Environmental Sustainability as a Determinant of Foreign Direct Investments: Empirical Evidence from Sweden

Olga Golubeva

Abstract A regression model which investigates the relationship between locational choice of multinational enterprises (MNE) and environmental sustainability in host countries as the determinant of foreign direct investments (FDI) has been suggested. The following proxies are proposed for analysis of the environmental sustainability: variables measuring environmental damage, efficiency of natural resources' employment, availability of renewable resources and, finally, governmental ability to maintain a fair distribution of resources. Swedish FDIs in 73 countries worldwide have been examined using a dataset provided by Statistics Sweden. According to the study, 83.2% of variation in the dependent variable, FDI, can be explained by the profitability of investments. The empirical evidence also indicates that environmental sustainability has little impact on foreign investors and that most investment location decisions are not made on the basis of environmental sustainability criteria, at least as it represented by proxies chosen in the paper.

Keywords Foreign direct investments (FDI) • Environmental sustainability • Pollution haven hypothesis • Pollution halo hypothesis • Return on invested capital (ROIC)

Introduction: Research Problem and Purpose

Foreign direct investments (FDI) play an increasingly significant role in the modern economy. In 2015, global FDI flows jumped by 38% to USD 1.76 trillion, their highest level since the global financial crisis of 2008–2009. Looking ahead, FDI flows are expected to decline by 10–15% during 2016. This reflects the fragility of the global economy with its persistent weakness of aggregate demand, elevated geopolitical risks and a slump in multinational enterprises' (MNE) profits. Over the

O. Golubeva (✉)
Stockholm Business School, Stockholm University, Stockholm, SE 10691, Sweden
e-mail: olga.golubeva@sbs.su.se

D. Procházka (ed.), *The Impact of Globalization on International Finance and Accounting*, Springer Proceedings in Business and Economics,
https://doi.org/10.1007/978-3-319-68762-9_2

medium term, however, global FDI flows are projected to resume growth in 2017 and to surpass USD 1.8 trillion in 2018 (UNCTAD 2016).

Analysis of the determinants of FDI has already received much attention in the literature. Existing studies suggest that macroeconomic and political issues, institutions, labour costs, human capital, financial and trade openness, country sizes and natural resources, taxes and investment climate in beneficiary countries are all important factors. Empirical evidence, however, in favour of the above suggested determinants often remains ambiguous (Blonigen and Piger 2011; Goswami and Haider 2014). Several factors have been found to have both negative and positive effects; this indicates an eventual lack of robustness and a limited predictive power of regression models (Kok and Ersoy 2009). Many studies emphasise the open-ended character of this research field, and they suggest that more effort needs to be invested in the systematisation and testing of existing hypotheses to reflect the priorities for FDI decision-making in different regions and countries. Furthermore, additional variables that have not yet been properly investigated may also significantly affect the inflow of FDI.

Sustainability as a possible determinant of FDI has started to attract attention of researchers. The concept of sustainable development was launched in 1987 when the World Conference on Environment and Development (WCED) defined the term as a development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (WCED 1987). The International Union for Conservation of Nature and Natural Resources (IUCN) proposed three main pillars of sustainable development: social, environmental and economic (IUCN 1980). In September 2015, the United Nations Summit adopted the 2030 Agenda for Sustainable Development together with Sustainable Development Goals (SDGs) to be achieved over the next 15 years.

The SDGs carry significant implications for future investments worldwide, including a much larger contribution by MNE through FDI. UNCTAD has estimated that achieving the SDGs by 2030 in developing countries alone will require investment in the range of USD 3.3 trillion to USD 4.5 trillion annually (UNCTAD 2016).

Academic scholars stress the importance of MNE for integrating the SDGs in international investment decision-making and to make FDI to strictly observe the principles of sustainable development (Voica et al. 2015). At the same time, theoretical issues regarding interaction between FDI and the environment of the host countries are far from being settled.

One of the most contentious issues debated today in connection with FDI activities is whether intercountry differences in environmental regulations are turning poor countries into “pollution havens” for foreign investors. The pollution haven hypothesis (PHavenH) predicts that owing to the liberalisation of trade and FDI, firms which are active in pollution-intensive sectors and operate in countries adopting more restrictive environmental policies will transfer production abroad and serve the domestic markets from these new foreign plants (see, e.g. Copeland and Taylor 2003). However, while theoretical studies converge in predicting such a shift, empirical evidence has been mixed.

