

Faculty of Economics and Management

Department of Economics



Extended Abstract of Master Thesis

**Determinants of Foreign Direct Investment in
Developing Economies**

Dimitrina Siljanoska

Abstract

The main aim of the diploma thesis is to establish the significance of the determinants affecting inward foreign direct investment on the example of three geographical groups of developing economies: Africa, Developing Asia and Latin America and the Caribbean. The panel data was collected for fifteen countries from each group, 45 countries in total, for the years 2007 to 2017. A least squares dummy variable method is used for the model, specified as a fixed effects one, and verification of the goodness-of-fit of this method, compared to pooled ordinary least squares regression, is performed. The significant determinants for each country group are identified and analyzed. Answers are given to the following three questions: does higher corruption have a negative effect on the inward foreign direct investment for all three groups of developing economies; does higher economic openness of the country affect positively the inflow of investments; Are the same determinants in the foreign direct investment model significant for all three groups of developing economies. The obtained results show that there is no one unifying determinant for the three groups, and that determinants have different significance for each country group. This leads to the conclusion, that it is of utmost importance to take into consideration the specific conditions and characteristics of each country group when choosing proxies, which represent the determinants in the model, in order to obtain the most relevant and meaningful results.

Keywords: FDI, fixed effects, OLS, determinants, GDP, human capital, corruption, corporate tax, capital flows, panel data, developing economies.

Abstrakt

Hlavním cílem této práce je určit významnost hlavních determinantů, které ovlivňují příliv přímých zahraničních investic, na příkladu třech geografických skupin rozvojových ekonomik: Afriky, Rozvojové Asie a Latinské Ameriky s Karibikem. Sběr panelových dat byl proveden pro patnáct zemí z každé výše uvedené skupiny (dohromady 45 zemí) v letech 2007 až 2017. Práce je založena na modelu fixních efektů, který je odvozen s využitím metody LSDV. Zároveň je ověřována vhodnost této metody ve srovnání s Běžnou metodou nejmenších čtverců. Determinanty významné pro každou skupinu jsou identifikovány a analyzovány. Cílem je odpovědět na následující tři otázky: má-li vyšší míra korupce negativní dopad na příliv přímých zahraniční investic všech třech skupin rozvojových ekonomik; má-li vyšší míra ekonomické otevřenosti zemí kladný dopad na příliv investic; jsou-li stejné determinanty v modelu přímých zahraničních investic významné pro všechny tři skupiny rozvojových ekonomik. Výsledky analýzy pak ukazují, že neexistuje jednotný determinant pro všechny tři skupiny, a že každá skupina zemí je ovlivňována jinými determinanty. Závěrem lze konstatovat, že při výběru proxy proměnných, které lze považovat za determinanty modelu, je nesmírně důležité vzít v úvahu specifické podmínky a vlastností každé skupiny zemí pro získání relevantních a smysluplných výsledků.

Klíčová slova: přímé zahraniční investice, fixní efekty, metoda nejmenších čtverců, determinanty, HDP, lidský kapitál, korupce, daň z příjmu právnických osob, kapitálový tok, panelová data, rozvojové ekonomiky

Objectives and Methodology

The main aim of this paper is to evaluate the significance of the chosen determinants affecting foreign direct investment inflows into developing countries. The partial aims are to estimate the goodness-of-fit of the chosen fixed effects model by comparing it to the pooled OLS method, and to answer the three questions posed below:

1. Does higher corruption have a negative effect on inward foreign direct investment?
2. Does higher economic openness of the country affect positively the inflow of investments?
3. Are the same determinants in the foreign direct investment model significant for all three groups of developing economies?

In order to analyze the relationship between foreign direct investments and their determinants, a regression economic framework was established and the model was defined as a fixed effects one. The panel data consists of seven determinants, representing the independent variables, with FDI as the dependent variable in the model. The indicators were chosen for 45 developing countries, divided into three groups of 15 countries for the geographical regions Africa, Developing Asia and Latin America and the Caribbean. The chosen timeframe was 11 years, from 2007 to 2017.

