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Eliminating the Pass-Through: Towards FDI Statistics that Better Capture the Financial and Economic Linkages between Countries

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MNEs play a central role in the creation and management of complex production networks, but FDI statistics can also reflect other factors, such as fiscal optimisation to reduce tax burdens and the increasing sophistication in MNEs' capital structures. This can make it difficult to interpret FDI statistics, in the sense that they are not 'real' and no longer represent "long-term" investments in a country. Moreover, this behaviour can further obscure the ultimate source and destination of FDI. This paper proposes a framework to produce consolidated FDI statistics based on the nationality of the MNE group. These statistics would be a complement to the residency-based FDI statistics. While residency-based financial statistics are useful to know where financial claims and liabilities are created and held, nationality based statistics provide information on who makes the underlying decisions, who reaps the benefits, and who takes on the risk and needs to hold sufficient capital to cover potential losses. These statistics would be useful for better measuring financial integration between economies and could also be used in conjunction with statistics on the operations of MNEs to analyse the relationship between the financing of MNEs and their operations. Rough estimates of the amount of pass-through capital in operating affiliates, rather than in SPEs, reveals that it is quite extensive, accounting for about one-third of the inward FDI positions in a selection of European countries. It also appears that pass-through capital is growing faster than 'real' FDI.

I. Introduction

Globalisation, characterised as a process of reductions in trade barriers, liberalisation of access to markets, and reductions in transport and communication costs, has facilitated the creation of complex global production networks managed by Multinational Enterprises (MNEs). But other factors, in particular fiscal optimisation, have also played a role on the shape and depth of these chains. While many of the opportunities presented by globalisation have generated 'real' foreign direct investment in economies, in the sense that they create jobs and income (both directly and indirectly) in the host economy, in many cases, especially when the FDI flows are related to pure financial flows engineered to minimise tax payments or overcome regulatory barriers, there is little direct benefit to the host economy, at least in a traditional production sense. This latter form of FDI can make it difficult to interpret FDI statistics, in the sense that they are not 'real' and provide little in the way of "long-term" investments in a country. In this sense, when MNEs channel investments through several countries, FDI flows and positions may be 'inflated' because each flow into and out of each country is counted even if the capital, or income, is just passing through. Indeed, in some countries such as Hungary, so significant is the perceived scale of 'pass-through' capital that the policy focus now looks in large part at net rather than gross flows of FDI; however, this imperfect solution is not available to countries with significant amounts of outward investment originating from their economies. Moreover, this behaviour can further obscure the ultimate source and destination of FDI when the statistics are compiled by immediate partner country.

The first goal of this paper is to propose a definition of pass-through capital, together with experimental estimates, based on the ultimate ownership and location of the assets that can be used as the basis for techniques to consolidate FDI statistics to remove these 'distortionary' flows, and in turn reallocate FDI positions and income flows from immediate to ultimate partner economies. Thus, the statistics take a nationality approach by reflecting the entity that ultimate influences or controls the FDI units.

However, this is not the only area where FDI data, on its own, may not create a complete picture of the overall scale of the impact of investment within an economy. Because MNEs can leverage their direct investments, parent enterprises can control assets in the host country that are many multiples of their initial investment. As discussed further below, the framework proposed in the paper to consolidate FDI statistics can be extended to capture the full financing of the MNE, providing a more complete picture of the economic involvement of the MNE in the host and home economies.

The statistics proposed in this paper are designed to address some important policy issues surrounding FDI. For example, they would provide better measures of financial integration between economies by stripping out the financial intermediation activities within MNEs, The statistics could be linked to other statistics capturing the operations of MNEs to analyse the links between FDI and trade as well as provide information on the alignment between where economic activity occurs and where the MNE attributes its income. Finally, they could provide a more complete picture of the involvement of the MNE in the economy as well as its cross-border and local exposures.

The next section of this paper gives some examples of the ways MNEs pass capital along their ownership structures and establishes the connection between pass-through capital and ultimate partner country. The third section defines what we mean by pass-through capital in terms of direct investment positions. From this, definitions of pass-through capital in FDI income flows are defined. Then, the paper defines the concepts of ultimate investing country, based on the nationality of the ultimate investor, and of ultimate host country based, on the objective of producing symmetric statistics. The fourth section provides experimental estimates for some European members of the OECD to provide order of magnitude estimates of their importance and potential 'distortionary' impact on current FDI statistics. The fifth section considers the relationship of the proposed consolidated FDI statistics to other sets of economic statistics as well as some unresolved issues. The sixth section discusses potential policy uses for the proposed statistics. The final section concludes and provides some recommendations for ways forward.

