ASSESSING THE LINKS BETWEEN FDI AND ECONOMIC PERFORMANCE THROUGH ECONOMETRIC MODELS

MACOVEI ANAMARIA-GEANINA

Academy of Economic Studies of Moldova/„Ștefan cel Mare" University of Suceava
Chișinău, Republic of Moldova/Suceava, România
anamaria.macovei@usm.ro
ORCID: 0000-0002-7995-1145

PÂRȚACHI ION

Academy of Economic Studies of Moldova
Chișinău, Republic of Moldova
ipartachi@ase.md
ORCID: 0000-0002-8042-983X

Abstract: *This study analyzes the relationship between economic performance and four macroeconomic indicators foreign direct investment, consumer price index, producer price index and employment in the period 2010-2024 for the countries Romania and Republic of Moldova. Three multiple regression models were obtained and differences were identified between the two economies in terms of the impact of macroeconomic indicators on economic performance. The results indicate that the economic performance of the Republic of Moldova is positively influenced by foreign direct investment, the consumer price index and employment and negatively by the producer price index. In Romania, price and employment indicators have a positive impact, while foreign direct investment has a negative impact on economic performance. The general aggregate model confirms that foreign direct investment, the consumer price index and the producer price index have a positive impact, while employment has a negative impact on economic performance. Therefore, the study highlights the structural differences between the two countries and the need to design tailored economic policies that maximize the positive impact of FDI and minimize the domestic consequences on economic performance.*

Keywords: foreign direct investment, economic performance, multiple linear regression.

JEL Classification: F21, C19

1. Introduction

In recent decades, economic globalization has changed trade dynamics, capital movements and the structure of international markets. In this respect, foreign direct investment (FDI) is the transfer of capital, technology and know-how between economies. For emerging and transition economies, FDI is not only a source of external finance, but also a tool for economic growth through infrastructure modernization and job creation. FDI requires the involvement of foreign investors through a long-term commitment leading to stability and economic and social benefits. As competition to attract foreign capital has intensified, governments have adopted proactive policies, offering government measures such as tax breaks, accessibility to infrastructure and legal stability. Thus, FDI is an indicator of investor confidence in a country's economy and institutional structure.

The relationship between FDI and economic performance is a topical issue in the context of European integration and economic convergence between Member States. At national level, governments are seeking to stimulate foreign investment through economic policies, through legislative and fiscal changes. Regional development strategies emphasize the important role of FDI in the development of disadvantaged areas by attracting investors to help diversify local economic activities, boost competitiveness and connect them to global value chains.

The main purpose of this study is to analyze the link between FDI, macro-economic indicators and

the economic performance of a national economy by applying econometric models. The study aims to analyze the influence of macroeconomic indicators: foreign direct investment, consumer price index, producer price index and employment on economic performance in Romania and the Republic of Moldova over the period 2010-2024. In order to achieve this goal, the research adopts a quantitative approach, based on the use of multiple linear regression models. The analysis is based on a set of statistical data from official sources (Eurostat, INS, INSM).

The structure of the study is organized as follows: the first part presents the theoretical framework of FDI and their implications for the economy; this is followed by a review of the literature, then by a detailed description of the dataset and the methodology applied. The central part is devoted to the exposition of the results and their interpretation, and the concluding section draws conclusions, policy recommendations and possible future research directions.

