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FDI Statistics and International Production: Towards (Re-) Conciliation?

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In a highly complex global production landscape, the quest for sound statistics to measure the international activity of multinational enterprises (MNEs) has become ever more pressing, and challenging at the same time. Rationales for the use of FDI statistics from Balance of Payments, traditionally the main indicators of international production, seem to have weakened as boundaries between "real" and financial investment are becoming increasingly blurry. The purpose of this paper is to critically revisit the main objections to the use of FDI statistics to describe international production, and the possible counter-arguments and mitigating factors. Such balanced approach is aimed at providing concrete indications on the best analytical use of FDI statistics to measure international production.

Keywords: FDI, international production, multinational enterprises, foreign affiliates.

Introduction

FDI data from the Balance of Payments (BoP) have been historically a key source of information on the international activity of multinational enterprises. While certain limitations of this approach have been recognized over the past decade (see Lipsey (2007) and Beugelsdijk et al. (2010)), in recent years concerns about the adequacy of FDI statistics to capture patterns of international production have increased and gained prominence (see Leino and Ali-Yrkko (2014), Blanchard and Acalin (2016) and Sauvart (2017)).

Such criticism has prompted not only adjustment to the treatment of FDI data but also a search for complementary sources of data. The *World Investment Report* has pursued both directions, by excluding Special Purpose Entities (SPEs) and tax havens from aggregate FDI statistics, and by drawing on project-based data (from fDi Markets for announced greenfield projects and cross-border M&A database), firm-level data (from ORBIS), survey-level data (Foreign Affiliates Statistics, FATS) and value added trade data (as presented in the UNCTAD-EORA GVC database).

Notwithstanding this progress, it is important to expound and critically assess the arguments against the use of FDI statistics for the analysis of international production, to avoid generalization and over-reaction. BoP-based FDI data have redeeming features and, as a result, remain widely used in analysis of international production and development (see Demir and Duan (2018) and Harms and Meon (2018)). In particular, BoP-based FDI data have a geographic and time coverage significantly higher than any other available metrics relating to international production.

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Such data is particularly important for the analysis of international activity of MNEs in developing countries for which alternative data sources are scarce.¹ Additionally, the production of FDI statistics is hard-coded into international Balance of Payment reporting standard, ensuring an adequate level of reliability and comparability.

Sections 1 to 3 elaborate on the three main critiques to FDI statistics (as summarized in table 1), while section 4 briefly hints at some less critical issues. Section 5 argues that the analysis of international production through FDI data in developing countries is less biased than in advanced economies. A concluding remark follows, with a practical proposal for (re-)conciliation.

Table 1: Summary of the main critiques of the use FDI data to explain MNE activity and responses

Critiques	Responses
FDI is a financing instrument , not necessarily an investment in productive assets (source of funds vs. use of funds)	<ul style="list-style-type: none"> • The relative stability of FDI, among financing instruments, is indicative of its long-term, productive investment nature • Data on foreign affiliates and global value chains indicate a link between FDI and MNEs foreign operations • The geographic and time coverage of FDI data is superior to alternative data sources and data collection is hard-coded into international balance of payments reporting standards, thereby ensuring an adequate degree of reliability and comparability
Conduit FDI flows through offshore financial centers (OFCs) have weakened the relationship between FDI and international production , and affected the bilateral links in international production networks (direct vs. ultimate investors)	<ul style="list-style-type: none"> • Conduit FDI through OFCs can, to some extent, be excluded from FDI data and analysis either directly (for those countries that report special purpose entities) or indirectly via estimation techniques • Standard FDI reporting is being expanded to include statistics on the basis of ultimate investors; analytical techniques are under development to estimate bilateral FDI by location of the ultimate investor
FDI ignores other financing options and does not capture the full extent of international production (FDI vs. local financing)	<ul style="list-style-type: none"> • There are no systematic measures of foreign affiliate financing other than FDI, and literature seeking to estimate non-FDI financing is sparse

