

Summary

Habilitation thesis

Exploring the role of FDI and multinational companies in host countries: towards economic prosperity and environmental sustainability

Candidate:

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The habilitation thesis entitled “*Exploring the role of FDI and multinational companies in host countries: towards economic prosperity and environmental sustainability*” highlights the results of the research activity I have carried out after obtaining the title of doctor in Economics (2013). My research focused on the impact of foreign direct investments (FDI) and multinational companies in the host economies, with the aim of establishing the major factors that could be considered for further working on improving the wealth and other major objectives on the global agenda, such as greening and reducing carbon emissions. There are four major directions on which I conducted studies, subordinated to this purpose, as follows: (1) Determinants of FDI at global and Central and Eastern European countries’ level; (2) Factors determining business performance; (3) The role of FDI and European funds in enhancing green transition; (4) Designing macro policies for enhancing the impact of FDI in host locations.

The papers I have contributed to have made use of several quantitative methods as follows: (1) panel data analysis for establishing FDI determinants at both global level and in Central and Eastern European (CEE) countries, and also for investigating determinants of profitability for European Union (EU) companies; (2) the machine-learning based random forest methodology to identify the most important predictors of FDI in CEE countries and for classifying economic activity within the EU; (3) balanced panel data approach in OLS and ARIMA frameworks to investigate the competitiveness of high-technology industries in the EU; (4) self-organizing map (SOM) algorithm for forming various clusters based on Euclidian distances that provide similarities and differentiation in order to characterize companies by a series of performance indicators; (5) panel VECM analysis for investigating the nexus among carbon emissions, energy consumption and mix, and economic growth in a modified framework that includes the contribution of inward foreign direct investments and international trade to lowering air pollution; (6) the Leontief Input-Output model for the Romanian economy for estimating the effects of European Structural and Investment Funds (ESIF) in Romania; (7) the Technique for Order

Preference by Similarity to Ideal Solution (TOPSIS), a tool usually used for decision-making issues, for establishing FDI location decision in CEE countries.

Foreign direct investment (FDI) is an important source of capital, with high contribution to the development of the economies, given the positive spillovers generated in host economies. These aspects raise the logical need to identify those particularities of the host countries that attract multinational companies and generate FDI inflows. Besides the natural endowment with resources, an increasing importance is given to created resources, as the location characteristics of a country must transform in enhancers for the multinational companies' competitiveness in the long run. Therefore, the quest for the most appropriate combination of factors which could enhance FDI inflows remained of high interest for governments and economists alike. More than that, the presence of foreign companies should allow and increase the performance of local businesses for spreading wealth across the entire host economy. In addition, in the actual context shaped by a raised concern on climate change and efforts for ensuring green transition, both FDI and other type of investments should prove their capacity in supporting countries' efforts for achieving such objectives. If it not the case yet, public policy measures are to be designed in a manner that help reaching this goal.

Following Introduction, the second part of the thesis reflects the scientific interest in the field of economics and international affairs and the main contributions to the specialized literature, emphasizing the four interdependent research directions.

The first research direction, "*Determinants of FDI at global and Central and Eastern European countries' level*", consists of investigations on FDI attractiveness framework at global level. The particularities raised by CEE countries are further analysed, in order to assess the shift in FDI determinants raised by the transition processes.

The study on location attractiveness for foreign investors comprehensively investigates the last two decades by using a large sample of countries with different economic backgrounds in a fixed effects panel data analysis. The 97 countries considered in the data sample are further divided into three sub-groups of countries clustered on the basis of the level of income for providing a reliable comparison between countries at different stages of development. The focus is on establishing the relevance for FDI of several traditional determinants that are used in empirical studies and on determining whether there are differences based on the level of economic development. Furthermore, we near our approach to the 2008-2017-timeframe, in order to seize any shifts in FDI determinants and to expand the analysis for including other determinants as proxies for created resources, such as institutional quality, technology availability and skilled human capital. The most significant differences reveal that high-income countries are attractive due to their prospects for growth and infrastructure development, while middle-income countries are assessed by investors in a first phase by the quality of their institutions and after that, by the stability of their macroeconomic environments. The most important FDI determinants in low-income countries are trade openness and highly educated labour force. The robustness of our approach is checked through different empirical methods and proxies for the selected variables.

