



Quarterly Journal of Quantitative Economics

Journal Homepage:
www.jqe.scu.ac.ir
Print ISSN: 2008-5850
Online ISSN: 2717-4271



Presenting the foreign direct investment model and economic growth of developing countries with the mediating role of human capital and information and communication technology

Neda Leylian*, Mehrzad Ebrahimi**, Hashem Zare***, Ali Haghghat ****

* Ph.D. student of Economics, Department of Economics, Faculty of Economics and Management, Shiraz Branch, Islamic Azad University, Shiraz, Iran.

Email: neda.leylian@gmail.com

** Assistance professor of Economics, Department of Economics, Faculty of Economics and Management, Shiraz Branch, Islamic Azad University, Shiraz, Iran. (Corresponding Author)

Email: mhrzad@yahoo.com

 [0000-0002-6560-1507](https://orcid.org/0000-0002-6560-1507)

Postal address: Iran, Shiraz, Sadra City, Islamic Azad University of Shiraz Branch, Faculty of Economics and Management, Third floor.

*** Assistance professor of Economics, Department of Economics, Faculty of Economics and Management, Shiraz Branch, Islamic Azad University, Shiraz, Iran.

Email: hashem.zare@gmail.com

**** Assistance professor of Economics, Department of Economics, Faculty of Economics and Management, Shiraz Branch, Islamic Azad University, Shiraz, Iran.

Email: alihaghghat91@yahoo.com

ARTICLE HISTORY

Received: 2 March 2020

Revision: 15 January 2021

Acceptance: 15 January 2021

JEL CLASSIFICATION

O47 J24 J20 O13

KEYWORDS

Economic Growth,
Foreign Direct
Investment, Human
Capital,
Information And
Communication
Technology

Acknowledgments: Acknowledgments may be made to individuals or institutions that have made an important contribution.

Conflict of Interest: The authors declare no conflict of interest.

Funding: The authors received no financial support for the research, authorship, and publication of this article.

How to Cite:

Leylian, Neda., Ebrahimi, Mehrzad., Zare, Hashem & Haghghat, Ali. (2022). Presenting the foreign direct investment model and economic growth of developing countries with the mediating role of human capital and information and communication technology. *Quarterly Journal of Quantitative Economics (QJE)*, 19(3), 125-153.

 [10.22055/qje.2021.32814.2225](https://doi.org/10.22055/qje.2021.32814.2225)



© 2022 Shahid Chamran University of Ahvaz, Ahvaz, Iran. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0 license) (<http://creativecommons.org/licenses/by-nc/4.0/>)

EXTENDED ABSTRACT

INTRODUCTION

One of the most important goals of the countries, especially developing countries, is economic growth and development. One of the sources that can retrieve the lack of capital in the developing countries and lead to economic growth is foreign direct investment. Some evidence shows the human capital plays a mediating role in the impact of foreign direct investment on economic growth. The other important factor that can affect economic growth and the prosperity of countries, is the information and communication technology. Thus, the current research aim is to present a foreign direct investment model and economic growth in developing countries with the mediating role of human capital and information and communication technology.

METHODOLOGY

The study populations are the developing countries between 2000-2018. In this research, the developing countries in three continents of Asia, Africa, and Southern America have been selected. Then, the countries are divided into four different income groups: developing countries with high-income, developing countries with higher than medium income, developing countries with lower than medium income, and developing countries with low-income. Thus, in the end, 27 countries in three continents have been chosen as the statistical sample. The method used in this study is the multi-group modeling approach with the structural models with partial least square (PLS) approach.

FINDINGS

The results showed that only in the developing countries with high income, the human capital and information and communication technology have a mediating role on the impact of foreign direct investment on economic growth. Thus in high income countries, foreign direct investment affects human capital by 0.609 and human capital affects economic growth by 0.428. Foreign direct investment affects information and communication technology by 0.482 and information and communication technology by 0.348 affects economic growth. In the other income groups in developing countries, these two variables couldn't have any impact on foreign direct investment on economic growth as a mediator.

CONCLUSION

Based on the results, it is recommended for developing countries to implement human capital, information and communication technology in foreign direct investment and increase economic growth by using these factors.