¹ Specifically, for developing countries, FATS are not available a part for exceptional cases (Thailand, Malaysia, Zambia, India; selected years). Firm-level data, e.g. from ORBIS, also have severe problems of coverage of the sample and availability of financial information, especially for foreign affiliates in Africa and Latin America (see for example discussion in *WIR15; annex 1 to chapter 5*). Project-level data on announced greenfield projects and cross-border M&As may be a comparatively more feasible option; for example Amighini et al. (2017) employ greenfield data to analyze the relationship between FDI and capital formation in developing countries. However, they also have some structural weaknesses that significantly limit their application. Firstly, the two sets of data (greenfield and cross-border M&As) can be hardly compared and/or combined; this makes their use challenging when the objective is to provide a comprehensive picture of international production. Additionally, greenfield project data, the most interesting dataset under many respects, refer to announced projects rather than actually implemented, their value is often estimated based on benchmarks and their coverage in developing countries, particularly low-income ones, can be very poor.

1. Source of funds vs. use of funds

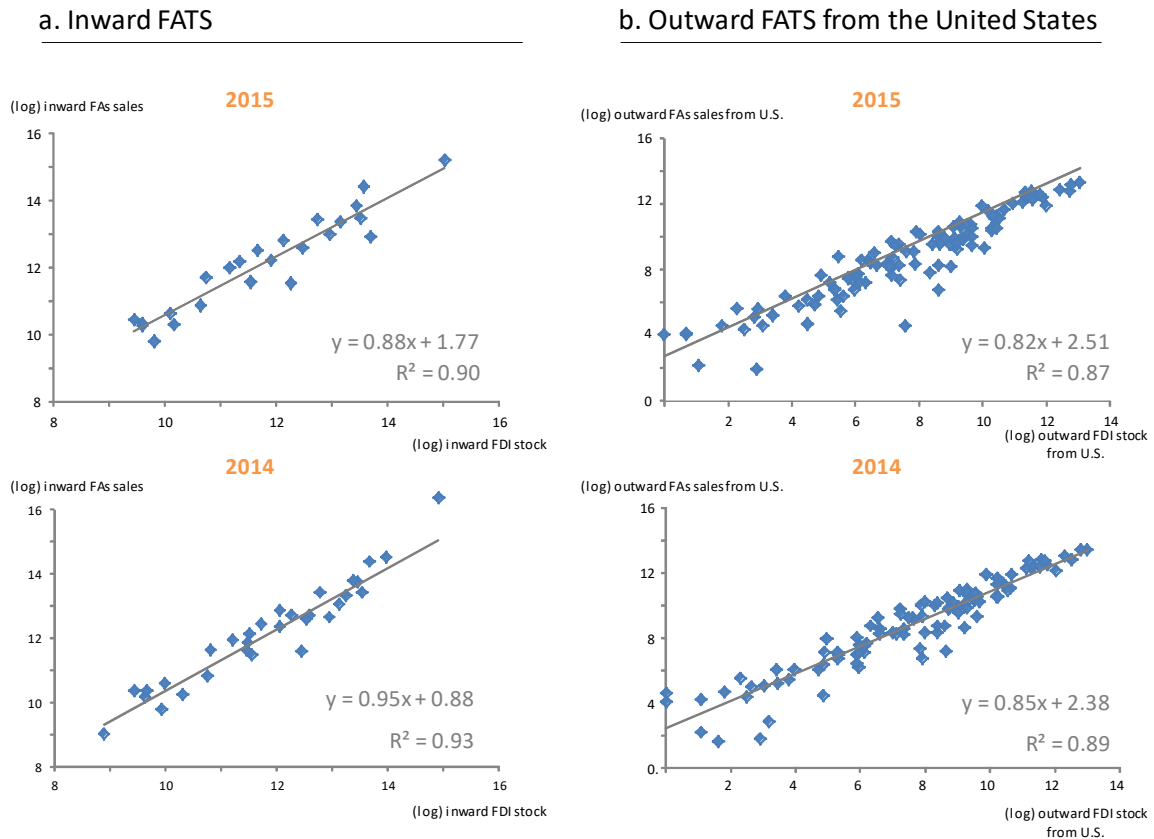
Critique 1: FDI is a financing instrument, not necessarily an investment in productive assets.