II. Pass-through capital: issues and examples

Interpretability challenges presented by measurement issues with FDI statistics are not new (see Box 1) but recent years have increased the spotlight. In a 2016 report, for example Blanchard and Acalin concluded that a large proportion of measured FDI flows consisted of flows going into and out of (passing through) countries on their way to their final destinations and moreover that these flows were, in effect, driven by changes in ta x regimes and short-run movements in U.S. monetary policy to a much greater extent than would have been expected if the flows were actually in relation to the long run, 'bricks and mortar' type of investment that analysts typically infer from FDI statistics. Lane and Milessi-Ferretti (2017) drew similar conclusions, finding that measured FDI flows inhibited the post-crisis analysis of international financial integration as they show that much of the expansion in FDI flows was with financial centres, suggesting that it was driven by the increasing complexity of corporate structures rather than by 'genuine' FDI flows.

MNEs can access financial systems in many different countries to optimise their capital structures, so there are several different forms that pass-through capital can take. One way is through the use of Special Purpose Entities (SPEs); SPEs are entities whose role is to facilitate the internal financing of the MNE but that have little or no physical presence in an economy. To address pass-through capital via SPEs, countries separately identify FDI to and from SPEs in their statistics. While SPEs are an important channel for pass-through capital, they are not the only one. MNEs can use their foreign affiliates to raise capital by issuing debt securities and then channel the funds raised to other parts of the MNE, including back to the parent. The first part of this transaction is either domestic or portfolio investment, but the second part is an FDI transaction. There is evidence that this activity is increasing, particularly for MNEs from emerging market economies (Tarashev et al, 2016) and that it is tied to the presence of capital controls (Caballero et al, 2015).[1]

MNEs can also channel funds through their operating affiliates. One reason they might do this to take advantage of lower tax rates, lighter regulation, and other benefits normally associated with SPEs. This channel might be growing as a result of initiatives to encourage MNEs to better align where they

[1] Going further, Shin and Zhou (2013) find evidence of non-financial MNEs issuing liabilities in some countries and currencies at the same time they acquire assets in other countries and currencies to generate profits.

report income with where they have economic activities[2], such as the G20/OECD framework to address Base Erosion and Profit Shifting (BEPS). MNEs can also channel investments through operating affiliates to spread production networks across borders. For example, an MNE investing in the United States may then invest in Mexico and Canada through their U.S. operation, forming an integrated, regional operation. While not necessarily thought of as in the same class as the financial activities discussed above, this still involves pass-through capital. While there is little evidence on the importance of capital passing through operating affiliates, one study found that 28% of Finland's inward FDI position in 2011 consisted of pass-through funding through operating affiliates, and only 10% via resident SPEs (Leino and Yrkko (2014)).

OECD Benchmark Definition of Foreign Direct Investment, 4th edition: Recommendations Related to Pass-through Capital

The 4th edition of the OECD's *Benchmark Definition of Foreign Direct Investment* (BD4) took an important step towards improving the measurement of FDI statistics by addressing some of these issues. For pass-through capital, BD4 recommended that FDI associated with resident Special Purpose Entities (SPEs) be separately compiled so that FDI statistics excluding resident SPEs could be derived. SPEs are entities whose role is to facilitate the internal financing of the MNE but that have little or no physical presence in an economy. By excluding such entities from their FDI statistics, countries have a better measure of the FDI into their country that is having a 'real' impact on their economy. In addition, BD4 also recommended use of the *extended directional principle* to better capture the direction and degree of influence of the investment and to remove some double-counting in the FDI statistics when debt passes through affiliated entities, called fellow enterprises (BD4, page 29-31). If the fellow enterprise makes a loan to a fellow in another country, it is treated as a reduction in inward investment to the reporting economy under the extended directional principle because the funds that flowed into the reporting economy from the foreign direct investor have now flowed to another country, reducing the amount of foreign investment in the reporting economy. It should not be treated as outward investment as making a loan to a fellow enterprise in another country does not give the resident fellow any influence over the operations of the fellow in the other country; instead, it is their common direct investor that still has the influence.

Additionally, to look through complex corporate structures to see the ultimate source of investment, BD4 recommended that countries compile inward investment positions according to the Ultimate Investing Country (UIC) to identify the country of the investor that actually controls the investments in their country. Although not directly related to the 'pass-through' problem, the ability to identify FDI flows on a UIC basis can be an important part of a comprehensive solution to the measurement issues in FDI statistics.

Nevertheless, BD4 recognized that these were only partial solutions. As such, it included a Research Agenda that included items related to pass-through capital, including through operating affiliates, and to further develop the presentation by ultimate partner country, especially by ultimate host country (BD4, page 223 to 25).

[2] Some countries have recently begun to report a growing prevalence of 'near SPEs', which combine the activities of SPEs with a small, but real, presence in the host economy (IMF, 2017 Task Force on SPEs report). The capital passing through these 'near SPEs' is not captured in the current statistics of resident SPEs because these entities do not meet all of the criteria, especially little or no employment or physical presence in the host economy, to be considered an SPE.