Studies testing the PHavenH by considering intercountry FDI location choice often do not find robust support for the prediction (Smarzynska Javorcik and Wei 2004). The findings of Dean et al. (2009) regarding the location choice of FDI within China support PHavenH for ethnically Chinese capital in industries that are highly polluting but not for investors from high-income countries.

Mixed evidence is also provided by studies on intra-country FDI location choice, analysing whether differences in environmental stringency across sub-national units affect the spatial allocation of FDI within a country. Eskeland and Harrison (2003) examined the pattern of industrial country FDI across industries within Mexico, Venezuela, Morocco and Cote d'Ivoire but found little evidence to support PHavenH. In contrast, studies focusing on the location of investment in the United States found evidence consistent with the PHavenH (List et al. 2004). These US studies argue that lack of evidence for PHavenH in research articles may be due to a failure to account for endogeneity and measurement error. On the other hand, the behaviour observed in the United States may not characterise FDI flows into developing countries, the focus of concern in the PHavenH (Blonigen and Wang 2005).

A significant part of the research done in this respect has found little evidence for widespread, systematic pollution haven effects; nevertheless, the hypothesis that stricter regulation may, in some given conditions, shift the FDI location still cannot be completely rejected (Golub et al. 2011). Sanna-Randaccio and Sestini (2012) suggested that stricter climate legislation does not lead to relocation of FDI in capital-intensive sectors in the short term. In the long-run, however, total relocation becomes a feasible option, especially for a smaller country with limited market size and when unit transport cost is not high, thus supporting reasonable expenditure for moving the plant to alternative destinations with less strict legislative climates.

The pollution halo hypothesis (PHaloH), by way of contrast, assumes that FDI spreads best environmental management practices and technologies and contributes to the improvement of the environment. According to Gallagher and Zarsky (2007), FDI determines three types of greening effects: transfer of clean technologies, by achieving more efficient and less polluting compared to domestic production; technology leapfrogging, by transferring technologies to control pollution; and spillovers to domestic firms, by transferring best practices in environmental management towards affiliates, domestic competitors and suppliers. Some cross-sectoral econometric studies support the hypothesis that foreign firms are, on average, cleaner than domestic firms after controlling for age, size and productivity of plant (Dardati and Tekin 2010).

Researchers also suggest that FDI, through the adoption of new technologies and the promotion of innovation and efficiency, helps to create a low-carbon economy (Tamazian et al. 2009). MNE, for example, promote environmentally friendly practices in countries with weak regulations by implementing high industrial standards such as ISO 14001 (Zeng and Eastin 2012). Tamazian et al. (2009) found that the increase in FDI inflows is associated with lower levels of CO2 emissions, because FDI inflows encourage research and development investments.

These, in turn, possibly lead to higher technological energy-related efficiency and therefore to lower emissions.

Zheng et al. (2010), testing the hypothesis concerning the relationship between FDI and ambient air pollution across major Chinese cities, found that those cities featuring higher per capita FDI flows have lower pollution levels. Witkowska (2011) examined the potential impact of foreign investors' activities in the Czech Republic, Poland and Slovakia. The research results show that as yet there has been no empirical evidence that FDI has a particularly negative impact on the natural environment in these new EU member states. This study is less conclusive as the absence of such a negative effect does not directly support PHaloH.

A review of the literature suggests that economic theory is ambiguous regarding the question of whether FDI is positive or negative concerning environmental sustainability, as concluded by Yue et al. (2016). The first group of problems in the research field investigating relationships between FDI and environmental issues has been created by weak measures of environmental quality and stringency and by insufficient data for estimating variation in degree of response to different environmental variables (Dean et al. 2009). Another group of problems emerges from the introduction of drastic simplifications in modelling, resulting from attempts to endogenise both location and policy decisions (e.g. Ikefuji et al. 2016). Golub et al. (2011) stressed that the absence of a clear definition of theoretical concepts in the research field constitutes a serious problem and concluded that "the contribution of FDI to the environment is potentially large but largely ignored so far" (p. 33).