A major point of contention is whether FDI data can be legitimately interpreted as indicators of international production, i.e. the presence and activity of multinational enterprises around the world. Detractors argue that FDI, as measured, represents a source of finance and not a use of funds. There is no guarantee that the funds are employed in productive investment to generate sales, employment, value added, etc., as has traditionally been associated with the term FDI. Consequently, there is a divergence between what FDI data show and the "real" economic trends in international production.

A counter-point to this argument is that FDI has historically been the most stable source of external finance (see *WIR18*, figure I.10). If FDI were largely driven by financial (rather than real) motives, it would exhibit a similar volatility portfolio investment and other (mainly banking) flows in the BoP. Its relative stickiness, however, indicates that it is associated with real, long-term activity.

Analysis of foreign affiliates' operational data (FATS) supports the link between FDI and real economic activity. Figure 1.a shows the relationship between inward FDI stock against inward foreign affiliates (FAs) sales for a set of OECD countries reporting inward FATS. Figure 1.b uses instead outward FDI from the United States and outward sales of U.S. foreign affiliates, capturing a larger set of countries, including developing countries. Both graphs exhibit a strong linear relationship between the stock of FDI in a country and the corresponding sales of the FAs operating in the same country, indicative of real, not financial, activity.

Figure 1. Relationship between FDI and FATS, selected countries, 2014 and 2015



Source: Based on data from UNCTAD FDI/MNE database, Eurostat Business Structural Statistics, Bureau of Economic Analysis, OECD

Note: Scatterplots (a) include 24 countries for 2015 and 31 for 2014, corresponding to all countries reporting inward FATS, with the exception of small islands tax havens. Scatterplots (b) include 103 countries for 2015 and 101 for 2014, corresponding to all partner countries reported by U.S. outward FATS, with the exception of small islands tax havens and countries with negative or null value of one variable. When reported by the countries' BoP, the SPE component was removed from the value of FDI stock.

More systematic analysis by Fukui and Lakatos (2012) confirm a positive and significant relationship between FDI and FAs sales with high explanatory power. The authors conclude that FDI statistics can be considered an appropriate measure of the aggregate activity of foreign affiliates while, at the same time, they warn against potential biases that may arise in cross-country and cross-industry analysis.² Similar analysis and results are presented by Ramondo and Rodríguez-Clare (2013), where FDI data are employed to impute missing (bilateral) data of foreign affiliates sales, in an effort to build a comprehensive database of multinational production.

FDI statistics are also linked to other meaningful measures of international production such as GVC related indicators; the empirical relationship between FDI and measures

² As suggested by the authors, bias across countries may be due to different levels of financial development, while across industries it could be related to differences in capital intensity.

of GVC participation has been extensively analyzed in the *World Investment Report 2013*.

UNCTAD *World Investment Report* has been historically providing estimates of total sales, value added, assets and employees generated by foreign affiliates globally (see *WIR18*, table I.6). The underlying idea is to employ FDI weights to estimate global values of FAs operational indicators based on the set of countries reporting FATS (more details of the approach are provided in the *WIR*). This extrapolation procedure based on FDI data leads to an acceptable approximation of FATS at the global level, thanks to good overall correlation between aggregate FDI and FATS discussed above. However, the use of FDI data for more granular analysis of international production, at the country or industry level, requires a more sophisticated approach, addressing the main empirical issues involved in the relationship between FDI statistics and FAs operational data.