2. Literature review

The relationship between FDI and economic performance has been intensively studied in the literature. Theoretical and empirical perspectives vary, depending on the economic context, the period under analysis and the indicators considered. The literature emphasizes that the effects of FDI on economic performance are not uniform, but depend on the quality of institutions, domestic market development, human capital and the absorptive capacity of the host economy. Classical economic theories, such as the comparative advantage theory (Ricardo) or the Heckscher-Ohlin theory (Ion, 2007), argue that international capital flows should contribute to a more efficient allocation of resources and, therefore, to economic growth. Caves (1974), Blomström and Kokko (1998) emphasize that FDI can generate positive externalities on the host economy through technology transfer, local productivity growth and human capital formation. Most empirical studies confirm a positive relationship between FDI and GDP or productivity growth, especially in emerging economies (Alfaro et al., 2004; Borensztein et al., 1998). Borensztein, De Gregorio and Lee (1998) showed that FDI contributes positively to economic growth in developing economies, provided that a minimum level of human capital is present. They consider FDI as a source for advanced technologization and modernization. Alfaro et al. (2004) emphasize that the positive effect of FDI on economic growth is magnified in the presence of well-developed financial markets, suggesting that institutional infrastructure plays a critical role. Studies for Central and Eastern European countries (Campos & Kinoshita, 2002; Campos & Kinoshita, 2002; Javorcik, 2004; Mîşu, 2019) show that FDI played a significant role in restructuring post-transition economies, but their impact on economic performance was conditional on political and economic stability. Mishra et al. (2001) find that FDI is disproportionately concentrated in the more developed regions of a country due to unbalanced public policies. Basile et al. (2008) study the distribution of FDI in 8 EU countries between 1991-1999 and conclude that human capital and public infrastructure influence regional attractiveness. Nunnenkamp (2004) finds that FDI contributes to poverty alleviation and economic growth under certain conditions, but not all FDI is beneficial, so those oriented towards resources or domestic markets may have limited long-term development effects compared to FDI oriented towards exports and innovation. The authors Görg and Greenaway (2004) assess various evidence (wages, exports, productivity growth) that contribute to the attraction of FDI through government policies. There are studies in the literature that investigate the risks associated with FDI, such as profit repatriation, unfair competition to local firms, or capture of the domestic market. These are mentioned by authors such as Rodrik (2001) and Chang (2002), who advocate for economic policies to regulate in attracting FDI. The European Union encourages the free movement of capital and the development of a single market, in which FDI plays an important role in reducing regional disparities and promoting economic and social cohesion. In Central and Eastern Europe, including Romania and the Republic of Moldova, FDI has been a strategic policy instrument for the transition to a market economy and integration into the European dimension, by taking on European standards of production, infrastructure, services and

corporate governance. In the context of Romania, several researches consider that FDI contributes to the modernization of industrial sectors, export growth and employment (Simionescu, 2017; Zaman & Georgescu, 2018). Munteanu (2021) studies the vulnerabilities of the local economy in case of dependence on FDI and limited impact on long-term development. In the Republic of Moldova, the literature emphasizes the importance of FDI in the developmentand diversification of the economy, as well as in the attraction of know-how. According to Murafa (2024), FDIs have an effect on the development of the industrial sector, but are negatively affected by political instability and infrastructure deficiencies. further emphasizes the Importance of institutional strengthening and governance reforms to increase investment attractiveness (Hîncu & Litocenco, 2022).

Analyzing the effects of FDI on economic performance is a decision-making tool in shaping sustainable development policies, attracting foreign capital and reducing territorial disparities. Assessing the relationships through econometric methods is important to identify influencing factors for adjusting public policies and amplifying the impact of economic interventions.

3. Data, methodology and econometric model

To analyze the relationship between economic performance (EP) and macroeconomic indicators: FDI, consumer price index (CPI), producer price index (PPI) and employment (EP) we consider a database containing financial information for Romania and the Republic of Moldova and apply a multiple linear regression model of the form:

$$EP = \alpha + \beta_1 \cdot RCPI + \beta_2 \cdot RPPI + \beta_3 \cdot RFDI + \beta_4 \cdot RPE + \varepsilon$$

where: EP is the dependent variable, the profitability indicators RCPI, RPPI, RFDI and RPE are the independent variables, α, β_1, $\beta_{(2)}$, β_3 and β_4 are the regression model parameters and ε is the random error variable.

The analysis was based on data for the Republic of Moldova and Romania for the period 2010-2024. The collected information was initially processed in Microsoft Excel, and subsequently a multiple linear regression model was built using the IBM SPSS 26 program.