Another issue is the attribution of FDI positions to ultimate, rather than immediate, partner countries. While BD4 recommended a supplemental presentation of inward FDI positions by ultimate investing country, it also included an item on the BD4 Research Agenda to more fully develop the statistics by ultimate partner country, including developing a presentation by ultimate host country (UHC) as the natural counterpart of the presentation by UIC. This matters because any reasonable definition of the UHC, in effect, removes the multiple-counting that results from pass-through capital (Mahoney, 2007). The removal of pass-through capital also has implications for statistics by UIC because, ideally, statistics by UIC and UHC would be symmetric. Indeed, even ignoring the desirability of symmetric UIC and UHC data, eliminating multiple-counting of pass-through capital in constructing UIC statistics is, in and of itself, preferable, as the ultimate goal, at least from a policy perspective, of statistics by UIC is to identify the country of the investor influencing the investment in the host country. However, as before, that influence is overstated if part of that investment is capital passing through the host economy. In other words, the two ideas–pass-through capital and ultimate partner economy–are ultimately and inextricably linked and should be considered together in order to produce complementary FDI statistics that are more analytically meaningful.

It is instructive to note that such an approach (consolidated FDI statistics by UIC) fits in with the broader thrust towards, and greater interest in, the use of nationality based statistics for understanding globalisation across a number of statistical areas, such as recommendations included in the G20 Data Gaps Initiative for more nationality-based statistics to better understand financial integration and monitor financial stability (Bank for International Settlements, 2015). In addition a full nationality-based approach could allow the statistics to be expanded to capture other sources of financing to better capture the full economic involvement of the foreign investor in the host economy. Indeed, the framework for consolidated FDI statistics discussed here can be extended to capture the total assets and liabilities of the MNE. This expansion goes beyond FDI statistics by capturing the cross-border assets and liabilities from other functional categories, especially portfolio and other investments, but also beyond the international account by capturing domestic assets and liabilities. Nevertheless, it is underpinned by the Framework for Direct Investment Relationships (FDIR) to identify the relevant units to be consolidated as well as the ultimate investor.

The expansion would reveal the extent to which MNEs have leveraged their direct investment to control more assets in the host economy. The difference between the direct investment figures (positions) and the actual value of assets the foreign parent firm controls in the host economy can measure the extent of this leverage. The framework can also be harmonised with the concepts underlying the Activities (AMNE) or Foreign AffiliaTe Statistics (FATS), so that they can be linked to these consolidated FDI statistics to analyse the relationship between the operations of MNEs and their financing.

It is important to note that the nationality/group consolidated statistics are not a substitute for, but rather a complement to, the residency-based financial statistics. The residency-based FDI statistics capture cross-border intra-group financing and are a starting point to analysing the international exposures of MNEs. However, it is not a complete picture because the MNE parent controls assets and incurs liabilities through its foreign affiliates. Residency-based financial statistics are useful to know where financial claims and liabilities are created and held. However, to know who makes the underlying decisions, who reaps the benefits, and who takes on the risk and needs to hold sufficient capital to cover potential losses, data are needed on a nationality basis.

III. Defining pass-through capital and the ultimate partner country

The section begins with the definition of pass-through capital and ultimate partner country in FDI positions. It then examines how these concepts could be extended to FDI income. Next, it discusses implications for measuring pass-through capital in financial flows and for producing these statistics.

III.A. Pass-through capital in FDI positions

This section begins with the definition of pass-through capital in FDI positions illustrated by two examples. It, then, discusses the conventions applied in these examples, and, next, it presents a nationality-based consolidation that captures the entire financing of the MNE.

III.A.1. Pass-through capital and ultimate partner country

The definition of pass-through capital is straightforward: *capital flowing into the host economy that is then invested in a subsequent economy*. However, identifying these flows in practice is more complicated. Entities receive financing from a variety of sources and use it in a variety of ways, especially operating affiliates, which can blur the relationship between inward and outward flows. As a result, assumptions, necessarily, have to be made about the relationship between the financing and its eventual use.[3]

The definition in this paper is derived from the position data and is based on the concept of ultimate ownership of the FDI assets. In FDI statistics, the inward position in a country reflects not just the claims on the direct investment enterprise in that country but may also reflect foreign direct investments that enterprise may have. This necessarily means that the outward investment position of a country reflects investments made by entities headquartered in that country but also by enterprises that are ultimately owned by another country.