The model was specified as a fixed effects model, while the parameters were estimated by the least squares dummy variable method (LSDV 1). The FDI model consists of one dependent, seven independent and 14 dummy variables (N-1), representing 15 countries per each group. The three country groups were analyzed separately. The dependent variable in the model is foreign direct investment inflow, while the independent ones are: market size, corruption, trade openness, infrastructure, human capital, taxes and inflation. Each determinant was included in the model with an appropriate proxy. Verification of the models was conducted based on coefficient of determination (R^2) and F test for the fixed effects model, which compares the efficient pooled OLS model and the robust LSDV model and tests the degree to which the goodness-of-fit measures changes.

Results and discussion

There is not a single determinant significant for all three groups of countries, with the determinant significance ranging from 3 to 4 determinants in a model. The expected and actual signs of the coefficients also differ and are sometime not in line with the theoretical framework developed in the paper.

For developing Asia, market size has a affects FDI inflows significantly, which is confirmed by the largest t-value in the model (t-value: 5,301>1,96), compared to other determinants. Corruption levels are significant (t-value: -2,885<-1,96; p-value: ,005), however, with a negative coefficient sign, unlike the expected plus. Infrastructure, with proxy of mobile cellular telephone subscriptions (per 100 people), has the expected positive effect on FDI, and is significant to the model (t-value: 2,337>1,96; p-value: ,021). The country dummies resulted in significant coefficients for Israel (,009), China (,047) and Bangladesh (,047) with respect to Turkey as the reference country. All others were insignificant.

Trade openness is the most significant determinant when it comes to investment in Africa (t-value: 2,808>1,96; p-value: ,006). The coefficient is positive, which means that investors are attracted to more economically open countries. Market size (t-value: 2,323>1,96; p-value: ,022) and Human capital (t-value: -2,460<-1,96; p-value: ,015) are significant in the model. Market size's coefficient is positive, as predicted by theory, stating that economically growing markets are important to investors. This has great significance for the Sub-Saharan countries, which have had slower growth rates historically, compared to other emerging markets. The country dummies resulted in significant coefficients for Madagascar (,000), Angola (,000), Niger (,000) and Zambia (,017) at the ,05 level, with respect to Benin as the base country. Chad (,063) and Egypt (,053) are significant at the ,1 level. All others were insignificant.

The Latin America and Carribean countries model is distinguished from the other two. It has the highest p-value of the three, is the only model for which corporate tax proved significant, and has a significantly higher number of significant coefficients of the country dummy variables (11 out of 14). Only three countries, DV3 (Uruguay), DV7 (El Salvador) and DV11 (Chile) are statistically significant. All others have statistically significant parameters, with high levels of probability. Trade openness (t-value: 6,349>1,96; p-value: ,000), Corruption (t-value: 2,838>1,96; p-value: ,005) and Corporate tax (t-value: 2,323>1,96; p-value: ,022) are significant for FDI

inflows in the countries of Latin America and the Caribbean. The actual signs for the coefficients are in line with the expected values and in accordance with the theory presented in this paper.

The obtained results, considering their significance and proper coefficient estimation, can help answer the questions, posed in the paper:

1. Higher corruption has a negative effect on inward foreign direct investment;

The level of corruption proved to be significant for FD inflow in 2 country groups – Asia and Latin America and the Caribbean. The results, however, are inconclusive in terms of coefficient signs. Countries with lower corruption levels (higher corruption perception index) in Latin America attract more investment. Corruption does continue to be a serious issues in these countries, hindering not only investment and economic growth, but their development in general. Corruption is significant for developing Asia as well, but unlike Latin America, corruption does not seem to hinder, but encourage foreign investment.