Reference

- Abor, J. Y., Amidu, Y., & Issahaku, H. (2018). Mobile telephony, financial inclusion and inclusive growth. *Journal of African Business*, 18(4), 430–453. Retrieved from <http://dx.doi.org/10.1080/15228916.2017.1419332>
- Abzari, M., & Teymoori, H. (2007). Foreign Investment in non-developed countries. *Tadbir Journal*, 179. Retrieved from <https://magiran.com/p405699> (In Persian)
- Alizadeh, M., Babaei, M., Jafari, M., & Khodaei, M. (2014). The Interaction between FDI and Economic Development in D8 Members. *quarterly journal of fiscal and Economic policies*, 2(6), 87-104. Retrieved from <http://qjfeq.ir/article-1-91-en.html> (In Persian)
- Alvarado, R., Iniguez, M., & Ponce, P. (2017). Foreign direct investment and economic growth in Latin America. *Economic Analysis and Policy*, 56, 176-187. Retrieved from <https://doi.org/10.1016/j.eap.2017.09.006>
- Asongu, S. A., & Nwachukwu, J. C. (2018). Educational quality thresholds in the diffusion of knowledge with mobile phones for inclusive human development in sub-Saharan Africa. *Technological Forecasting and Social Change*, 129, 164–172. Retrieved from <https://doi.org/10.1016/j.techfore.2018.01.004>
- Asongu, S.A. & Odhiambo, N.M. (2019). Foreign direct investment, information technology and economic growth dynamics in Sub-Saharan Africa, *Telecommunications Policy*, 44(1). Retrieved from <https://doi.org/10.1016/j.telpol.2019.101838>
- Azarm, H., Liani sang neyeshi, G.H., & Tarazkar, M.H. (2017). Foreign direct investment and growth in agriculture in Iran. *The application of the cointegration approach is the fourth scientific journal of development and the*

- promotion of agricultural sciences ,natural resources and the environment of Iran.* Retrieved from <https://civilica.com/doc/649052/> (In Persian)
- Chen, G. S., Yao, Y., & Malizard, J. (2017). Does foreign direct investment crowd in or crowd out private domestic investment in China? The effect of entry mode. *Economic Modelling*, 61, 409-419. Retrieved from <https://doi.org/10.1016/j.econmod.2016.11.005>
- Ciesielska, D., & Koftuniak, M. (2017). Outward foreign direct investments and home country's economic growth. *Physica A: Statistical Mechanics and its Applications*, 482, 127-146. Retrieved from <https://doi.org/10.1016/j.physa.2017.04.057>
- De Mello, L.R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *Journal of Development Studies*, 34(1), 1-34. Retrieved from <https://doi.org/10.1080/00220389708422501>
- Dunne, J. P., & Masiyandima, N. (2017). Bilateral FDI from South Africa and income convergence in SADC. *African Development Review*, 29(3), 403-415. Retrieved from <http://dx.doi.org/10.1111/1467-8268.12277>
- Fornell, C., & Larcker, D. (1981). Evaluating structural equation modeling with unobserved variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. Retrieved from <https://doi.org/10.2307/3151312>
- Ghafari, H., Jalooli, M., & Changi Ashtiani, A. (2015). Social instability and economic growth, Analysis based on ARDL Model. *Quarterly Journal of Economic Reseach (Sustainable Growth and Development)*, 15(4), 25-50. Retrieved from <http://ecor.modares.ac.ir/article-18-10064-fa.html> (In Persian)
- Gordon, R. (2000). Does the New Economy Measure Up to the Great Inventions of the Past?. *Journal of Economic Perspectives*, 14, 49-74. Retrieved from <https://doi.org/10.1257/jep.14.4.49>
- Gosavi, A. (2018). Can mobile money help firms mitigate the problem of access to finance in Eastern sub-Saharan Africa. *Journal of African Business*, 18(4), 343-360. Retrieved from <https://doi.org/10.1080/15228916.2017.1396791>
- Griliches, Z. (1964). Research expenditures, education, and the aggregate agricultural production function. *The American Economic Review*, 961-974. Retrieved from <https://www.jstor.org/stable/1809481>
- Griliches, Z., & Mairesse, J. (1995). Production Functions: The Search for Identificatio, *NBER Working Papers from National Bureau of Economic Research*, Retrieved from Inc. <https://econpapers.repec.org/RePEc:nbr:nberwo:5067>
- Gui-Diby, S. L. (2014). Impact of foreign direct investments on economic growth in Africa: Evidence from three decades of panel data analyses. *Research in Economics*, 68(3), 248-256. Retrieved from <https://doi.org/10.1016/j.rie.2014.04.003>
- Hanif, I., Raza, S. M. F., Gago-de-Santos, P., & Abbas, Q. (2019). Fossil fuels, foreign direct investment, and economic growth have triggered CO2

