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HETEROGENEITY IN TECHNOLOGICAL CONTENT OF FDI AND ECONOMIC GROWTH

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The relationship between foreign direct investment (FDI) and economic growth (EG) has been extensively studied in the macroeconomics literature, yet consensus on whether the sign of this relationship is positive or not could not be reached as controversy continues to linger on. This policy brief is based on two research studies that find that the relationship between FDI and growth is positive with some caveats, suggesting that FDI is not all equal in impacting growth, a possibility that has received remarkably little attention in the literature so far, possibly due to the scarcity of data. The finding that not all FDI types may be growth-fostering and the technological content of FDI is of crucial importance is particularly useful for policy makers in FDI-receiving countries when deciding which type of FDI they should target.

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INTRODUCTION

The relationship between FDI and economic growth in the host country has been studied widely in the literature. Such keen interest was sparked by the surge in the flow of FDI to a number of host countries which has taken place in recent decades as multinational firms looked for different ways of expanding their business beyond their national borders. However, until recently, lack of granularity in FDI data had been a major constraint.

Initial research on FDI and EG was hampered by the lack of satisfactory data regarding FDI for sufficiently long time intervals. Moreover, accessible data would concern FDI aggregates only. Over time, as data became more plentiful, detailed and covering longer time spans, it became possible to study the relationship between FDI and growth along newer dimensions.

Nonetheless, as availability of data improved, researchers became more interested to investigate whether the effect on the economy of the host country may change depending on the type of FDI being considered. To this end, FDI has been categorized in various ways, such as:

- 1 primary, secondary and services sectors,
- 2 agriculture, manufacturing and services,
- 3 manufacturing and non-manufacturing,
- 4 horizontal FDI (market seeking) or vertical FDI (efficiency seeking),
- 5 greenfield investments versus merger or acquisitions,
- 6 skill intensity, reliance on external capital, and recipient country's preferences

FDI and Economic Growth

Based on empirical evidence, there is no consensus on whether a relationship exists between FDI and EGI; or the direction of causality. A broader consensus has been reached on the existence of a relationship between FDI and EG after taking into account threshold effects in a number of covariates, like, but not limited to, human capital, financial development, etc. However, very few studies to date have tried to probe whether the existence of a relationship between FDI and EG depended on the sector of industry the FDI was flowing into or the type of FDI involved.

According to economic theory, one channel through which FDI may influence the economy of the receiving country would be by acting as a vehicle for technology transfer from the country of origin to the country of destination of the investment flow.

This policy brief is based on two research studies that address this gap in literature:

- 1.** The first study¹ investigates the existence of a positive association between the geographical distribution of FDI/GDP ratios and the subsequent economic performance of the beneficiary countries, as measured by the growth rate of economic output (GDP per person). It classifies FDI data by technology by following the criteria laid down by the Organization for Economic Cooperation and Development (OECD) for differentiating sectors by technological content and collating FDI data from multiple sources accordingly².
- 2.** The second research study³ also disaggregates industries into primary (agriculture and mining), secondary (manufacturing) and services sectors and then further disaggregates the data⁴ for the secondary and services sectors by their technological content and uses Generalized Methods of Moment (GMM) techniques for empirical estimation.

Research Findings and Discussion

Findings from both studies point strongly to the fact that the relationship between FDI and the growth rate of the recipient countries really depend on the type of FDI involved.

01 In contrast to many earlier studies, these studies find that the association between FDI Total and EG, though positive, is not significant, in GMM regression.

¹Interested reader is directed to Foreign Direct Investment, Technology and Economic Growth: What the Data Say

²This study uses FDI data for 2010 and compares them against the growth performance of the recipient countries for the 5-year interval between 2011 and 2015.

³Interested reader is directed to Does Technology shape the relationship between FDI and growth? A panel data analysis

⁴Data for this study spans 48 countries, for the period between 1989 and 2019. However, the sample goes down to 28 countries after dropping to zero values for relevant FDI variables. The full sample of 48 countries (both developed and developing) includes five main regions, East Asia and the Pacific, Europe and Central Asia, North and Latin America, Middle East and Africa, South Asia. The most notable absences from this sample, due to lack of detailed FDI data, are China and Russia.