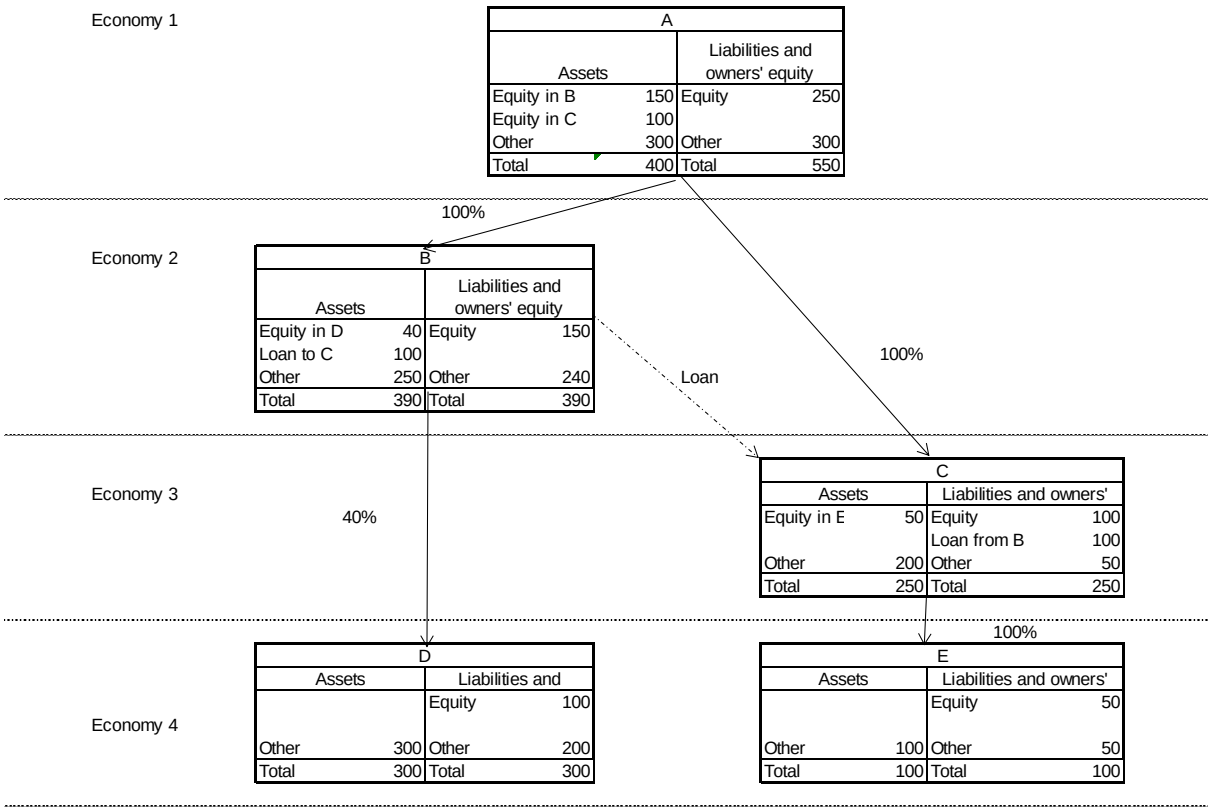
Figure 1 below illustrates some of the challenges presented by pass-through capital in current FDI statistics compilation, and how interpretability could be improved using the concept of UIC. It presents the ownership diagram of a simple MNE structure consisting of five different enterprises in four different economies; A (in Economy 1, the UIC) is the ultimate controlling parent (UCP), and it owns B and C directly and D and E indirectly. For each entity and country, the figure shows an abridged balance sheet consisting of total assets, with the equity investments in foreign affiliates broken out, total liabilities, and owners' equity; the figure also shows the ownership chains and the percentage of ownership.

Table 1 shows the inward and outward FDI positions that would be recorded under the extended directional principle; the outward positions are allocated to the immediate partner country, and the inward positions are recorded on both the immediate country basis and the ultimate investing country (UIC) basis as recommended in BD4.[4]

[3] As a result of these difficulties, BD4 chose to identify entities associated with pass-through capital rather than to identify the flows themselves because it was thought to be more feasible. The criteria listed in BD4 to identify SPEs–including little or no physical presence, foreign ownership, and almost all assets and liabilities of the enterprise represent investments in or from other countries–were designed to identify entities for which almost all of the FDI into and out of SPEs qualified as pass-through capital.

[4] BD4 recommends that the UIC be identified by proceeding up the ownership chain of the immediate direct investor until a unit that is not controlled by any other unit is reached.

Figure 1: Pass-through Capital in a Simple Example of an MNE Ownership Structure



The table shows that the inward and outward positions are globally additive, each summing to 340. But the reallocation of inward positions to economy 1, (the UIC), results in a total of 340 being recorded as inward investment from economy 1 by economies 2, 3, and 4, exceeding 1's total outward FDI of 250 due to pass-through capital. Moreover, under the extended directional principle, the loan between fellow enterprises B and C is treated as a reduction in inward investment in B as the funds that flowed into economy 2 from the fellow enterprises' common direct investor (enterprise A) have flowed to another country (economy 3). This loan does not give B any influence over the operations of C, and, so, should not be recorded as an outward investment. However, because it is recorded against the immediate partner economy, it does lead to an asymmetry in the bilateral inward and outward FDI positions reported by the two countries.