This paper attempts to fill some of the gaps in the research field by proposing a theoretical model which investigates the relationship between the locational choice of MNE and environmental sustainability in host countries where environmental sustainability proxies are assessed as determinants of FDI. In our study, we examine Swedish FDI using a dataset provided by Statistics Sweden for the period 2003–2014. The value of Swedish FDI amounted to SEK 2824 billion at the end of 2014, which is approximately 72% of Swedish GDP (Golubeva 2016). A Swedish foreign assets portfolio is relatively diverse, enabling a search to be conducted for general patterns that explain foreign investments made by a particular developed country (Sweden) in the global arena. The study sample covers 73 countries.

Theoretical Model, Method and Definition of Variables

A multiple regression model has been applied to test the ability of suggested independent variables to explain the behaviour of the dependent variable, FDI. We restrict the study of sustainability to an environmental factor. Firstly, economic and social peers in connection with FDI have already been attracted by many researchers,

while investigations of environmental sustainability are still rare. Furthermore, there is some evidence that the most important influence comes from the environmental pillar followed by social and economic pillars (Voica et al. 2015).

Several authors suggested that foreign investors are influenced by the profitability of the project (Kok and Ersoy 2009; Kinda 2010; Mottaleb and Kalirajan 2010; Golubeva 2016). In accordance with standard economic textbooks, Nnadozie and Njuguna (2011) defined profit (Π) as the difference between revenues (R) and costs (C). Given that total revenue is a product between quantity of goods (Q) and its corresponding price (P), Π may be expressed as:

$$\Pi = \Pi(P, Q, C), \text{where } \partial\Pi/\partial P > 0; \ \partial\Pi/\partial Q > 0 \text{ and } \partial\Pi/\partial C < 0 \quad (1)$$

Furthermore, total cost is a combination of the input costs (IN), operational costs (OP) and hidden costs (HD). Input costs are defined as the costs of different factors of production such as land, labour, raw materials and electricity; operational costs include financial and transaction costs, while hidden costs involve, for example, the monetary costs of applying for a licence to start a business.

It is reasonable to assume that profits are maximised in a country where foreign investors can operate their businesses at low cost and produce at full scale with competitive market prices. Therefore, variables which determine profit can also determine the FDI flows into a country. The equation for FDI will be:

$$FDI = f(P, Q, IN, OP, HD) \quad (2)$$

The equations assume that foreign investors prefer to invest in countries where they can produce large amounts of goods at lower costs. We apply return on the invested capital (ROIC) as a measure of profitability of FDI.

Several researchers have argued that the profit-related incentives for investors do not generally work unless they are appropriately combined with other incentives that improve the general investment climate (Athukorala 2009).

The introduction of environmental sustainability variables into the model is handled in a manner similar to the previous studies of Liu (2006), Wang et al. (2011), Voica et al. (2015), Peng et al. (2016) and Yue et al. (2016).

Compared to previous articles, which applied a rather restricted number of variables, this study extends the search to multiple groups of proxies representing the concept of environmental sustainability. These include variables measuring environmental damage (greenhouse gases emission, air pollution), efficiency of natural resources' employment (GDP per energy unit), availability of renewable resources (electricity and freshwater) and a government's ability to maintain a fair distribution of resources (Government Effectiveness Index and Rule of Law). The majority of independent variables chosen for regression analysis are represented by objective data, but two variables are represented by indices (Government Effectiveness Index and Rule of Law). These indices are assigned scores that are used as criteria to rank different countries and are a perception-based data source.

The following equation is proposed for assessing the impact of various environmental sustainability factors on FDI:

FDI (Model 1) = $\alpha + \beta_1$ (ROIC) + β_2 (GDP per energy unit) + β_3 (Greenhouse gases emission) + β_4 (Air pollution) + β_5 (Renewable electricity) + β_6 (Renewable freshwater) + β_7 (Government effectiveness) + β_8 (Rule of law) + ε, where α is a constant, β_1 – β_8 are vectors of parameters to be estimated and ε is the stochastic error term.

The paper goes a step further by removing the profitability factor from the regression model. The revised model (Model 2), with the indicator of ROIC, is as follows:

FDI (Model 2) = $\alpha + \beta_1$ (GDP per energy unit) + β_2 (Greenhouse gases emission) + β_3 (Air pollution) + β_4 (Renewable electricity) + β_5 (Renewable freshwater) + β_6 (Government effectiveness) + β_7 (Rule of law) + ε.