2. The challenge of conduit FDI

Critique 2a: Conduit FDI through OFCs have weakened the relationship between FDI and international production.

Conduit FDI through (OFCs) does not add productive value to international production in the traditional "brick and mortar" sense and generates substantial double-counting in FDI statistics. The *World Investment Report 2015* was among the first to acknowledge, document and quantify systematically the size and growth of conduit FDI. *WIR15* estimates conduit FDI in 2012 at some 30% of the total FDI stock globally, a share that has significantly increased since the first half of the 2000s (from less than 20%).

Conduit FDI has been the subject of extensive empirical work questioning the link between FDI and international production. Beugelsdijk et al. (2010) explicitly model conduit FDI and conclude that it introduces a systematic over-estimation of FAs operations in tax havens jurisdictions. Blanchard and Acalin (2016) site the high correlation between quarterly inward and outward FDI at the country level as evidence of the influence of conduit FDI.

Due to its magnitude and rapid growth, conduit FDI have become a priority issue for statistical and analytical treatment of FDI data. Fortunately, at least to some extent, it is possible to identify, separate and remove conduit FDI through OFCs from FDI data and analysis. The *World Investment Report* has done so for many years by excluding from aggregate statistics FDI to major jurisdictions reporting Special Purpose Entities (SPEs) and to Caribbean tax havens. This important step will be even more valuable as a growing number of countries start reporting separate statistics for SPEs.³ Additionally, for analytical purposes, it is also possible to estimate conduit FDI for those countries that do not report SPEs. *WIR15* has proposed a simple methodology, based on countries' GDP, to identify larger SPE jurisdictions and estimate the corresponding share of conduit FDI. The IMF has also proposed a method to estimate the SPE component in global FDI statistics (Damgaard and Elkjaer, 2017).

³ As of 2016, there are 27 countries reporting FDI flows to/from SPEs (in half of the cases, they claim a negligible presence), compared to 5 jurisdictions in 2010 (similar statistics hold for stocks).

To illustrate the point, in figure 1.a the removal of conduit FDI through SPEs and tax havens leads to an increase of the correlation coefficient (R^2) between inward FDI and inward FAs sales from 0.46 to 0.90 reported on the graph (2015; from 0.54 to 0.93 for 2014).

Critique 2b: Conduit FDI flows have affected bilateral links in international production networks.

The separate treatment of SPEs reduces but does not eliminate the problem of conduit FDI. It helps when the analytical scope involves the analysis of global or regional FDI statistics or the analysis of a country's *aggregate* FDI flows and positions. However, in bilateral settings, where all the countries are tightly interconnected, the simplistic removal of conduit FDI on one side of the investment link (inward or outward) is insufficient. From an analytical perspective, bilateral statistics remain probably the most challenging obstacle to a reconciliation between FDI and international production.

Specifically, in a bilateral setting, FDI statistics show the countries of the direct investor (or, conversely, of the direct recipient). However, as documented by *WIR16*, for around 40% of foreign affiliates the country of the direct investor does not coincide with the country of the ultimate investor. This leads to a distribution of bilateral FDI by countries of investors significantly different from the distribution of bilateral FATS, based on the ultimate owners.

Bilateral distributions of FDI tend to be heavily biased towards a few jurisdictions whose weight does not reflect their "real" level of ownership and control of global production, but rather their role in conduit FDI. Conversely, some large economies are underweighted in FDI statistics as they are "shielded behind" conduit jurisdictions. For example, in 2012 the combined weight of the two major conduit jurisdictions, the Netherlands and Luxembourg, in inward FDI (stock) to Germany is around 40% compared with 8% for the United States. However, according to FATS, the United States accounts for 20% of FAs sales in Germany, whereas Netherlands and Luxembourg combined account for only 13%. The distribution of bilateral FDI by ultimate investors (available for Germany and for a limited set of other developed countries⁴) is, however, similar to the distribution of FATS statistics (United States - 25% versus Luxembourg and the Netherlands - 14%). Round-tripping, i.e. domestic investment disguised as a foreign direct investment, is another common example of the effects of a departure from the ultimate investor perspective.⁵