In order to identify the factors shaping competitiveness in CEE countries that also matter for the foreign investors' decision regarding location, we have taken an innovative approach in dealing with the large range of FDI determinants and we have used the machine-learning based random forest methodology to identify the most important predictors of FDI in CEE countries from a set of 15 indicators also present in the calculation of the European Regional Competitiveness Index

2019. The indicators were collected with annual frequency between 2008 and 2017 for seven countries included in our analysis - Bulgaria, Croatia, Czechia, Hungary, Poland, Romania, and Slovakia. Our results indicate that the highest predictive power in attracting FDI is given by each country's particularities, followed by the market size, the digitalization of the economy and labour market. Other variables with good predictive power are GDP per capita, population in tertiary education, the dimension of the population and employment in knowledge-intensive services. The least important predictors of FDI stocks for the countries in our sample are the total factor productivity and the infrastructure quality, potentially due to the proxy considered. When countries particularities are not included, the highest predictive power belongs to employment in high-tech manufacturing, total employment or population and the ratio of urban population, when the previous level of FDI is also considered. Among the variables having a less important role in driving FDI in the CEE region there are population with secondary education, infrastructure size and infrastructure quality. Based on these results, we confirm previous literature findings pointing towards the market-seeking behaviour of multinational enterprises (MNEs) in CEE countries.

In a second paper, we have investigated this topic by taking a deeper look into assessing the differences in FDI determinants during the transition period and in the years of obtaining the EU membership for the CEE countries. The paper also emphasizes the type of FDI determinants, by assessing if foreign investors were attracted by high quality institutions, a stable macroeconomic environment or by the labour market and better infrastructure. The hypothesis was that the FDI determinants changed during the two periods already mentioned, which implied the need to adapt public policies in order to attract foreign investment. The other hypothesis was that the variables expressing the quality of the institutions had a strong impact on foreign investors. The paper used a fixed effects panel data approach, estimated by the method of least squares (OLS - Ordinary Least Squares) for the 11 newest EU member states (Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia) during 1994-2013. The analysed period was split into two sub periods: from 1994 until 2003 and from 2004 until 2013. The first sub period represents the transition years, while the second one the years as part of the EU. In conclusion, our hypothesis stating that FDI determinants are different depending on the stage of transition is confirmed. The variables regarding the institutions' quality are only significant for the transition period in one of the models, mostly as a result of the variables employed. During 1994-2003, investors were mainly interested in open economies, for diminishing the transaction costs. The trade openness facilitates both the import of intermediate goods required for the production and the export of finished goods. At the same time, they are interested in an environment capable of growth, where their products can be sold. For the period starting with 2004, the main advantages of CEE countries rest in their capacity to provide labour force with low costs. As the countries are already regionally integrated, their main advantage rested in cheap labour force and created resources – in our case, in developing their mobile networks.

The second research direction, "*Factors determining businesses performance*", investigated the firms' heterogeneity in terms of their performance and competitive positions, linking the performance to the industry-related factors, location-related factors, and external factors.