4. Results and discussions

Three econometric multiple regression models were developed and tested in order to assess economic performance (EP) as a function of a number of macroeconomic indicators - return on foreign direct investment (RFDI), return on consumer price index (RCPI), return on producer price index (RPPI) and return on employment (RPE). These models were applied separately for the Republic of Moldova, Romania, as well as for a pooled sample (general model), using aggregated data and statistically processed using SPSS.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Moldova	.961[a]	.923	.892	.11213	1.400
Romania	.644[a]	.414	.180	.83563	2.521
General	.858[a]	.736	.694	.77614	1.980

a. Predictors: (Constant), RPE, RCPI, RPPI, RFDI

b. Dependent Variable: EP$_{Moldova}$, EP$_{Romania}$, EP$_{general}$,

Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

Analyzing the Model Summary, we observe a very strong correlation ratio for the Republic of Moldova, 0.961, which indicates a strong linear relationship between economic performance and the explanatory variables analyzed: the RFDI, RCPI, RPPI and RPE. This result suggests that the variations of these macroeconomic indicators explain a significant proportion of the evolution of economic performance. At the same time, the high value of the determination ratio $R^2 = 0.923$ reflects the fact that 92.3% of the variation in economic performance is explained by the model, which denotes

a very good explanatory power and a model well adjusted to the economic realities of the Republic of Moldova. For Romania, the correlation ratio R = 0.644 indicates a medium correlation, which points to the existence of a significant but not very strong relationship between the explanatory variables (RFDI, RCPI, RPPI, RPE) and economic performance. This average level reflects the influence of other influencing factors, but also the complexity of the Romanian economic structure, where the effects of FDI and other macroeconomic indicators are influenced by political instability and fiscal changes. Thus, in the case of Romania, the change in economic performance is 41.4% influenced by the change in RFDI, RCPI, RPPI, RPE. In the general model, which combines the data for both countries, the value of the correlation ratio is 0.858, indicating a strong correlation. This result shows that, overall, the variables analyzed are relevant in explaining economic performance. However, this result may also show structural differences between the two economies.

Table 2. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
Moldova	Regression	1.512	4	.378	30.057	.000[b]
	Residual	.126	10	.013		
	Total	1.637	14			
Romania	Regression	4.941	4	1.235	1.769	.212[b]
	Residual	6.983	10	.698		
	Total	11.923	14			
General	Regression	42.056	4	10.514	17.454	.000[b]
	Residual	15.060	25	.602		
	Total	57.116	29			

a. Dependent Variable: $EP_{Moldova}$, $EP_{Romania}$, $EP_{general}$,
b. Predictors: (Constant), RPE, RCPI, RPPI, RFDI
Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

Analyzing the Anova table testing the overall significance of the models, it can be observed that in the case of the Republic of Moldova and the overall model, the models are statistically significant, which means that at least one of the variables RFDI, RCPI, RPPI, RPE contribute significantly to explain the economic performance, which supports the use of the models for predictions. On the other hand for Romania the Sig. value is 0.212 and exceeds the significance threshold, so the model is not statistically significant.

Table 3. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Moldova	(Constant)	1.987	.628		3.163	.010
	RCPI	4.502	2.716	2.332	1.657	.128
	RPPI	-2.897	2.878	-1.347	-1.007	.338
	RFDI	.016	.081	.029	.201	.845
	EPR	.010	.077	.016	.133	.897
Romania	(Constant)	5.664	.764		7.414	.000
	RCPI	.412	.239	.488	1.727	.115
	RPPI	.092	.210	.124	.437	.671
	RFDI	-.639	.435	-.391	-1.472	.172
	EPR	.157	.343	.124	.458	.656
General	(Constant)	3.537	.199		17.753	.000
	RCPI	.757	.193	.437	3.914	.001
	RPPI	.286	.185	.179	1.544	.135
	RFDI	.354	.169	.285	2.092	.047
	EPR	-.565	.180	-.438	-3.143	.004

a. Dependent Variable: $EP_{Moldova}$, $EP_{Romania}$, $EP_{general}$,
Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