Table 1: Inward and Outward FDI Positions under the Extended Directional Principle

Partner country	Reporting Economy											
	Economy 1			Economy 2			Economy 3			Economy 4		
	Outward	Inward		Outward	Inward		Outward	Inward		Outward	Inward	
	Immediate		UIC	Immediate		UIC	Immediate		UIC	Immediate		UIC
1	0	0	0	0	150	50	0	100	200	0	0	90
2	150	0	0	0	0	0	0	100	0	0	40	0
3	100	0	0	0	-100	0	0	0	0	0	50	0
4	0	0	0	40	0	0	50	0	0	0	0	0
Total	250	0	0	40	50	50	50	200	200	0	90	90

Table 2 presents the results for the consolidated FDI statistics in which pass-through capital has been netted out and positions reallocated to ultimate partner country. In this simple example, if countries were to separately identify the outward investment of foreign-owned parents as pass-through capital and net it from both their outward and inward FDI statistics, the pass-through capital would be eliminated.

If the positions were also reallocated to the ultimate investing country, then economy 1 would still report outward investment of 250 but, now, Economy 2 would recognise that both the loan of 100 to C and the equity investment in D of 40 are pass-through capital and would net these from its inward and outward investment and the remaining inward investment would remain allocated to economy 1, the economy of the ultimate investor A. Economy 3 would also recognise that the equity investment of 50 in E is pass-through capital and net it from its inward and outward investment and the remaining inward investment would be reallocated to economy 1. Economy 4 does not have pass-through capital and would reallocate its inward position to economy 1. In this case, the only country with outward investment is economy 1 since that is the economy of the domestic parent of the MNE; economies 2 and 3 no longer have outward investment since all of their outward investment was from A, the foreign-owned parent. As before, the statistics are globally additive but now the amount of inward FDI attributed to Economy 1 (the UIC) is the same as its outward investment (250), reflecting the elimination of pass-through capital.

Table 2: Inward and Outward Positions under Consolidated FDI Statistics by Ultimate Partner Country

Partner country	Reporting Economy							
	Economy 1		Economy 2		Economy 3		Economy 4	
	Outward	Inward	Outward	Inward	Outward	Inward	Outward	Inward
1	0	0	0	10	0	150	0	90
2	10	0	0	0	0	0	0	0
3	150	0	0	0	0	0	0	0
4	90	0	0	0	0	0	0	0
Total	250	0	0	10	0	150	0	90

If we define the UHC as the country where the foreign-owned asset is ultimately located, and that the reallocation to UHC should be based on the total intragroup funding that each foreign affiliate receives net of any intragroup funding it provides to fellow enterprises or its subsidiaries, then FDI positions by UHC can easily be derived from the inward statistics by using mirror relationships.

Of course, ownership structures can be more complicated than presented in Figure 1. The first complication is that FDI statistics cover influence as well as control relationships and, so, can include multiple direct investors. The second difficulty is that FDI positions can be negative. Negative positions usually result when the loans from the affiliate to its foreign parent group exceed the loans and equity capital it has received.[5] The final difficulty is that MNEs can raise financing from outside of the group. Figure 2 presents a more complicated ownership structure including these aspects. Each case will be discussed more completely below as well as the measurement and identification challenges that they raise.

[5] Negative positions could also occur if the distributed earnings exceeded total earnings or the affiliate operated at a loss, resulting in negative reinvested earnings.

In figure 2, there are 2 direct investors in enterprise E in economy 4, both from economy 3. Under the recommendations in BD4 for the UIC, the 20% of equity held by enterprise Z would be attributed to Economy 3, while the equity investment held by C would be reallocated to country 1 as would the loan from enterprise B in economy 2. An alternative way to reallocate the FDI positions to the UIC is based on who controls the enterprise rather than who owns the investment. The implications for this change in identifying the Ultimate Investor will be discussed below. Enterprise B in economy 2 has a minority ownership interest in enterprise D in economy 4, but, in this case, it is assumed that no other investor owns more than 10% of the voting power, so there are no other direct investors. Enterprise B plays an important role in the MNE's financing structure, borrowing money from some parts of the MNE as well as from outside of the group and lending money to other parts of the MNE.

Table 3 presents the standard FDI statistics in the upper panel that would result from this ownership structure, and there is a negative inward position in economy 2 from economies 1, 3, and 4 under the extended directional principle resulting from the role that enterprise B plays in the internal financing of the MNE. So how is pass-through capital interpreted in the case of negative positions? There are three possible cases. First, if the inward position of enterprise B is negative and its outward position is negative, then there has been pass-through capital, but it has gone in the opposite direction. This is the case shown in figure 2; in this case, enterprise B has borrowed more from its affiliate (enterprise D) than it invested and some of this financing contributes to the financing that it provides to other parts of the MNE, including the parent. In the other two cases, there is no pass-through capital. If the inward position in enterprise B is negative but its outward position is positive, then the financing for the outward investment must have come from extra-group sources. This would be the case if there had been no loan from enterprise D to B in figure 2. Similarly, if the inward position in enterprise B had been positive but its outward position in D is negative, then there has been no pass-through capital; in this case, the funding received by B from its parent has not gone to its subsidiary, enterprise D.