2. Higher economic openness of the country positively affects the inflow of investments;

Economic openness has a positive affect on FDI inflows for Africa and Latin America and the Caribbean, and is insignificant for developing Asia. Africa and Latin America are to a degree unified by the structure of their exports and imports, with a large part of their export still accounting for natural resources, which is not the case with Asia, that exports technology. This difference could be a factor affecting the significance of economic openness in the FDI model.

3. Same determinants in the foreign direct investment model are significant for all three groups of developing economies;

A determinant that could be left out of the model and is insignificant for all three groups is inflation, i.e. the CPI proxy. Taxes and infrastructure are significant for only one group each, while market size, human capital and trade openness are significant for two country groups, which could mean that further development of these determinants in future studies could provide even more meaningful results. Because of the differences, separating the country groups, and the fact that most determinants proved insignificant because of their proxies, while having strong methodological support, the proxies and determinants they represent must be chosen carefully and adjusted for each region, considering all the differences mentioned above, in order to result in meaningful results.

References

- ABDiOĞLU, N., BiNiŞ, M., & ARSLAN, M. (2016). The Effect of Corporate Tax Rate on Foreign Direct Investment: A Panel Study for OECD Countries. *EGE ACADEMIC REVIEW*, 16(4), 599-610.
- AKAIKE, H. (1974). A New Look at the Statistical Model Identification. *IEEE Transactions on Automatic Control*, 19(6), 716-723.
- ALLISON, P. D. (2009). *Fixed effects regression models*. California: SAGE Publications, Inc.
- AMEMIYA, T. (1985). *Advanced Econometrics*. Cambridge, Massachusetts: Harvard University Press.
- ASIEDU, E. (2006). *Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Instability*. Kansas: University of Kansas.
- AWUDI, G. B. (2002). The role of foreign direct investment (FDI) in the mining sector of Ghana and the Environment. *Conference on Foreign Direct Investment and the Environment*. Paris: Friends of the Earth.
- BAEK, I.-M., & OKAWA, T. (2001). Foreign exchange rates and Japanese foreign direct investment in Asia. *Journal of Economics and Business*, 53(1), 69-84.
- BANE, J. (2018). Human Capital and Economic Growth in Developing Countries: Evidences from Low and Middle Income African Countries. In A. HESHMATI, *Determinants of Economic Growth in Africa* (pp. 237-258). Palgrave Macmillan, Cham.
- BLUNDELL-WIGNALL, A., & ROULET, C. (2017). *Foreign direct investment, corruption and the OECD Anti-Bribery Convention*. Paris: OECD Directorate for Financial and Enterprise Affairs.
- BROADBERRY, S., & WALLIS, J. J. (2017). *Growing, shrinking, and long run economic performance: Historical perspectives on economic development*, NBER Working paper 23343. Cambridge: National bureau of economic research.
- CAMPOS, N. F., & KINOSHITA, Y. (2008). *Foreign Direct Investment and Structural Reforms: Evidence from Eastern Europe and Latin America*, IMF Working Paper 08/26. International Monetary Fund.
- CARKOVIC, M., & LEVINE, R. (2005). *Does Foreign Direct Investment Accelerate Economic Growth?* Minnesota: University of Minnesota, Department of Finance.
- CHENG, L., & KWAN, Y. K. (2000). *The Location of Foreign Direct Investment in Chinese Regions: Further Analysis of Labor Quality*. National Bureau of Economic Research: University of Chicago Press.
- DELLIS, K., SONDERMANN, D., & VANSTEENKISTE, I. (2017). *Determinants of FDI inflows in advanced economies: Does the quality of economic structures matter? Working paper series 2006*. European Central Bank.
- DEMIRHAN, E., & MASCA, M. (2008). Determinants of foreign direct investment flows to developing countries: A cross-sectional analysis. *Prague Economic Papers*, 4, 356-369.
- DUNNING, J. H. (1997). Re-evaluating the benefits of foreign direct investment. In J. H. DUNNING, *Alliance Capitalism and Global business*. London: Imprint Routledge.
- DUNNING, J., & NARULA, R. (2003). *Foreign Direct Investment and Governments; Catalysts for Economic Restructuring*. London: Routledge.
- EASSON, A. (2004). *Tax Incentives for Foreign Direct Investment*. The Hague: Kluwer Law International.