The first strand of studies deals with the determinants of profitability for EU companies. In a first approach, we investigated the determinants for profitability in the high-tech sectors, while in a second approach, we expanded the sample of companies to different branches of economic activities across EU countries, while highlighting the performance gap between locally owned and foreign-owned companies. The results obtained widen the sphere of analysis by relating to

determinants of companies' performance grouped in three major categories: industry-related factors, location-related factors and international exposure or external factors. Secondly, country individualization is applied, given that the general landscape of high-tech industries as well as the FDI level in EU suggests significant differences in performance and competitiveness between the old and the new EU countries. Thirdly, the analyses are designed for allowing for the distinction between the factors influencing the competitiveness of firms in the secondary and tertiary sectors, as the services sector exhibit special characteristics. Finally, in order to compensate a gap in the literature, which is more focused on the situation of developed economies, the analyses take into account both older and newer EU members, thus enriching the literature related to the investigation of Central and Eastern Europe industries' competitiveness. The analysis is undertaken for the period 2008–2015 and includes twelve EU countries. The competitiveness of high-tech industries is described by using the apparent labour productivity and gross operating rate and we use several specifications of panel data analysis for estimating the results, which allowed us to observe whether potential country-related idiosyncrasies are reflected in our results. From this perspective, coefficients' signs remain the same in all estimated panels in the two specifications, which is an indication of the robustness of our results but, at the same time, of the lower than expected differences between countries in terms of industries' performance.

The investigations are carried out by using different methodologies, starting with the traditional ones (panel data analysis) to the most recent that imply the use of machine learning. Thus, in a first approach, we use a balanced panel data approach in OLS and ARIMA frameworks to investigate the competitiveness of high-technology industries in the EU with the aim of uncovering the nature of the main explanatory factors behind their performance, in an analysis covering the 2008–2015 period. We obtained different results for industry exposure (a positive link between turnover and productivity for all industries and a negative link between the number of employees and productivity), location or country-related variables (a positive link between turnover and productivity for all industries and a negative link between the number of employees and productivity), international exposure (productivity is positively linked to FDI in the case of two industries (C21 and J63) and negatively linked in the case of two industries (C26 and J59), with similar results for profitability, while the country's general level of competitiveness is significant for high-tech industries' competitiveness, but with specificities across industries).

In the following approach, the research methodology is based on a self-organizing map (SOM) algorithm, which belongs to a class of neural networks trained to organize data so that unknown patterns may be discovered. Here, we characterize companies by a series of performance indicators that are included in the SOM algorithm for forming various clusters based on Euclidian distances that provide similarities and differentiation. The results point towards the presence of performance gaps between companies within EU, although with nuances that need to be properly understood. Foreign-owned and Western-located business outperform the locally owned and Eastern-located ones, at both enterprise and employee levels, but the gap at employee level is lower compared to the gap at enterprise level. This points towards the need for increasing the performance convergence within the EU, since the maintenance of such gaps between the Western and Eastern parts of the EU is damaging over the long-run for business equilibrium. On the other hand, locally owned companies should engage more in the learning process from the foreign-owned ones, with positive effects on the former performance.

We also use the machine learning Random Forest algorithm for classifying economic activity within the EU, building on the relevance of a reduced set of variables alongside location and

industry of origin for the differences in performance between foreign versus locally-owned companies. The personnel costs per employee in the classification is highlighted as the most important variable that discriminates between foreign and locally-owned companies. All in all, the use of different methodologies shows convergent results, which confirms the validity of our hypotheses.

The second part of this research direction is focused on Romania, in an approach for investigating the aggregated performance of foreign-owned versus Romanian-owned companies in the most important four economic sectors in terms of foreign ownership presence, in the period between 2008 and 2014. Although, overall, foreign-owned companies enjoy superior performance than Romanian-owned companies, the picture being slightly nuanced depending on industry and even year in the period under analysis. Therefore, our findings point towards the existence of strong sector-specific performance gaps between foreign-owned companies and Romanian-owned companies that deserve to be further investigated, but, at the same time, towards a learning process from foreign-owned companies that Romanian-owned companies are currently involved in, at least in some sectors.

The third research direction, “*The role of FDI and European funds in enhancing green transition*”, is focused on green transition, given the EU’s environmental goal by 2050 to become the first climate-neutral continent in the world, therefore to conduct specific efforts for diversifying the energy mix and investing in low-carbon energy, on one hand, and enhancing green transition, on the other hand. We establish the role of investments (both foreign and national efforts) in complying with EU objectives.