Finally, we investigate whether determinants of FDI and return on these investments, ROIC, can be explained by the same environmental sustainability factors. ROIC becomes the dependent variable, while independent variables previously chosen as determinants remain the same. Model 3 is therefore developed as follows:

ROIC (Model 3) = α + β_1 (GDP per energy unit) + β_2 (Greenhouse gases emission) + β_3 (Air pollution) + β_4 (Renewable electricity) + β_5 (Renewable freshwater) + β_6 (Government effectiveness) + β_7 (Rule of law) + ε.

FDI is defined as an investment involving long-term control by a foreign direct investor of 10% or more of the foreign enterprise resident within a different economy (UNCTAD 2015). The value of Swedish FDI abroad is defined as.

FDI = E + LC + CC – LL – CL + P + IL + OH; where E – total equity; LC – long-term claims; CC – current claims; LL – long-term liabilities; CL – current liabilities; P – directly-owned properties abroad; IL – parent company investment loans; OH – overseas homes.

In the study, as the dependent variable, we use data about FDI stock per country (average for 2003–2014 in million SEK). Direct investment can vary considerably, but for a small country like Sweden, large individual transactions may have a substantial impact on the development of assets going abroad on a year-on-year basis. Averaging allows us to address the long-term implications of foreign stocks mitigating cyclic investment activity.

Income on Swedish direct investment assets abroad, ROIC, is defined as ROIC = R + W + CL – CG – T + I; where R – income after net financial items; W – write-downs (net) included in R; CL – capital losses included in R; CG – capital gains included in R; T – tax in Swedish-owned companies abroad; I – interest on parent company investment loans.

The data for profitability was provided by Statistics Sweden for 2007–2014.[1] Definitions of variables and descriptive statistics are summarised in Table 1.

[1]We performed regression analysis applying FDI stock average as a dependent variable for the periods 2003–2014 and 2007–2014, leaving the other independent variables unchanged. There is no material difference which can lead to disparity in conclusions when results for the two periods 2003–2014 and 2007–2014 are compared.

Table 1 Definition of variables and descriptive statistics

Theoretical concepts	Definition of variables	Time period	Mean	Std. deviation
Swedish FDI	FDI stock per country in MSEK	Average 2003–2014	29679.22	63361.255
Return on capital	Return on capital in MSEK	Average 2007–2014	3049.47	5826.359
GDP per unit of energy used	GDP per unit of energy use is the PPP GDP per kilogramme of oil equivalent of energy use	Average 2007–2013	9.7970	3.80155
Greenhouse gas emission	Total greenhouse gas emissions (kt of CO2 equivalent)	Average 2007–2012	563748.71	1534685.360
Air pollution	Population-weighted exposure to ambient PM2.5 pollution	Average 2010–2014	21.5241	19.02665
Renewable electricity	Renewable electricity output (% of total electricity output)	Average 2007–2012	26.9016	26.35701
Renewable freshwater	Internal renewable resources (billion cubic metres)	Average 2007, 2012, 2014	470.7911	1024.04807
Government effectiveness index	Measures quality of public services; ranges from 0 (lowest) to 100 (highest rank)	Average 2007–2014	69.3771	22.67760
Rule of law	Measures quality of contract enforcement, property rights, police, courts; ranges from 0 (lowest) to 100 (highest rank)	Average 2007–2014	65.4756	25.68195

Source: Author's calculations, Statistics Sweden, World Development Indicators Metadata, The Worldwide Governance Indicators project
N, number of observations = 73

The 73 countries included in the analysis are (in alphabetical order) Algeria, Argentina, Australia, Austria, Bahamas, Belgium, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Korea (South), Latvia, Lithuania, Luxembourg, Malaysia, Mexico, Morocco, the Netherlands, New Zealand, Norway, Panama, Peru, the Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Serbia, Sierra Leone, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Switzerland, Taiwan, Thailand, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States, Uruguay, Venezuela and Vietnam.

A stepwise methodology has been chosen to present the empirical results so that only statistically significant variables are presented in the model. Stepwise regression implies that we add sequentially independent variables that are statistically significant.

Empirical Results

Table 2 summarises the empirical results for Models 1–3. Collinearity statistics are satisfactory. The VIF value being equal to 1 indicates that the independent variables are not strongly correlated with one another. The Durbin-Watson statistic measuring autocorrelation, where successive residuals are correlated, ranges between 1.7 and 2.2, indicating no or very minor autocorrelation.