- ECLAC. (2017). *Foreign Direct Investment; ECLAC keynotes for development*. Economic Commission for Latin America and the Caribbean.
- EDWARDS, S. (1990). *Capital flows, foreign direct investment, and debt-equity swaps in developing countries*. Cambridge: National Bureau of Economic Research.
- FREUND, R. J., WILSON, W. J., & SA, P. (2006). *Regression Analysis: Statistical Modelling of a Response Variable* (2 ed.). Elsevier Science & Technology.
- GROPP, R., & KOSTIAL, K. (2000). *The Disappearing Tax Base: Is Foreign Direct Investment (FDI) Eroding Corporate Income Taxes?* IMF Working Paper 00/173. International Monetary Fund.
- HA, J., & IVANOVA, A. M. (2017). Inflation in Low-Income Countries. In J. HA, A. M. KOSE, & F. OHNSORGE, *Inflation in Emerging and Developing Economies: Evolution, Drivers and Policies*. World Bank.
- ILO. (2014). *FDI in Mining and Sustainable Development in Africa*. International Labour Organization.
- ILOSTAT. (2020). *International Labour Organization*. Retrieved from International Labour Organization Department of Statistics: <https://ilostat ilo.org/>
- IMF. (2001). The decline of inflation in emerging markets: Can it be maintained? In I. M. Department, *World Economic Outlook: Fiscal Policy and Macroeconomic Stability* (pp. 116-143). Washington D.C.: INTERNATIONAL MONETARY FUND.
- KAKAR, Z. K., & KHILJI, B. A. (2011). Impact of FDI and Trade Openness on Economic Growth: A Comparative Study of Pakistan and Malaysia. *Theoretical and Applied Economics*, 18(11), 53-58.
- KARAMBAKUWA, T., NEWADI, R., & PHIRI, A. (2019). *The human capital - economic growth nexus in SSA countries: What can strenghten the relationship?* MPRA Paper No. 95199. Port Elizabeth: Nelson Mandela University.
- LIANG, H. (2010). *Three Essays on the Determinants of Foreign Direct Investment (FDI)*. CUNY Academic Works. Retrieved from https://academicworks.cuny.edu/gc_etds/1640
- LOUNGANI, P., & SWAGEL, P. (2001). *Sources of Inflation in Developing countries*, IMF Working Paper WP/01/198. IMF.
- MININGOU, E. W., & TAPSOBA, S. J. (2017). *Education Systems and Foreign Direct Investment: Does External Efficiency Matter?* IMF Working Paper 17/79. International Monetary Fund.
- MONTGOMERY, D. C., RECK, E. A., & VINNING, G. G. (2012). *Introduction to Linear Regression Analysis*. John Wiley & Sons, Incorporated.
- MOOSA, I. A. (2005). *The determinants of foreign direct investment in MENA countries: an extreme bounds analysis*. Victoria: La Trobe University, Department of Economics and Finance.
- NGUYEN, A. D., DRIDI, J., UNSAL, F. D., & WILLIAMS, O. H. (2015). *On the Drivers of Inflation in Sub-Saharan Africa*, IMF Working Paper WP/15/189. IMF.
- Nust.na. (2017). *Comprehensive Notes for DEC712S, Characteristics of Developing Economies*. Namibia University of Science and Technology.
- ODI. (1997). *Foreign direct investment flows to low-income countries: a review of the evidence, Briefing paper*. Overseas Development INstitute.
- OECD. (2019). *FDI in Figures*. Organisation for Economic Cooperation and Development.