According to the coefficients table, the three econometric models will be determined. The model for the Republic of Moldova has the form:

$$EP_{Moldova} = 1.987 + 4.502 \cdot RCPI - 2.897 \cdot RPPI + 0.016 \cdot RFDI + 0.010 \cdot RPE$$

In the case of the Republic of Moldova, from the data obtained from the multiple regression analysis we can conclude that the increase in economic performance is due to the increase in the indicators of the CPI, the RDIER and the EPR. CPI is a leading indicator in a market economy and the increase in the CPI leads to increase in economic performance. Republic of Moldova inflation is slightly high, which leads to price liberalization and economic integration. Increasing RFDI indicates the ability of FDI to boost economic performance (Alexa & Hachi, 2024) through the inflow of capital, technology and access to foreign markets. In the model for the Republic of Moldova, there is a negative relationship between EP and RPPI, decreasing RPPI is associated with an increase in economic performance, which indicates that decreasing producer prices is associated with an improvement in firms' economic performance.

The model for Romania has form:

$$EP_{România} = 5.664 + 0.412 \cdot RCPI + 0.092 \cdot RPPI - 0.639 \cdot RFDI + 0.157 \cdot RPE$$

In the case of Romania, multiple regression results indicate that EP is positively influenced by RCPI, RPPI and RPE, while the influence of RFDI is negative. The positive correlation between RCPI and EP suggests that moderate consumer price inflation leads to higher economic activity in Romania, indicating a favorable consumption climate, higher firm incomes and an active business environment. Firms are able to capitalize their output at high prices, increasing revenues and operating profit. It should be noted that Romania has a predominantly consumption-oriented economic profile, characterized by a high dependence on imports for a wide range of goods and services. The positive cost efficiency effect of employment reflects the fact that labor plays a key role in generating economic value. In the case of Romania, the relationship between RFDI and PE is paradoxical, as many studies (Nistor, 2014; Manescu, 2025; Alexa & Hachi, 2024) find that attracting FDI leads to higher economic performance. This paradoxical effect is due to the substitution effect, i.e. FDI replaces domestic capital.

To assess the common trends of the two countries, a general aggregate model was constructed and estimated using a pooled sample integrating observations from both countries, which has the form:

$$EP_{general} = 3.537 + 0.757 \cdot RCPI + 0.286 \cdot RPPI + 0.354 \cdot RFDI - 0.565 \cdot RPE$$

Analyzing the general model, the results of the multiple regression show a significant positive influence of the variables RCPI, RPPI and RFDI on economic performance, while RPE has a negative influence. In both countries CPI growth leads to higher economic performance, reflecting high domestic demand and a favorable economic climate. The general model emphasizes the increase in economic performance is due to the increase in RPPI. This positive relationship indicates output prices pick up cost increases. A difference is observed between the two countries with respect to PPI which indicates a difference between the two economies due to different levels of development and integration in international markets. According to the general model the attraction of FDI leads to an increase in economic performance, which is confirmed by studies (Dinu & Socol, 2006; Iordache, 2007; Tornea, 2016; Macovei et al., 2024). As in the case of PPI, there is an inverse relationship between the two countries, due to the distinct ways of leveraging foreign capital. Government policies in both countries need to be tailored to channel foreign investment towards strategic and sustainable sectors specific to each country. From the general model equation, economic performance decreases if EPR increases. There are situations where increasing the

number of employees is not enough to increase performance, technological upgrading is needed.

In order to understand the structure and distribution of the variables used in the econometric models, histograms corresponding to the economic performance for the two countries and the overall aggregate model were generated
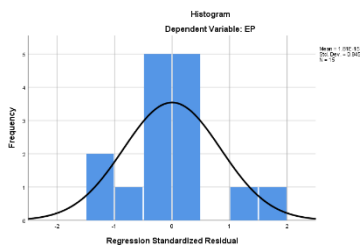
Republic of Moldova   Romania
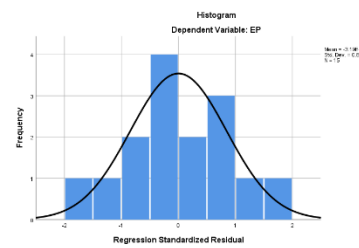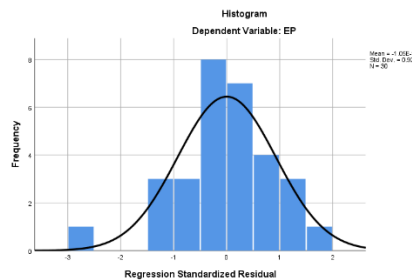