A first study in this regard investigates the nexus among carbon emissions, energy consumption and mix, and economic growth in a modified framework that includes the contribution of inward foreign direct investments and international trade to lowering air pollution. A two-step approach is used to explore in more detail the links between these variables in 24 EU countries over the period 1995–2018, followed by a panel VECM analysis. The results indicate that there is a unidirectional link between economic growth and carbon dioxide (CO₂) emissions, which should imply a decoupling of environmental improvement measures from the pace of economic growth. We also find bidirectional causal relationships between low-carbon energy shares in consumption and CO₂ emissions, as well as between low-carbon energy share in consumption and GDP per capita, which confirms both pollution haven and the halo effect hypotheses for FDI on gas emissions. However, in the long term, FDI, exports, and imports have positively impacted the reduction in CO₂ emissions; therefore, stronger EU investment and trade integration should be promoted to improve the quality of the environment.

We also developed one of the first estimates on the effects of European Structural and Investment Funds (ESIF) in Romania on supporting the transition to a low carbon economy in all sectors. Using the green Leontief Input-Output model for the Romanian economy, aggregated at NACE Rev.2 economic sectors, the analysis decomposed the direct, indirect, and induced effects of ESIF on the reduction of GHG emissions, following data related to both completed and contracted projects in the programming period 2014-2020. The empirical results revealed the positive, although small, impact of ESIF on environmental degradation, green funds under ESIF leading to a reduction of 1137.5 thousand tonnes in the GHG emissions. Larger effects are expected due to the contribution of the projects which are still under development, estimated to reduce GHG emissions by 4476 thousand tonnes. Based on the results, main policy implications were

evidenced, given the important role that the state has to play in resource allocation and in ensuring the efficiency of funds dedicated to green transition.

Finally, the fourth research direction, “*Designing macro policies for enhancing the impact of FDI in host locations*”, is focused on designing public policy measures that are appropriate for increased the volume of FDI inflows and directing the investment flows in the sectors with high value-added.

We start with a study in which the FDI location decision in CEE countries is investigated based on the attractiveness of policies most influenced by public officials: infrastructure, quality of institutions, labour market and taxes. The attraction degree of the CEE countries in 2007 and 2010 is calculated using the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) method, a tool usually used for decision-making issues. Here, we provide a framework for establishes the state’s role in attracting FDI and identifying whether there is room for further improvement on the public policy side.

In the second part, we deepen the investigation and focus on Romania, evaluating its capacity of attracting FDI by investigating the legal framework and incentives provided to foreign investors and proposing new potential measures as compared to the best practices identified in neighbouring countries. We highlight the main attributes of the Romanian institutional environment regarding FDI in two directions - the analysis of measures to stimulate FDI and the evaluation of the quality of the general institutional environment - and emphasize the existing differences from this perspective between Romania and the countries in the region (Bulgaria, Czech Republic, Poland and Hungary). We evaluate the Romanian institutional environment from the perspective of FDI by referring to these countries as they all share a similar history in terms of the economic and political regime before 1989, the transformations achieved during the 1990s in the process of transition to the market economy and the efforts made in the 2000s for EU accession. From this perspective, each of the five states started at the same time in the race to attract FDI, but the results are significantly different between Romania and the other four countries in the region.

Then, looking at the actual situation of FDI distribution as compared to the main competitors in the area, we establish a series of measures that can guide FDI towards increasing the value-added for the Romanian economy. We consider that the design of public policies must be oriented towards a strategic and structural approach which aims to reevaluate all the opportunities offered by FDI. This should involve two complementary and mutually influential policies, such as improving the capacity of local companies to learn and to absorb knowledge and technological developments from foreign investors, while targeting FDI in high value-added activities.

The next part of the Habilitation thesis (Development of the academic career and future development plans) briefly highlights the main academic, didactic and research achievements.