- PARK, H. M. (2011). *Practical Guides to Panel Data Modelling: A step by step analysis using Stata*. Nigata: Graduate School of International Relations, International University of Japan.
- PONCE, A. F. (2006). *Openness and Foreign Direct Investment: The Role of free Trade Agreements in Latin America*, MPRA Paper No. 8858. Munich Personal RePEc Archive.
- PRING, C. (2017). *People and Corruption: Latin America and the Caribbean*. Transparency International.
- SHAH, M. H., & KHAN, Y. (2016). Trade Liberalisation and FDI Inflows in Emerging Economies. *Business & Economic Review*, 8(1), 35-52.
- STAPPER, M. (2010). *Tax regimes in emerging Africa: Can corporate tax rates boost FDI in sub-Saharan Africa? ASC Working Paper 88 / 2010*. Leiden: African Studies Center.
- Statista. (2017). *Statista*. Retrieved from Income distribution inequality based on Gini coefficient in Brazil between 2000 and 2017: <https://www.statista.com/statistics/981226/income-distribution-gini-coefficient-brazil/>
- STATISTA. (2020). *Statista*. Retrieved from Global Inflation Rate from 2014 to 2024: <https://www.statista.com/statistics/256598/global-inflation-rate-compared-to-previous-year/>
- SUBASAT, T., & BELLOS, S. (2013). Governance and foreign direct investment in Latin America: A panel gravity model approach. *Latin american journal of economics*, 50(1), 107-131.
- ŠUMAH, Š. (2018, February 21). *Corruption, Causes and Consequences*. doi:10.5772/intechopen.72953
- SUNNY, D. (2015). FDI inflows, gross domestic product and domestic investment in India: An appraisal in the South Asian context with panel data analysis. *Australasian Conference on Business and Social Sciences*. Sydney: University of Mumbai.
- TANZI, V., & DAVOODI, H. R. (2000). *Corruption, Growth and Public finances, Working Paper No. 00/182*. International Monetary Fund.
- TAXFOUNDATION. (2019). *Tax Foundation*. Retrieved from Corporate tax rates around the world: <https://taxfoundation.org/>
- TE VELDE, D. W. (2003). *Foreign direct investment and income inequality in Latin America: Experiences and policy implications, Documento de Trabajo, No. 04/03*. La Paz: Universidad Catolica Boliviana, Instituto de Investigaciones Socio-Economicas (IISEC).
- Trading Economics. (2020). Retrieved from <https://tradingeconomics.com/china/foreign-direct-investment>
- TRANSPARENCY INTERNATIONAL. (2016). *Corruption Perceptions Index: Technical Methodology Note*. Transparency International.
- TREVINO, L. J., DANIELS, J. D., & ARBELAEZ, H. (2002). Market reform and FDI in Latin America: an empirical investigation. *Transnational Corporations*, 11(1), 29-48.
- UKEssays. (2018). *Causes of Inflation Across Developed and Developing Countries Economics Essay*. Retrieved from <https://www.ukessays.com/essays/economics/causes-of-inflation-across-developed-and-developing-countries-economics-essay.php?vref=1>
- UN/DESA. (2019). *World Economic Situation and Prospects*. United Nations department of Economic and Social Affairs.
- UNCTAD. (2018). *Trade and development report: Power, platforms and the free trade delusion*. New York: United Nations Publication.

- UNCTAD. (2019). *World Investment Report, Special Economic Zones*. New York: United Nations Publication.
- UNCTAD. (2020). *Investment Trends Monitor*. New York: United Nations Publication.
- WILLIAMS, R. (2018). *University of Notre Dame*. Retrieved from <https://www3.nd.edu/~rwilliam/>
- WILLIAMS, R. (2020). *University of Notre Dame*. Retrieved from <https://www3.nd.edu/~rwilliam/stats2/125.pdf>
- WORLDBANK. (2020). *The World Bank*. Retrieved from World Development Indicators: <http://datatopics.worldbank.org/world-development-indicators/>
- YASMIN, B., HUSSAIN, A., & CHAUDHARY, M. A. (2003). Analysis of factors affecting foreign direct investment in Developing countries. *Pakistan Economic and social Review*, *XLI*, 59-75.