General aggregate model

Figure 1. Histograms
Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

Thus, analyzing the three models, some differences can be observed, which confirms the importance of the national context in the formulation of government policies and valorization of FDI.

5. Conclusions

The study analyzed the relationship between economic performance and four macroeconomic indicators: foreign direct investment, consumer price index, producer price index and employment for two Eastern European economies, the Republic of Moldova and Romania in the period 2010-2024. The analysis carried out using multiple regression obtained three different models, which reveal significant differences in the impact of macroeconomic indicators on the economic performance of the two countries.

For the Republic of Moldova, RFDI, RCPI and RPE have a positive effect and RPPI has a negative effect, revealing a very strong correlation between these variables. These results suggest that the economy of the Republic of Moldova is dependent on foreign capital inflows and domestic demand dynamics, and the increase in production costs have a negative impact on economic performance. In contrast, in Romania, economic performance is positively affected by the price index and employment, but negatively by RFDI. This negative relationship reflects the limited integration of foreign capital into the national production ecosystem and practices such as profit repatriation and outsourcing of services.

The general aggregate model of the collective sample confirms that RFDI, RCPI and RPPI have a positive impact on economic performance, but also indicates a negative impact of EPRs, due to structural inefficiencies in the labor market. In order to effectively use the general aggregate model for forecasting, both countries need to adopt coherent policies to increase the absorptive capacity of

foreign direct investment, stimulate the reinvestment of profits in the domestic economy and support the process of integration of domestic firms into global value chains. Reforms are also needed on the labor market to increase productivity, to qualify the workforce to the requirements of the modern economy. We can conclude that only through government policies adapted to the requirements of the global economy, both economies can transform the identified trends into sustainable growth paths.