My entire didactic activity has been held within the Bucharest University of Economic Studies (ASE Bucharest), going successively through the didactic titles of Assistant Professor (2016 - 2020), Lecturer (2020 - 2023) and Associate Professor (2023 - present) at the Department of International Business and Economics within the Faculty of International Business and Economics (REI) of the Bucharest University of Economic Studies.

I have successfully defended my Doctoral thesis in International Business and Economics at the Bucharest University of Economic Studies under the supervision of prof. Ioan Popa, PhD, with the

title “*Foreign Direct Investments analysis in the new European Union member states*” and between June 2014 and September 2015 I have followed a the postdoctoral research program “Performance and excellence in doctoral and postdoctoral research in the field of economic sciences in Romania” contract POSDRU/159/1.5/S/134197, the thematic area of postdoctoral research “Competition and competitiveness on the internal market of the European Union”.

I started my teaching activity in the Department of International Business and Economics in the 2011/2012 academic year, in my second year as a doctoral student of the ASE Doctoral School. My university career began with teaching activities in the disciplines of International Negotiation, Foreign Trade Techniques, International Insurance and European Economic Integration. At present, I am teaching International Insurance for students in both Romanian and English programs, Foreign Trade Techniques within the Faculty of International Business and Economics, and Risk management and Business analysis within the Faculty of Business Administration in Foreign Languages. In addition to the teaching activity, I coordinate the students in the elaboration of the bachelor’s and dissertation papers, as well as the papers for participation in the student scientific communication sessions in ASE.

My scientific activity after defending my doctoral thesis and obtaining the title of doctor in economics (Ministry order 5581 from 03.12.2013) has had an interdisciplinary character, focusing mainly on foreign direct investments and their impact in the host economy, assessing different sources of competitiveness, designing public policies, assessing the international trade activity and enhancing green transition. Until present, I have contributed as author or co-author in 9 books and book chapters published in Romania and abroad, and to over 55 indexed publications. For 2023, I had an H-index of 7 in Web of Science (WOS) from 17 indexed publications that have been cited 85 times (77 times without self-citations) and an H-index of 6 in Scopus from 18 documents that have been cited 85 times. I have received the following diploma/prizes for my research activity and for the international visibility of my research work: the Excellency Diploma for Academic Research for publishing articles in high-ranked international ISI journals (i.e., Diploma Opera Omnia pentru Cercetare Stiintifica de Excelenta, 2023) and the quality of research I conducted has been recognized two awards by UEFISCDI under the Precisi Award Programs, in 2023 and 2019.

I took part in several research projects, which required my ability to work in a team and the ability to concentrate for the preparation of final reports. Among them, I mention the participation as a team member in the Young Teams project PN-III-P1-1.1-TE-2021-1339 “An alternative approach for modeling speculative bubbles: implications for financial stability”, the 2015 and 2017 Strategy and Policy Studies (SPOS) projects developed by the European Institute of Romania, of the EUPACK projects on public administration in Romania coordinated by the European Commission and the collaboration with the China-CEE Institute in Budapest, Hungary during 2018-2023. I have also been involved in several projects with the business environment, the most representative being the studies developed for the Foreign Investors Council on the impact of foreign direct investments in Romania and the “Analysis of the impact of the new European directive regarding the excise duty on tobacco products on Romanian consumers, the tobacco market and the stability of budget revenues in Romania”, carried out following the cooperation of ASE- British American Tobacco (Romania) Trading S.R.L. In addition, I participated as team member in several institutional projects within the university, such as: “ReStart Economy. Measures to combat the economic and social effect of COVID 19 in Romania”, “Research on the implementation of Regulation (EU) 2020/852 of the European Parliament and of the Council of June 18, 2020 on the establishment of a framework to facilitate sustainable investments, related to the field of climate change on the

evolution of the financial-banking system”, “Business Environment Barometer”, “Analysis of the impact of current uncertainties on the economic environment”.