In our multiple regression, R square for Model 1 as a predictor of FDI is 83.2, which means that 83.2% of variation in the dependent variable, FDI, is explained by the profitability of investments (ROIC). Furthermore, we did not find any evidence that the proxies used for the analysis of environmental sustainability are statistically significant determinants of Swedish FDI. When the profitability factor was removed from the regression model, then the rule of law and greenhouse gases emission appeared to be statistically significant determinants via a stepwise inclusion. R square for Model 2 decreased from 83.2% to 29%. During the next step of analysis, ROIC became the dependent variable, while independent variables previously chosen as determinants remained unchanged. We found that the rule of law and greenhouse gases emission are statistically significant determinants of profitability of investments with R square of 26.2%.

The regression coefficients of greenhouse gases emission are very low in both Model 2 and Model 3. The average amount of increase in FDI (in MSEK) for a 1 unit increase in greenhouse gases emission (kt of CO2 equivalent) is 0.013 (equal to 13,000 SEK) for Model 2 and 0.001 (equal to 1000 SEK) for Model 3. For these

Table 2 Summary of the empirical results

Model		Unstandardised coefficients		Sig.	VIF collinearity	R square	Durbin-Watson
		B	Std. error				
Model 1							
(Constant)		−572.067	3458.739	0.869			
Profit_MSEK		9.920	0.529	0.000*	1.000	0.832	1.742
Model 2							
1	(Constant)	−41306.017	18481.336	0.029			
	Rule_of_law	1084.148	263.012	0.000*	1.000	0.193	
2	(Constant)	−52466.040	17833.735	0.004			
	Rule_of_law	1143.771	249.272	0.000*	1.006		
	Greenhouse_gas	0.013	0.004	0.003*	1.006	0.290	1.900
Model 3							
1	(Constant)	−2926.636	1732.031	0.095			
	Rule_of_law	91.272	24.649	0.000*	1.000	0.162	
2	(Constant)	−4071.354	1648.692	0.016			
	Rule_of_law	97.388	23.045	0.000*	1.006		
	Greenhouse_gas	0.001	0.000	0.001*	1.006	0.262	2.184

Source: Author's calculations; *Significant at 1%

two models, empirical data supports PHavenH, suggesting that FDI is positively related to higher pollution levels in countries chosen as their investment destinations. More important, however, is the discovery that proxies for environmental sustainability lack statistical significance as soon as ROIC is incorporated into the analysis.

In summary, the empirical results of the regression analysis suggest a decisive role of return on capital in predicting FDI. When the profitability factor is included in the regression, only 16.8% of the variation in FDI stock is due to other sources such as random error or variables outside this analysis. The study therefore provides additional support for the literature highlighting the importance of profitability as a determinant of FDI (Kok and Ersoy 2009; Kinda 2010; Golubeva 2016). The results of this study also suggest that variables associated with environmental sustainability have little impact on the stock of Swedish FDI in 73 countries worldwide.

Only when the profitability factor has been removed from the regression do two variables – the rule of law and greenhouse gases emission – become statistically significant determinants. The predictive power of the model decreases alongside the removal of the profitability factor. It seems that further investigation is required in order to understand how to incorporate the requirements of environmental sustainability into the profitability goals pursued by MNE.

The empirical evidence suggests that the rule of law has a significant impact on foreign investors. Transparency, accountability and predictability in the design and implementation of investment and environmental policies and regulations can be an important step in stimulating FDI. Due to the importance of the rule of law for foreign investors, the possible union of two goals – raising FDI and promoting sustainability – may be achieved through enhancing environmental legislation. This conclusion is consistent with the findings of Golub et al. (2011) who suggested that the lack of predictable and transparent regulations (including environmental regulations) has deterred FDI in a number of countries.

Conclusions

The International Chamber of Commerce (ICC), the world business organisation, believes that investment, broadly, and FDI, specifically, can play a critical role towards realising the SDGs. The Addis Ababa Action Agenda – agreed in July 2015 – places a significant emphasis on mobilising private finance in order to support implementation of the SDGs. Investment, specifically FDI, is a key tool for business involvement in sustainable development (ICC 2016). FDI can potentially play a very important role for two reasons. Firstly, the scale of FDI and its significant growth over recent decades makes it a crucial source of financing. Looking at climate change-related financial flows from developed to developing countries, Buchner et al. (2011) note that FDI is the largest source of financing across all public and private sources. Secondly, whereas trade has largely indirect effects, FDI

has the potential to transfer environmentally friendly industries, technology and know-how that directly contribute to environmental progress.