References

1. Alexa, A., & Hachi, M. (2024). *Economic-investment activity in Romania-a benchmark for the Republic of Moldova*. In Scientific Symposium of Young Researchers, 248-252, https://doi.org/10.53486/sstc2024.v2.58.
2. Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). *FDI and economic growth: the role of local financial markets*. Journal of International Economics, 64(1), 89-112, https://doi.org/10.1016/S0022-1996(03)00081-3.
3. Basile, R., Castellani, D., & Zanfei, A. (2008). *Location choices of multinational firms in Europe: the role of EU cohesion policy*. Journal of International Economics, 74(2), 328-340, https://doi.org/10.1016/j.jinteco.2007.08.006.
4. Blomström, M., & Kokko, A. (1998). *Multinational corporations and spillovers*. Journal of Economic Surveys, 12(3), 247-277, https://doi.org/10.1111/1467-6419.00056.
5. Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). *How does foreign direct investment affect economic growth*? Journal of International Economics, 45(1), 115-135, https://doi.org/10.1016/S0022-1996(97)00033-0.
6. Campos, N. F., & Kinoshita, Y. (2002). *Foreign direct investment as technology transferred: Some panel evidence from the transition economies*. The Manchester School, 70(3), 398-419, https://doi.org/10.1111/1467-9957.00309.
7. Caves, R. E. (1974). *Multinational firms, competition, and productivity in host-country markets*. Economica, 41(162), 176-193, https://doi.org/10.2307/1923965. https://doi.org/10.2307/1923965.
8. Chang, H. J. (2002). *Kicking away the ladder: Development strategy in historical perspective*. Anthem Press, https://doi.org/10.1080/1360081032000047168.
9. Dinu, M., & Socol, C. (2006). Romania's entry into the second modernity. The potential for convergence. *Research and Education*, 7, https://www.store.ectap.ro/documente/libere/articolfreeECTA4.pdf#page=7 .
10. Görg, H., & Greenaway, D. (2004). *Much ado about nothing? Do domestic firms really benefit from foreign direct investment?*. World Bank Research Observer, 19(2), 171-197, https://doi.org/10.1093/wbro/lkh019.
11. Hincu, R., & Litocenco, A. (2022). Analysis of state securities as an instrument for financing the budget deficit of the Republic of Moldova, "30 years of economic reforms in the Republic of Moldova:economic progress via innovation and competitiveness", Chisinau, Moldova, https://doi.org/10.53486/9789975155663.54, https://doi.org/10.53486/9789975155663.54.
12. Ion, R.A. (2007) *Romania's comparative advantage in world and European trade in agri-food products*. Scientific Papers, vol.50, Agronomy series, https://www.uaiasi.ro/revagrois/PDF/2007-3/paper/28.pdf.
13. Iordache, F. (2007). The Impact of Transnational Corporations on Romania's Economic Integration Processes in the EU, PhD Self-refereed, http://www.cnaa.md/files/theses/2007/6796/florin_iordache_abstract.pdf.
14. Javorcik, B.S. (2004). *Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages*. American Economic Review, 94(3), 605-627, https://www.aeaweb.org/articles?id=10.1257/0002828041464605.
15. Macovei, A. G., Cara, E., & Pârțachi, I. (2024). Econometric analysis of the impact of financial indicators on the attractiveness of foreign direct investment in romania. *USV Annals of Economics & Public Administration*, *24*(2).
16. Manescu, D. M. (2025). Flat Tax Rate in Romania: Comparative Analysis and Legal and Fiscal Perspectives. *Tax Mag.* 24.
17. Mishra, D., Mody, A., & Murshid, A. P. (2001). Private capital flows and growth. *Finance and Development, IMF, June*, https://www.researchgate.net/profile/Antu- Munteanu, P. (2021). *The impact of foreign investment on sustainable development*. *Oeconomica*, (2), 10.24818/OEC/2021/30/30/2.04.

18. Murafa, C. (2024). PhD Thesis Abstract "The Impact of Foreign Direct Investment on Economic Growth and Development in the Republic of Moldova" https://doctorat.feaa.uaic.ro/doctoranzi/pagini/Murafa_Cristin/Documents/Teza%20Cristin%20Murafa%20-%20Rezumat%20RO.pdf.
19. Mîșu, I. G. (2019). Foreign Direct Investment and its Impact on Economic Growth in Central and Eastern Europe. *Collection of working papers" ABC of the Financial World"*, (8), 494-518.
20. Nistor, P. (2014). *Isd si cadrul legislativ în românia*. Acta Marisiensis. Seria Oeconomica, 8(8), 88-104, https://www.ceeol.com/search/article-detail?id=1030757.
21. Nunnenkamp, P. (2004). *To what extent can foreign direct investment help achieve international development goals*? The World Economy, 27(5), 657-677, https://doi.org/10.1111/j.0378-5920.2004.00620.x. https://doi.org/10.1111/j.0378-5920.2004.00620.x.
22. Rodrik, D. (2001). *The global governance of trade as if development really mattered*. UNDP, https://drodrik.scholar.harvard.edu/files/dani-rodrik/files/global-governance-of-trade.pdf.
23. Simionescu, M. D. (2017). *Evaluation of Impact of the Foreign Direct Investment on the sectors' added value in Romania. International Economics Letters, 6(1), 26-43.*
24. Tornea, I. (2016). Policies for cluster development in Moldova. *IDIS Viitorul*, (1), 23, http://www.old.viitorul.org/public/files/1/Economic_Reports_01_-_Cluster.pdf.
25. Zaman, G., & Georgescu, G. (2018). *Retrospective study on Romania's foreign trade over the last 100 years*. MPRA, https://mpra.ub.uni-muenchen.de/89707/1/MPRA_paper_89707.pdf.
26. ** INS https://insse.ro/cms/.
27. ** Eurostat https://agerpres.ro/.
28. ** INSM https://statistica.gov.md/ro.