0.054)	(0.054)
CAPI	0.017**	0.016**	0.016**	0.003	
	(0.007)	(0.007)	(0.007)	(0.010)	
TECH	0.007	-0.040***	-0.037***	-0.030**	-0.028***
	(0.005)	(0.011)	(0.011)	(0.012)	(0.010)
SIZE·ICOR			0.101***	0.104***	0.104***
			(0.034)	(0.034)	(0.034)
SIZE·LCOR			-0.182***	-0.184***	-0.184***
			(0.062)	(0.062)	(0.062)
CAPI·ICOR				0.018*	0.020***
				(0.010)	(0.007)
TECH·LCOR		0.053***	0.050***	0.041***	0.040***
		(0.010)	(0.010)	(0.012)	(0.011)
Industry effects	Y	Y	Y	Y	Y
Nobs	22960	22960	22960	22960	22960
Pseudo R2	0.573	0.574	0.575	0.575	0.575
Log. Likelihood	-4932	-4918	-4912	-4910	-4910

Notes: Semi-elasticities are reported. Robust standard errors within parenthesis.
*** p < 0.01, ** p < 0.05, * p < 0.1.

capital intensity face lower transaction costs to foreign market investment. The parameter estimate for enterprise technological capacity receives no statistical support. Adding individual enterprise determinants to the model affects legal corruption parameter estimates, resulting in a direct effect without statistical support and an indirect effect with moderate statistical support. In combination, the insignificant results for enterprise technological capacity and legal corruption

may reflect estimation bias due to omission of the joint interaction variable. To check this, we add this interaction variable to the model in specification VII.

The estimation results for specification VII re-establishes the impact of legal corruption on market constraints to investment: Strong support of direct and indirect legal corruption effects are obtained once the legal corruption interaction variable with technological capacity is introduced. The parameter estimate for enterprise technological capacity becomes highly significant and receives the expected negative sign in support of Antràs' (2005) conjecture that enterprises with more advanced technology are more reluctant to engage in FDI because they anticipate higher monitoring and judicial costs upon foreign market entry. The introduced indirect legal corruption effect is positive as expected and obtains strong statistical support, indicating that enterprises with advanced technology readily can navigate through legislative processes distorted by legal corruption. The estimation results suggest that this effect may be large enough to offset the deterrent effect of using more advanced technology in line with the argument that the access to judicial expertise acquired by enterprises close to the technological frontier provides them with better means to offset antagonist pressure on judicial outcomes.

In specification IIX, the model is extended to include corruption interaction variables with enterprise size. The parameter estimates for these variables are highly significant. Larger enterprises are less deterred from entry into markets infiltrated by illegal corruption, indicating that these enterprises face lower illegal corruption impediments. The result reveals that this negative link, which previously has been identified in a local market context by Svensson (2003), is transposed to foreign enterprise. Larger enterprises are more reluctant to enter into markets infiltrated by legal corruption, suggesting that these enterprises are targeted by antagonists using policy, regulatory and judicial influence to reap corporate or political gains. The results provide novel evidence that legal and illegal corruption impose contrasting market investment effects for large enterprise.

Including these indirect corruption effects in the model affects parameter coefficients of direct corruption effects in opposite direction, by similar magnitude (albeit receiving weak statistical support in case of legal corruption). These changes indicate that the indirect corruption impact working through enterprise size was absorbed by direct corruption effects in prior estimations, which induced a downward bias in the deterrent direct effect of illegal corruption and falsely captured a deterrent direct effect of legal corruption. Overall, parameter coefficient estimates

suggest that a one percentage increase in legal corruption market infiltration can have a positive impact on the market investment incentive. While this effect cannot be statistically confirmed, it pinpoints that market infiltration by legal corruption can function as a 'helping hand' that favours FDI.

The illegal corruption interaction variable with enterprise capital intensity is added to the model in specification IX. Its parameter estimate has the expected positive sign and is weakly significant, which supports the Antràs and Helpman (2004) model prediction that higher enterprise capital intensity is required for entry into markets more infiltrated by illegal corruption. This addition renders the enterprise capital intensity variable without statistical support, indicating that its full explanatory impact works through the role played by illegal corruption in deterring enterprise investment. The interpretation is validated by results obtained when the enterprise capital intensity variable is dropped from the model in specification X: The parameter estimate for the interaction variable between illegal corruption and capital intensity is of similar magnitude and increases in precision to become highly significant. Overall, a one percentage increase in illegal corruption market infiltration has a negative impact on the incentive to invest in the market. The effect can be statistically confirmed, which indicates that illegal corruption functions as a 'grabbing hand' that deters FDI.

5. Conclusions

While many researchers have studied the corruption impact on FDI, little is known about mechanisms through which corruption affects market constraints to investment. In particular, it is difficult to reconcile discrepant evidence from the literature of corruption that reinforces or counteracts market barriers to FDI without pinpointing underlying counteracting corruption mechanisms. In this paper, we identify corruption mechanisms by empirically investigating enterprise market selection based on enterprise-market data for the Swedish manufacturers. Using corruption data provided by Kaufmann (2004) allows us to disentangle corruption that complies with jurisdiction (legal corruption) and corruption that involves criminal activity (illegal corruption), which can give rise to different market investment constraints. This is a novel approach in the literature.