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When FDI decomposition is done broadly by sector, findings confirm the presence of heterogeneity across sectors, in particular:

- > A highly significant and positive association between FDI in the manufacturing/secondary sector and EG.
- > FDI in services is positive but not significant.
- > In the primary sector, FDI is negative and slightly significant.

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At both ends of the technological spectrum, FDI flows with high and low technological content are highly conducive to EG, while the two intermediate types of FDI with medium technological content are not⁵.

- > More specifically, we find strong evidence that in the manufacturing sector, FDI with a higher technological content exhibits a positive association with growth in the host country.
- > We also find evidence pointing towards a positive relationship between FDI and growth in the host country at the other end of the technology spectrum (low-tech)⁶.

Our findings support the argument that different FDI types seem to be carriers of different effects.

Effects of FDI with high technological content	Effects of FDI with medium-low technological content	Effects of FDI with lowest technological content
New managerial skills	Higher entry barriers for local firms as foreign firms enjoy economies of scale	Here, the authors conjecture that low-tech FDI may better fit with the economic texture of recipient countries.
Novel production processes	Privileged access to credit for multinational firms	

If a sufficient number of local firms succumb, the net effect of foreign direct investment on the growth rate of the recipient economy may be negative. This is what seems to be happening when the FDI involved is of the low tech type.

⁵This result holds across two different estimation techniques – generalized method of moments (GMM) and fixed effects (FE) and two sampling methods – first including countries for which the FDI value is non-zero and then using a full sample of all Countries.

⁶Interestingly, the empirical evidence supports a U-shaped relationship between FDI and economic growth when FDI is disaggregated by different technological contents.

Policy Recommendations

From the above discussion, the message for policy makers is rather clear: FDI is not all equal and differentiating it by technological content is crucial.

High tech FDI holds the highest promise of fostering economic growth in the host economy. Policy makers of countries interested in attracting FDI should strive not just to attract FDI indifferently, but they should rather focus their efforts on attracting FDI in the high technology sectors, and give less encouragement to investment flowing into low tech sectors.

However, though pursuing GDP growth is important, there is now a broad consensus that this is not the only measure of the well-being of countries. Specifically, when devising policies geared towards attracting FDI, policymakers around the world should ensure that the effects of inward FDI on the recipient countries are in line with the United Nations' Sustainable Development Goals 8 and 9.

SDG 8 calls for inclusive and sustainable economic growth, while SDG 9 is to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Policies designed to achieve inclusive and sustainable growth would bring important societal impacts.



Future Direction of Work

Future work may advance knowledge on this topic in several ways.



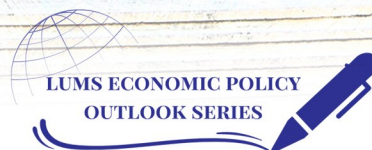
Increasing the sample size as more data becomes available. This will be particularly useful to study income or geographic region specific groups of countries.

Another possible extension concerns exploring the nexus between different technological FDI categories, and economic growth depending on the country of origin on FDI

Future work can compare and contrast the short term and long term effects of various types of FDI on economic growth.

Finally, recent studies have made advances in studying the network features of FDI and they have shed lights on the importance of the informational content these may contain. Once the granularity of FDI data makes it possible to classify these data both by sectoral content and geographical origin, it will be possible to focus on the informational content of FDI networks with differing technological content and their impact on the growth rates of the recipient countries.





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Marasco, A., Khalid, A. M., & Tariq, F. (2024). Does technology shape the relationship between FDI and growth? A panel data analysis. *Applied Economics*, 56(21), 2544-2567.

Marasco, A. (2021). Foreign Direct Investment, Technology, and Economic Growth: What the Data Say. *Ekonomi-tek*, 10(2), 89-110.