These challenges of using bilateral FDI data imply that it is important that countries intensify their efforts to integrate the standard FDI reporting by direct investor with statistics based on ultimate investors. Analytical efforts are underway to try to estimate bilateral FDI by location of the ultimate investor. Recently IMF (Damgaard and Elkjaer, 2017) has proposed a methodology that applies to FDI bilateral distributions an adjustment factor based on the sample of countries reporting bilateral FDI by ultimate investors. UNCTAD is also working on a procedure that "looks through" conduit FDI, in search of the ultimate investors.

⁴ 12 OECD countries including Austria, Czech Republic, Estonia, Finland, France, Germany, Hungary, Iceland, Italy, Poland, Switzerland and the United States.

⁵ However, in the common FDI narrative, the relevance of round-tripping seems to be overstated. UNCTAD research (*WIR16*) shows that its incidence is quite small in the aggregate figures, involving no more than 1% of the foreign affiliates.

3. FDI and local financing

Critique 3: FDI ignores other financing options and does not capture the full extent of international production.

FDI data provide only a partial view of foreign affiliates financing because the operations of foreign affiliates may be partly financed by non-affiliated parties. Consequently, it is claimed that FDI statistics understate the size of international production. This is correct. FDI data, however, capture trends and patterns over time and across countries and industries; they cannot be used as an absolute measure of international production. Unfortunately, at the country level, there are no systematic measures of FAs financing other than FDI and therefore it is difficult to assess the extent to which ignoring non-affiliated financing introduces a bias in the analysis of international production.

Similarly, the literature offers some indications but no comprehensive assessment. The only direct estimate of non-affiliated financing covers only Finnish foreign affiliates, estimating 50% non-affiliated financing as a share of total FAs financing (Leino and Ali-Yrkko (2014)). Sauvart (2017) observes that the value of total assets for United States foreign affiliates in 2012 (at \$15.7 trillion) largely exceeds U.S. outward FDI (US\$4.4 trillion), implying that more than two thirds of FAs assets are not financed by FDI. However, in the context of international production, "assets" *per se* is an inflated measure, including many items, such as financial assets, that have little to do with FAs operations.⁶

More systematically, Beugelsdijk et al. (2010) find that countries with more advanced financial systems cause an upward bias in the estimation of foreign affiliates operations (sales/value added) by FDI statistics. This is indirectly attributed to the effect of non-affiliated financing: better financial systems lead to larger use of local financing and, as a consequence, comparatively higher operations (relative to the FDI level). However there may also be other factors at play: it could be that countries with advanced financial systems tend to attract FDI in more service-oriented and/or less capital-intensive industries and this (rather than, or eventually in combination with, non-affiliated financing) explains high values of operational indicators. Again, the lack of a direct indicator of non-affiliated financing limits the possibility to rigorously measure its scale and assess its impact on the link between FDI and international production.

4. Other less relevant issues

The aforementioned are the three major critiques of the use of FDI data to analyse international production. Other, less critical, issues often raised include:

⁶ According to the Bureau of Economic Analysis, total assets of U.S. (majority-owned) FAs in 2012 amount to 21.7 US\$ trillion. Of this, the tangible or "productive" part in the traditional sense (Property, Plant and Equipment) is only 1.3 US\$ trillion (2.4 US\$ trillion in gross terms). The bulk of the assets instead is represented either by "Equity investment in other foreign affiliates" (5.9 US\$ trillion - mostly concentrated in Netherlands, Luxembourg and United Kingdom), or "Other" (11.4 US\$ trillion - of which 7.5 US\$ trillion in finance and insurance).