To formalise, the amount of pass-through funding, PT, for each enterprise *j* in period *t*, is:

$PT_{j,t} = \min(I_{j,t}, O_{j,t})$ if the $I_{j,t} \geq 0$ and $O_{j,t} \geq 0$ (1)

$= \max(I_{j,t}, O_{j,t})$ if the $I_{j,t} < 0$ and $O_{j,t} < 0$ (2)

$= 0$, otherwise (3)

Where $I_{j,t}$ and $O_{j,t}$ represent the inward and outward positions of the direct investment enterprise j in period t, respectively. Looking from the inward FDI perspective, a foreign-owned enterprise with no subsidiaries would have no pass-through capital ($O_{j,t} = 0$ under (1)). If it did have a foreign subsidiary, the amount of pass-through capital is the smaller of the inward and outward positions of the foreign-owned enterprise if both its positions are positive (under (1)) or negative (under (2)), and it is zero otherwise. Looking from the outward FDI perspective, the same amount of pass-through would be identified for direct investors in the economy. The total pass-through capital in the economy would be found by either summing the pass-through capital across the direct investment enterprises or across the direct investors in the economy. This follows one of the methods described in Leino and Yrrko (2014).

Figure 2: MNE Ownership Structure

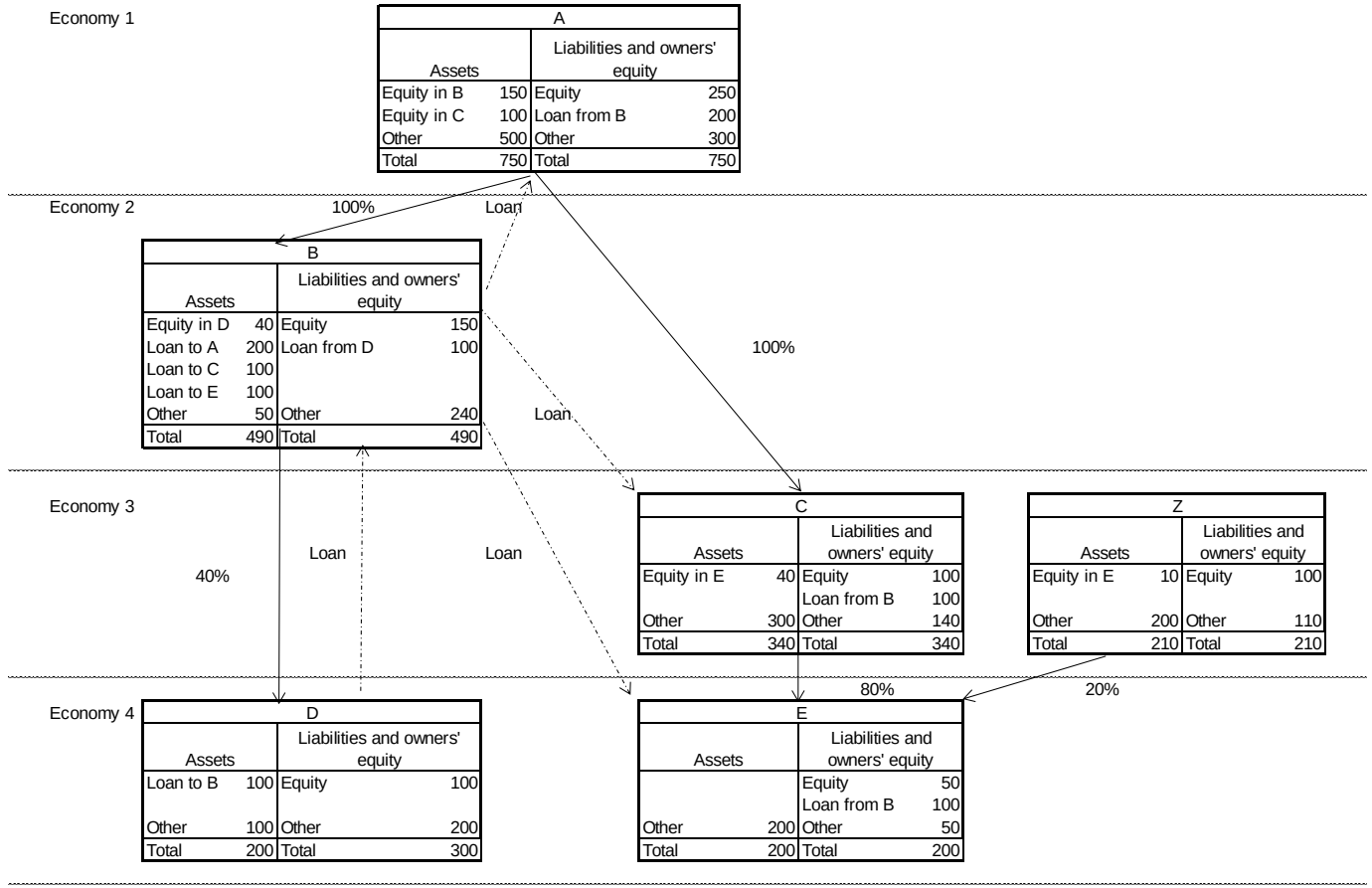


Table 3: Standard and Consolidated FDI Positions from Figure 2

Partner country	Reporting economy							
	1		2		3		4	
	Inward	Outward	Inward	Outward	Inward	Outward	Inward	Outward
1	0	0	-50	0	100	0	0	0
2	0	-50	0	0	100	0	40	0
3	0	100	-100	0	0	0	50	0
4	0	0	-100	-60	0	0	0	0
Total	0	50	-250	-60	200	50	90	0
Consolidated FDI Statistics								
1	0	0	-190	0	160	0	80	0
2	0	-190	0	0	0	0	0	0
3	0	160	0	0	0	0	0	0
4	0	180	0	0	0	10	10	0
Total	0	50	-190	0	160	0	90	0

The bottom panel of table 3 shows the consolidated FDI statistics that would result from applying this definition and reallocating positions to the ultimate partner country. The inward positions from B in economy 2 (the -60 in D plus the 100 in E) and from C in economy 3 (40) are reallocated to A in economy 1, but the investment from Z in economy 3 remains allocated to economy 3 because Z is not controlled by another entity. For economy 3, the pass-through capital from C to E is deducted from its inward investment from A (100-60) and, along with the loan from B (100), is reallocated to A; the outward investment from Z to E (10) remains as outward investment from economy 3 to economy 4. For economy 2, the negative outward investment to D (-60) is identified as pass-through capital and is netted from the inward positions from A, C, and E (-250), for a total inward position of -190 allocated to A. For economy 1, there is no inward investment, but its outward investment identifies the ultimate destination for its direct investment as well as the fact that enterprise A controls B and uses it as a source of funding to the rest of the MNE.

Another complication arises if the MNE raises financing from outside of the group. This could include any minority ownership interests from the reporting economy, as depicted by enterprise Z in economy 3, and funds raised from third parties that are then lent to other parts of the MNE group, as depicted in the case of enterprise B.

II.A.2 Conventions in the Recording