Foreign investors, having multiple options, will seek the best investment opportunities – those with the best prospects for returns on investment and with the lowest perceptions of risk. The empirical evidence of our study shows that most investment location decisions are not made on the basis of environmental sustainability criteria, at least as they are represented by the proxies chosen in this paper. Environmental variables are eventually a small element in these international investment decisions. While the debates regarding the pollution haven or halo hypothesis continue, the current reality might be that businesses, including MNE, are just beginning to take on board the implications of the post-2015 development agenda.

With the SDG targets agreed only in 2015, it is unsurprising that indicators are not yet reflected in the current FDI portfolio of MNE. Neither are policies and processes to encourage further sustainable investment yet in place. It is interesting, however, that one of the policy pillars formulated for investing in sustainable development is related to well-established legal systems (ICC 2016), and the importance of this factor has been supported by our study.

The balance of evidence also suggests that governments must be proactive in capturing the economic, social and environmental benefits of FDI; supportive public policies are required to ensure a reunion between environmental sustainability and the profitability of particular investment projects.

Acknowledgements The author would like to thank Statistics Sweden (SCB) for providing empirical data for research purposes. The author is grateful for helpful comments from the participants of the "18th Annual Conference on Finance and Accounting", Faculty of Finance and Accounting, University of Economics, Prague, Czech Republic, 26th of May, 2017. The author is also indebted to Dr. Alan Wood (UK) for proofreading assistance.

References

Athukorala PC (2009) Trends and patterns of foreign direct investments in Asia: a comparative perspective. J Appl Econ Res 3(4):365–408. https://doi.org/10.1177/097380100900300403

Blonigen BA, Piger J (2011) Determinants of foreign direct investment. NBER working paper series 16704, January 2011. Retrieved from http://www.nber.org/papers/w16704

Blonigen BA, Wang MG (2005) Inappropriate pooling of wealthy and poor countries in empirical FDI studies. In: Moran T, Graham E, Blomstrom M (eds) Does foreign direct investment promote development? Institute for International Economics, Washington, DC, pp 221–243

Buchner B, Brown J, Corfee-Morlot J (2011) Monitoring and tracking long-term finance to support climate action. OECD, Environment Directorate International Energy Agency. Retrieved from http://www.oecd.org/env/cc/48073739.pdf

Copeland BR, Taylor MS (2003) Trade and the environment: theory and evidence. Princeton University Press, Princeton

Dardati E, Tekin M (2010) Multinationals and environmental regulation: are foreign firms harmful or helpful? Retrieved from https://webspace.utexas.edu/ead397/www/index_files/trade_environment.pdf

Dean JM, Lovely ME, Wang H (2009) Are foreign investors attracted to weak environmental regulations? Evaluating the evidence from China. J Dev Econ 90:1–13. https://doi.org/10.1016/j.jdeveco.2008.11.007

Eskeland GS, Harrison AE (2003) Moving to greener pastures? Multinationals and the pollution haven hypothesis. J Dev Econ 70:1–23. https://doi.org/10.1016/S0304-3878(02)00084-6

Gallagher K, Zarsky L (2007) The enclave economy. MIT Press, Cambridge, MA

Golub S, Kauffmann C, Yeres P (2011) Defining and measuring green FDI: an exploratory review of existing work and evidence, OECD working papers on international investment 2011/2, OECD Publishing. https://doi.org/10.1787/5kg58j1cvcvk-en

Golubeva O (2016) Determinants of Swedish foreign direct investments (FDI): how important is profitability? Econ Finance Rev 4(10):1–19. Retrieved from http://www.businessjournalz.org/articlepdf/EFR-41001-June-2016-4(10)-a.pdf

Goswami GG, Haider S (2014) Does political risk deter FDI inflow? J Econ Stud 41(2):233–252. https://doi.org/10.1108/JES-03-2012-0041

ICC (International Chamber of Commerce) Commission on Trade and Investment Policy Foreign Direct Investment – Promoting and Protecting a Key Pillar for Sustainable Development and Growth, 1 March 2016