- *Differentials in labor productivity* may affect cross-country analysis of international production based on FDI data (Beugelsdijk et al., 2010). FDI could under-estimate international production in countries characterized by higher labor productivity. However this seems an unavoidable consequence of the definition of FDI rather than a data limitation. FDI capture the *capital side* of international production. When linking them to operational metrics like sales or value added, it is necessary to control for productivity differentials.
- *Cross-border M&As*, are often merely a "change of hands" that do not add real value to the subsidiary's operations nor, consequently, to the host country's economy (Leino and Ali-Yrkko, 2014). Although important in view of the increasing role of M&As as FDI entry mode, this issue is not pertinent to the link between FDI and international production. By definition, cross-border M&As do expand international production. Rather, it is an issue related to the overall growth impact of FDI on the host countries' economy.⁷ As a side-note, while in a development context it may be sensible to prioritize the greenfield component of FDI, cross-border M&As do often lead to increases in productivity.
- *The statistical treatment of data* poses a number of further technical issues. The lack of consistency between inward and outward FDI and the mismatch between evaluation of FDI stock at book value and at market value are among the most disturbing. These issues call for a better quality of the data and stronger coordination and harmonization in FDI reporting between countries. Meanwhile it is important to be aware of these problems in analytical applications in order to minimize their impact.⁸

5. Developing countries: less controversial (re-) conciliation?

Empirical studies analyzing the link between FDI statistics and international production tend to limit the sample to developed and emerging economies.⁹ Conceptually, the critiques discussed above do not apply to the same extent to developing countries, especially low-income countries. At the country-level, a significant part of the bias generated by the FDI statistics is related to the level of development, particularly financial development, of the recipient country. Firstly, all

⁷ This seems to be the main point also in Leino and Ali-Yrkko (2014). The paper shows that cross-border FDI do not correlate with real investment (or seems to correlate less than the other FDI), where real investment is measured by gross fixed capital formation at the firm-level. This evidence is in line with the expectations, given the non-incremental nature of M&As, but it does not discriminate between domestic and foreign capital and therefore it does not capture patterns of international production.

⁸ For example, in analytical applications it is recommended to avoid mixing the inward side and the outward side. Keeping only one side prevents some of the inconsistencies that arise from mismatches due to countries' different evaluations. In this respect, inward data are generally preferred to outward for their higher reliability and comparability with other domestic indicators. Similarly, in cross-country analysis of FDI stock, it is often necessary to resort to book values to avoid data heterogeneity across the sample, as many countries do not report FDI at market values.

⁹ Lipsey (2007) and Beugelsdijk et al. (2010) employ US outward FATS and FDI data to a selection of recipient countries (around 10 and 50 respectively), for which US Bureau of Economic Analysis report country-level operational data. Most of them are OECD countries and the remaining are emerging economies. Blanchard and Alcalin (2016) focus on (25) emerging economies that report quarterly FDI data. Leino and Ali-Yrkko (2014) analyze foreign affiliates operating in Finland for which they have very detailed data at the firm-level.

major OFC jurisdictions are developed countries with strong financial and service sectors.¹⁰ In this respect, there is no clear reason why FDI should be routed to developing countries other than for genuine productive purposes. Secondly, foreign affiliates operations in developing countries with poor or absent financial and banking systems will be mainly financed by intra-company flows (equity or debt), i.e. FDI rather than non-FDI financing. Beugelsdijk et al. (2010) indirectly confirms these conjectures, by showing that the mismatch between FDI and FATS data is (negatively) related with the status of offshore financial centers and (positively) with the presence of a highly developed banking system. Finally, the issue of cross-border M&As is much less relevant for developing countries; their total net value in 2016 is only 10% of total FDI inflows, against almost 80% for developed economies.¹¹

The lower relevance of critiques of FDI data in a developing country context is useful from an analytical standpoint because developing countries are ultimately the most dependent on FDI data. Among other things, FDI statistics are the main source of information when analyzing the development impact of MNEs activity, a major research and policy area in development economics (e.g. Alfaro et al, 2009; Harding and Javorcik, 2012). Conversely, analysis of international production for developed countries can leverage alternative sources, including FATS data (for most European countries and the United States) and firm-level data (from ORBIS or other firm-level databases).