- emissions in emerging Asian economies: Some empirical evidence. *Energy*, 171, 493-501. Retrieved from <https://doi.org/10.1016/j.energy.2019.01.011>
- Hassan, M. K. (2005). *FDI, information technology and economic growth in the MENA region*. 10th ERF paper. Retrieved from <https://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.458.7841>
- Hong, J.P. (2016). Causal relationship between ICT, R&D investment and economic growth in Korea. *Technological Forecasting and Social Change*, 116, 70–75 March. Retrieved from <https://doi.org/10.1016/j.techfore.2016.11.005>
- Hosseini Yazdi, S.S., Emadzadeh, M. & Daei-Karimzadeh, S. (2022). Globalization, Human Capital Accumulation and Economic Growth in selected Developed and Developing Countries, *Quarterly Journal of Quantitative Economics*, 19(2), 111-150. Retrieved from <https://doi.org/10.22055/jqe.2020.32690.2222> (In Persian)
- Iamsiraroj, S., & Ulubaşoğlu, M. A. (2015). Foreign direct investment and economic growth: A real relationship or wishful thinking?. *Economic Modelling*, 51, 200-213. Retrieved from <https://doi.org/10.1016/j.econmod.2015.08.009>
- Issahaku, H., Abu, B. M., & Nkegbe, P. K. (2018). Does the use of mobile phones by smallholder maize farmers affect productivity in Ghana?. *Journal of African Business*, 19(3), 302–322. Retrieved from <https://doi.org/10.1080/15228916.2017.1416215>
- Khosravi, M., Mehrjoo, S., & Mohseni, R. (2014). The Effect of Financial Market and FDI upon Economic Growth of Agricultural Sector: GMM Approach. *Journal of Agricultural Economics Research*, 1, 103-130. Retrieved from <https://dorl.net/dor/20.1001.1.20086407.1393.6.21.6.6> (In Persian)
- Kottaridi, C., & Stengos, T. (2010). Foreign direct investment, human capital and non-linearities in economic growth. *Journal of Macroeconomics*, 32(3), 858-871. Retrieved from <https://doi.org/10.1016/j.jmacro.2010.01.004>
- Latif, Z., Danish, Y., Latif, S., Ximei, L. & Pathan, Z.H. (2018). The dynamic of ICT, foreign direct investment, globalization and economic growth: Panel estimation robust to heterogeneity and cross-sectional dependence. *Telematics and informatics*, 35, 318-328. Retrieved from <https://doi.org/10.1016/j.tele.2017.12.006>
- Leylian, N., Ebrahimi, M., Zare, H., & Haghghat, A. (2021). Investigating the Effect of Foreign Direct Investment and Human Capital on Agricultural Economic Growth in Selected Asian Developing Countries, *Journal of Agricultural Economics Research*, 13(2), 109-126. Retrieved from <https://dorl.net/dor/20.1001.1.20086407.1400.13.2.6.7> (In Persian)
- Lucas, R. (1988). On the mechanics of economic development, *Journal of Monetary Economics*, 22, 3-42. Retrieved from [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Mohamandzadeh Asl, N. (2002). Testing the theory of neoclassical growth, *Economic Reseach*, 14. Retrieved from https://joer.atu.ac.ir/article_3185.html (In Persian).

- Morrissey, O., & Udomkerdmongkol, M. (2016). Response to Institutions, Foreign Direct Investment, and Domestic Investment: Crowding Out or Crowding In?. *World Development*, 88, 10-11. Retrieved from <https://doi.org/10.1016/j.worlddev.2016.08.001>
- Moshiri, S., & Kian Poor, S. (2012). Determinants of Foreign Direct Investment: A Cross Country Analysis (1980-2007), *Quarterly Journal of Quantitative Economics*, 9(2), 1-30. Retrieved from <https://doi.org/10.22055/jqe.2012.10563> (In Persian)
- Nejati, M. (2017). Investigating the role of foreign direct investment in Iran's economy using a general equilibrium model. *Journal of Economic Policy Research*, 18, 65-100. Retrieved from <https://magiran.com/p1824694> (In Persian).
- Nordhaus, W.D. (2000). *Policy Rules in the New Economy*. Presentation for the Discussion on the New Economy Sponsored by the Congressional Budget Committee and the Senate Budget Committee, June 6. Retrieved from <https://www.nber.org/papers/w8096>
- Pohjola, M. (2002). *Information technology and economic growth: A cross country analysis*. UNU/WIDER. Retrieved from <https://academic.oup.com/book/5009/chapter-abstract/147515492?redirectedFrom=fulltext>
- Romer, D. (1986). *Advanced macroeconomics*, McGraw Hill. Retrieved from
- Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, 51(1), 1-17. Retrieved from <https://academic.oup.com/book/5009/>
- Su, Y., & Liu, Z. (2016). The impact of foreign direct investment and human capital on economic growth: Evidence from Chinese cities. *China Economic Review*, 37, 97-109. Retrieved from <https://doi.org/10.1016/j.chieco.2015.12.007>
- Tchamyou, V. S. (2017). The role of knowledge economy in African business. *Journal of the Knowledge Economy*, 8(4), 1189-1228. Retrieved from <https://link.springer.com/article/10.1007/s13132-016-0417-1>
- Van Ark, B. (2000). Measuring Productivity in the New Economy: Towards a European Perspective. *De Economist*, 148 (1). Retrieved from <https://www.proquest.com/openview/0f4f406b0d5e9fc1f162f08f3360b66e/1?pq-origsite=gscholar&cbl=37474>
- Walters, P. B., & Rubinson, R. (1983). Educational expansion and economic output in the United States, 1890-1969: A production function analysis. *American Sociological Review*, 480-493. Retrieved from <https://doi.org/10.2307/2117716>
- Wang, J. Y. (1990). Growth, Technology Transfer and the Long-Run Theory of International Capital Movements. *Journal of International Economics*, 29, 255-71. Retrieved from [https://doi.org/10.1016/0022-1996\(90\)90033-I](https://doi.org/10.1016/0022-1996(90)90033-I)