There are conventions used in the method discussed above to compile the consolidated FDI positions. Enterprises can receive financing from a number of different sources and can use that financing in a number of different ways. Due to the fungible nature of capital, it is not possible to trace the source to the use. As a result, it is necessary to make assumptions about how much of the FDI received by the enterprise is used in local production and how much passes through. This is much more difficult in the case of operating affiliates than in the case of SPEs.

Some proposed definitions have focused on applying shares of intragroup financing in total financing. For example, one proposed definition of pass-through capital in Mahoney (2007) used the proportion of the total liabilities (including shareholder's equity) of an enterprise that are equity liabilities to a direct investor to determine the amount of its equity assets that should be deemed pass-through capital; so, if one-third of the total liabilities of the enterprise were equity liabilities to its direct investor, then one third of its direct investment equity assets were deemed to be pass-through capital.

Other definitions have included debt liabilities as well as equity (OECD, 2006). The assumption in these definitions is that all sources of funding are used equally in all uses. In contrast, the assumption used in this paper is that the intra-group financing is the primary source of funding for intra-group investments.

It is important to note that whichever of the estimation approaches used require the use of conventions. The preference for the approach (and underlying assumption) used in this paper largely reflects practical reasons. First, it requires less information than those approaches that require information on the full funding of the enterprise. Second, basing the amount of pass-through capital on the share of total financing could result in volatility as the share changes due to increases or decreases in the amount of total financing needed by the enterprise but with no change in the underlying intrafirm financing. Potentially introducing such volatility in measured FDI is arguably contrary to the goal of measuring stable, long-term financing. Finally, it is in keeping with the extended directional principle in which the full amount of the loan between fellow enterprises is netted from the inward investment of fellow making the loan. The result of the assumption that intragroup financing is the primary source of funding for intragroup investments is that more of the direct investment positions are reallocated to the entities at the end of the chain compared to the assumption that all sources of funding contribute to the intragroup lending.

The second convention that has been used is that the reallocation to the UIC is based on the country of the entity that controls the immediate direct investor; alternatively, it could be based on who controls the direct investment enterprise. When moving to focusing on control of the direct investment enterprises, it makes sense to move to examining only control relationships in the consolidation of the financing structure of the MNE; that is, the definition of FDI covering both influence and control relationships would need to be changed to only control relationships. Table 4 presents the results of the consolidated FDI statistics with only control relationships.