In conclusion, despite various limitations that must be considered, FDI statistics remain a useful source of information on international production. For lower income countries, given the current status of alternative sources of information on FAs activity, FDI statistics from BoP *have* to be the starting point. A better understanding of the limitations of FDI statistics, thanks to a number of recent contributions in this direction, together with an improvement in the quality of the data, should contribute to prevent over-simplified use of the data. A pragmatic approach to the analysis of international production should be adopted in which FDI is used as the main indicator of MNEs activity in developing countries, especially lower income countries, complemented by other available data (at the project-, country- and firm-level) for developed and emerging economies.

¹⁰ Exceptions include small islands tax havens. *WIR15* identified a list of 38 such jurisdictions. However with the exception of British Virgin Islands and Cayman Islands, their weight in offshore investment is marginal.

¹¹ *World Investment Report 2017*.

References

- Alfaro, L. S. Kalemli-Ozcan and S. Sayek, (2009). "FDI, Productivity and Financial Development", *The World Economy*, 31(1): 111-135.
- Amighini, A., M. McMillan, and M. Sanfilippo (2017). "FDI and Capital Formation in Developing Economies: New Evidence from Industry-level Data", *NBER Working Paper No. 23049*, The National Bureau of Economic Research.
- Beugelsdijk, S., J.F. Hennart, A. Slangen and R. Smeets (2010). " Why and How FDI Stocks Are a Biased Measure of MNE Affiliate Activity", *Journal of International Business Studies*, 41(9): 1444-1459.
- Blanchard, O. and J. Acalin (2016). "What Does Measured FDI Actually Measure? ", *Policy Brief 16-17*, Peterson Institute for International Economics, Washington, DC.
- Damgaard, J. and T. Elkjaer (2017). "The Global FDI Network: Searching for Ultimate Investors", *IMF Working Papers*, WP/17/258, International Monetary Fund, Washington.
- Demir F. and Y. Duan (2018). "Bilateral FDI Flows, Productivity Growth, and Convergence: The North vs. The South", *World Development*, 101(C): 235-249.
- Fukui, T. and C. Lakatos (2012). "A Global Database of Foreign Affiliate Sales," *GTAP Research Memoranda 4009*, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University.
- Harms, P. and P.G. Meon (2018). " Good and Useless FDI: The Growth Effects of Greenfield Investment and Mergers and Acquisitions", *Review of International Economics*, 26(1): 34-59.
- Harding, T. and B.S. Javorcik (2012). "Foreign Direct Investment and Export Upgrading", *The Review of Economics and Statistics*, 94(4); 964-980.
- Leino, T. and J. Ali-Yrkkö (2014). "How Well Does Foreign Direct Investment Measure Real Investment by Foreign-Owned Companies? – Firm-Level Analysis", *Bank of Finland Research Discussion Paper No. 12/2014*.
- Lipsey, R.E. (2007). " Defining and Measuring the Location of FDI Output", *NBER Working Paper No. 12996*, The National Bureau of Economic Research.
- Ramondo, N. and A. Rodríguez-Clare. 2013. "Trade, Multinational Production, and the Gains from Openness". *Journal of Political Economy* 121(2): 273—322.
- Sauvant, K. (2017), "Beware of FDI Statistics!", *Columbia FDI Perspectives*, No. 215. Available at SSRN: <https://ssrn.com/abstract=3089794>
WIR15. World Investment Report 2015: Reforming International Investment Governance. New York and Geneva: United Nations.

WIR16. World Investment Report 2016. Investor Nationality: Policy Challenges. New York and Geneva: United Nations.