I also have experience as Editor and reviewer of international peer-reviewed academic journals. Currently, I am an associate editor of the Romanian Journal of Economic Forecasting (ISI indexed) and I am part of the peer review team of the Romanian Journal of European Affairs, Romanian Economic Journal and Financial Studies. Recently, I have produced evaluation reports for journals such as: Cogent, De Economist, Journal of Competitiveness, Sustainability, Energies, International Journal of Environmental Research and Public Health, based on invitations from the editors. In addition, I was part of the peer review team for various editions of the international conferences International Conference on Business Excellence (ICBE) and International Conference on Economics and Social Sciences (ICESS), held within ASE, and Recent Advances in Economic and Social Research (RAESR), within the Institute of Economic Forecasting, Romanian Academy.

Building on my achievements and experience until now, the plan for the development of the didactic activity focuses on the following main objectives: (i) developing a didactic activity focused on the individualization of the educational process and its adaptation according to the needs of the students; (ii) promoting didactic methods that require the active involvement and participation of the student to subscribe to the education process for a sustainable development, through the use of interactive teaching methods in classes, including the ones based on digital frameworks, in order to increase the quality of information transmission and assimilation of knowledge by students; (iii) permanent analysis of the new developments in the disciplines of teaching activity and the continuous development of the teaching materials for being adapted to the latest information in the field of interest; (iv) permanent connection to the dynamics of the surrounding environment in terms of teaching activity, scientific research and labour market requirements by updating the course and seminar offerings for the disciplines I teach based on the newest approaches in terms of content and teaching methodologies, as well as involving the representatives of the business environment and public sector in Romania and abroad in presenting their experience to students, acting as guest speakers in my lectures and becoming partners in research and development projects; (v) encouraging research activity among students, by familiarizing them with the results of the scientific research as well as encouraging in taking the path of research and use quantitative methods for stating the results of their works; (vi) increasing the number of students coordinated in the elaboration of undergraduate and/or dissertation theses; (vii) contributing to the development of topics for the elaboration of bachelor’s and dissertation theses as well as participating in the process of elaboration/revision of curricula; (viii) exchange of experience by participating in Erasmus+ teaching mobility, in order to establish and strengthen contacts with personalities from the academic area of other countries, exchange experience, and carry out my work in an international and multicultural environment.

In terms of research directions, I intend to continually update and improve my analytical skills and work on several objectives. The first one is the development of a portfolio of publications in leading academic journals. I propose to continue publishing scientific papers in journals with a high impact factor at home and abroad and in those indexed in international databases, as well as publishing books in recognized international publishing houses and in recognized national publishing houses, respectively. Therefore, I expect increasing the number of scientific articles published in WOS indexed journals, particularly in Q1 and Q2. Another objective is to develop personal recognition at the national level in my fields of interest. My intention is to continue to deepen the topics of interest addressed so far and to expand into new subsequent area, with results

visible in increasing the number of participations in prestigious scientific events; conducting research/mobility visits at prestigious international universities and research centres; extending my participation in the editorial boards and/or scientific committees of prestigious academic journals and professional associations; extending my participation as a reviewer for prestigious academic journals, particularly for journals indexed in Web of Science. Another objective is to be involved in research projects, with national and international funding, and in partnership with the business environment. Such activity will be one of my main areas of interest in the next period. I will consider participating in scientific research projects as a member and be in charge of them. I believe that the activity currently carried out, both as a professor and as a scientific researcher within the Institute of Economic Forecasting, will facilitate this endeavour and respond to this desire in the development of my research activity. In addition, my aim is to involve students in the research teams. Finally, I intend to expand my collaboration with foreign universities and foreign research institutes to increase the qualitative level and visibility of research. Such an activity will give me the opportunity to be permanently connected to new research in the field and applied research methods.

Mainly, I intend to contribute to the development of a transparent, fair, performing, inclusive and competitive academic environment.

The Habilitation thesis concludes with the list of tables and figures and the References that lists the main bibliographic references referring to the papers that support the main research directions highlighted in the thesis.