We find stark evidence that illegal corruption reinforces the deterrent effect of trade protection and legal corruption counteracts the deterrent effect of corporate taxes. The reinforced trade restrictive effect is likely to reflect that opportunist customs officials take advantage of trade regulation, which is coherent with prior evidence showing that bribes extraction is common amongst customs officials in illegally corrupt systems.[14] The counteracted tax effect may reflect that taxes are more easily circumvented in systems infiltrated by legal corruption. Our estimation results suggest that this effect may be large enough for legal corruption to stimulate inward investment into systems that levy corporate taxes.

We also investigate how legal and illegal corruption constraints vary with enterprise characteristics, which enables us to identify several novel mechanisms through which corruption affects the enterprise incentive to invest in a market. Enterprises with more advanced production technology are less constrained by legal corruption, which is likely to reflect that direct enterprise access to judicial expertise enhance maneuvering capabilities in legally corrupt systems. Larger enterprises are less constrained by illegal corruption in line with prior local market evidence that these enterprises are less susceptible to bribes extraction (Svensson, 2003), which may be attributed to their strong bargaining power. Larger enterprises are more restricted by legal corruption, which suggests that they are targeted through legal means by antagonists influencing judicial, regulatory and policy outcomes. In addition, we find evidence supporting the Antràs and Helpman (2004) model implication that larger enterprise capital intensity is required to invest in markets more infiltrated by illegal corruption.

Overall, our results show that the total effect of illegal corruption is deterrent while legal corruption may increase market attractiveness. The result suggests that the sign of the estimated corruption impact can reflect sample composition, and the combination of legal and illegal corruption infiltration, of investigated markets. This could contribute to explain the discrepant results in the literature as many corruption indices, and those used in prior research that provide support of the helping hand conjecture (Barassi and Zhou, 2012; Egger and Winner, 2005; Henisz, 2000), capture both forms of corruption.

[14] See, e.g., Miller (2006).

Acknowledgements

This paper builds on independent work performed with financial support of the Torsten Söderberg Foundation (research grant no E7/10). It is included in the project *Corruption Effects on FDI*, which was inspired by research activities of the International Economics and Institutional Economics seminar groups at Department of Economics, Lund University.

Appendix A

Table A.1
Illegal and legal corruption indices

Country	ICOR	LCOR	Country	ICOR	LCOR
Argentina	0.699	0.838	Latvia	0.631	0.793
Australia	0.080	0.497	Luxembourg	0.188	0.428
Austria	0.177	0.428	Malaysia	0.332	0.529
Bangladesh	0.877	0.811	Mexico	0.600	0.778
Belgium	0.241	0.459	Netherlands	0.089	0.208
Bolivia	0.762	0.855	New Zealand	0.036	0.313
Botswana	0.456	0.527	Norway	0.088	0.214
Brazil	0.491	0.801	Pakistan	0.779	0.765
Canada	0.167	0.571	Panama	0.624	0.876
Chile	0.214	0.465	Peru	0.607	0.801
China	0.564	0.506	Philippines	0.792	0.926
Colombia	0.488	0.778	Poland	0.747	0.856
Croatia	0.701	0.815	Portugal	0.318	0.580
Cyprus	0.449	0.633	Romania	0.790	0.805
Czech Rep.	0.679	0.691	Russia	0.801	0.788
Denmark	0.029	0.253	Singapore	0.067	0.274
Dominican Rep.	0.728	0.780	Slovak Rep.	0.618	0.821
Ecuador	0.715	0.877	Slovenia	0.450	0.727
El Salvador	0.406	0.661	South Africa	0.286	0.535
Estonia	0.273	0.591	Spain	0.378	0.603
Finland	0.031	0.274	Sri Lanka	0.643	0.761
France	0.204	0.601	Switzerland	0.107	0.409
Germany	0.150	0.376	Thailand	0.542	0.884
Ghana	0.541	0.528	Tunisia	0.344	0.512
Greece	0.530	0.739	Turkey	0.685	0.805
Guatemala	0.755	0.860	Ukraine	0.820	0.775
Honduras	0.759	0.888	United Kingdom	0.068	0.326
Hungary	0.572	0.775	United States	0.160	0.692
India	0.606	0.702	Uruguay	0.362	0.611
Indonesia	0.618	0.576	Venezuela	0.701	0.806
Ireland	0.221	0.574	Vietnam	0.711	0.607
Israel	0.199	0.633	Zambia	0.668	0.650
Italy	0.527	0.656			
Japan	0.213	0.538			
Jordan	0.331	0.406			
Kenya	0.639	0.666			

Table A.2
Variable summary statistics

Variable	Min	Max	Mean	St.Dev.
MNE	0.000	1.000	0.151	0.358
SIZE	8.614	18.446	12.786	1.900
CAPI	0.416	10.153	5.912	1.398
TECH	0.023	0.867	0.403	0.166
TAR	0.000	375.326	6.261	10.873
TAX	0.000	42.000	29.068	7.171
KLR	0.044	5.773	3.385	1.468
HLR	6.210	84.004	47.197	16.438
MS	8.517	16.321	11.744	1.790
DIST	6.109	9.764	8.154	0.980
ICOR	0.029	0.877	0.450	0.248
LCOR	0.208	0.888	0.621	0.188

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