Ikefuji M, Itaya J, Okamura M (2010) Optimal emission tax with endogenous location choice of duopolistic firms, vol 06. Fondazione Eni Enrico Mattei, Nota di Lavoro, p 2010

Ikefuji M, Itaya J, Okamura M (2016) Optimal emission tax with endogenous location choice of duopolistic firms. Environ Resource Econ 65(2):463–485. https://doi.org/10.1007/s10640-015-9914-0

IUCN (1980) World conservation strategy – living resource conservation for sustainable development: International Union for Conservation of nature and natural resources. United Nations Environment Programme, World Wildlife Fund

Kinda T (2010) Investment climate and FDI in developing countries: firm-level evidence. World Dev 38(4):498–513. https://doi.org/10.1016/j.worlddev.2009.12.001

Kok R, Ersoy BA (2009) Analysis of FDI determinants in developing countries. Int J Soc Econ 36 (1,2):105–123. https://doi.org/10.1108/03068290910921226PO

List JA, McHone WW, Millimet DL (2004) Effects of environmental regulation on foreign and domestic plant births: is there a home field advantage? J Urban Econ 56:303–326. https://doi.org/10.1016/j.jue.2004.03.007

Liu GA (2006) Causality analysis on GDP and air emissions in Norway, Discussion papers 447. Research Department of Statistics Norway, Oslo

Mottaleb KA, Kalirajan K (2010) Determinants of foreign direct investment in developing countries: a comparative analysis. J Appl Econ Res 4(4):369–404. https://doi.org/10.1177/097380101000400401

Nnadozie E, Njuguna AE (2011) Investment climate and foreign direct investment in Africa. Paper presented at the 6th African Economic Conference, Addis Ababa, Ethiopia, 26–28 October 2011

Peng H, Tan X, Li Y, Hu L (2016) Economic growth, foreign direct investment and CO2 emissions in China: a panel granger causality analysis. Sustainability 8(233):1–13. https://doi.org/10.3390/su8030233

Sanna-Randaccio F, Sestini R (2012) The impact of unilateral climate policy with endogenous plant location and market size asymmetry. Rev Int Econ 20(3):580–599. https://doi.org/10.1111/j.1467-9396.2012.01040.x

Smarzynska Javorcik B, Wei SJ (2004) Pollution havens and foreign direct investment: dirty secret or popular myth? Contrib Econ Anal Pol 3:1–32. https://doi.org/10.2202/1538-0645.1244

Tamazian A, Chousa JP, Vadlamannati C (2009) Does higher economic and financial growth lead to environmental degradation: evidence from the BRIC countries. Energy Policy 37:246–253. https://doi.org/10.1016/j.enpol.2008.08.025

UNCTAD (2015) World investment report. Reforming international Investment Governance. United Nations publications, Geneva

UNCTAD (2016) Investor nationality: policy challenges, 2016 United Nations Conference on Trade and Development, United Nations Publication

Voica MC, Panait M, Haralambie GA (2015) The impact of foreign direct investment on sustainable development. Econ Insights Trends Challenges IV(3):89–103

Wang SS, Zhou DQ, Zhou P (2011) CO2 emissions, energy consumption and economic growth in China: a panel data analysis. Energy Policy 39:4870–4875. https://doi.org/10.1016/j.enpol.2011.06.032

WCED (1987) Our common future. World Commision on Environment and Development, Oxford

Witkowska J (2011) Foreign direct investment and sustainable development in the new EU member states: environmental aspects. Comp Econ Res 14(3):5–23. https://doi.org/10.2478/v10103-011-0016-0

Yue S, Yang Y, Hu Y (2016) Does foreign direct investment affect green growth? Evidence from China's experience. Sustainability 8(158):1–14. https://doi.org/10.3390/su8020158

Zeng K, Eastin J (2012) Do developing countries invest up? The environmental effects of foreign direct investment from less-developed countries. World Dev 40(11):2221–2233. https://doi.org/10.1016/j.worlddev.2012.03.008

Zheng SQ, Matthew EK, Liu HY (2010) Towards a system of open cities in China: home prices, FDI flows and air quality in 35 major cities. Reg Sci Urban Econ 40:1–10. https://doi.org/10.1016/j.regsciurbeco.2009.10.003