Table 4: Consolidated FDI Positions from Figure 2: Only Control Relationships

Partner country	Reporting economy							
	1		2		3		4	
	Inward	Outward	Inward	Outward	Inward	Outward	Inward	Outward
1	0	0	-250	0	160	0	140	0
2	0	-250	0	0	0	0	0	0
3	0	160	0	0	0	0	0	0
4	0	140	0	0	0	0	0	0
Total	0	50	-250	0	160	0	140	0

One change is that the investment from Z in economy 3 to E in economy 4 is no longer shown because it is not a control relationship. Similarly, the investment by B in economy 2 in D in economy 4 nor the loan from D to B are included since it is not a control relationship. One thing this highlights is the value of expanding the information to capture the total financing of the MNE because these sources of funding are no longer captured in the data.

II.A.3. Expanding Consolidated FDI Statistics to Capture the Full Financing of the MNE

Moving to control relationships resembles the consolidation rules used in international accounting standards, and, so, in developing a framework for capturing the full financing of the MNE, the Working Group on International Investment Statistics (WGIIS) called on these principles to identify the intragroup assets. The framework recommended expanding the coverage of financial variables to

total assets and liabilities. So, these statistics would include FDI but would go beyond it to include purely domestic sources of financing and cross-border sources other than FDI. This expansion recognizes that all of the funding received by the enterprise, not just FDI, affects its operations.

Next, the MNE framework made use of the Ultimate Controlling Parent (UCP) concept from the FDIR to classify investment and to define the entities to be covered. The UCP is the entity on top of the ownership chain and which is not controlled by another entity. For inward investment, the MNE framework recommended allocating all variables to the country of the UCP. Not only does this align with the recommendation for a supplemental presentation of FDI statistics by UIC, but it also aligns with the recommendations for compiling AMNE/FATS statistics. For outward investment, it recommends that the entities covered include only non-resident subsidiaries that are controlled by UCPs resident in the reporting economy. That is, it removes from the outward investment of a country investments made by entities that are resident in the economy and that are in turn themselves foreign-controlled. This prevents overestimation of the amount of overseas assets under control.

Finally, the MNE framework recommended that the financial measures be consolidated for the group to eliminate the double-counting of funds in transit or round-tripping. This consolidation is done by netting investments between the affiliates of the group from the group's total assets and is equivalent to the methods discussed above. This consolidation not only removes fund that go into and out of subsidiaries simultaneously (funds-in-transit) but also removes funds that have been invested by subsidiaries in other affiliated enterprises on behalf of the UCP. For a complete description of the method, see OECD (2011) and OECD (2015).

The results of expanding the presentation to the full financing of the MNE are presented in Table 5, but for a more complete description of the framework, see OECD (2011). Table 5 presents the assets that enterprise A controls in each economy. The amount of total assets in column 1 overstates the total assets controlled by A due to intragroup positions, so column (2) identifies the amount of intragroup assets, and column (3) identifies the consolidated assets of A by netting these intragroup positions from the total assets.

Table 5: Assets Controlled by A in Each Country

Economy	Total assets (1)	Intragroup assets (2)	Consolidated assets controlled by A (3)= (1)-(2)	FDI positions by UHC (4)	Extra-group financing		
					Total (5)	Equity (6)	Debt (7)
1	750	250	500	0	500	200	300
2	490	400	90	-250	340	0	340
3	340	40	300	160	140	0	140
4	200	0	200	140	60	10	50
Total	1,780	690	1,090	50	1,040	210	830

The total financing reveals the extent to which A has leveraged its direct investment (in column (4)) to control a much larger amount of assets. It also reveals the extent to which it relies on extragroup financing (column (5) and broken out between equity (6) and debt (7)). This includes both the equity in A itself as well as the equity investment that enterprise Z has in enterprise E. It also reveals the extent of debt at A's foreign subsidiaries, particularly the reliance on extragroup financing through its subsidiary B.

III.B. Income-in-transit

Just as capital can flow down an MNE ownership structure, income can flow up it. The same concept of pass-through capital used for positions can be used for FDI income: income-in-transit is the FDI

income a foreign-owned parent receives from its foreign affiliates. In the same way therefore, bilateral income-in-transit flows can exaggerate the degree of interdependencies between partners and give a misleading picture of the importance that productive activity (in particular with respect to GDP) in one country (and its resident affiliates) makes to the generation of income in another (especially the parent). In addition it blurs the ability to identify where the income was generated within an MNE, and so in turn hampers analyses of GVCs and also our understanding of potential income shifting occurring under BEPS.

But by netting flows between affiliated enterprises it is possible to derive a meaningful estimate of the actual FDI income generated within the host economy (as oppose to the total income passing through). Figure 3 presents a simple example of an MNE ownership structure with three economies to illustrate this. For each entity, an abridged income statement showing their total income, total costs, and net income is shown; additionally, under the total income, the amount of that income that represents income resulting from their equity investments in other parts of the MNE, called "Income from foreign affiliates", is shown. Table 6 shows the FDI income that would be reported by immediate partner country in standard FDI statistics and the consolidated FDI statistics by ultimate partner country.

Figure 3: Income in transit through a simple MNE structure

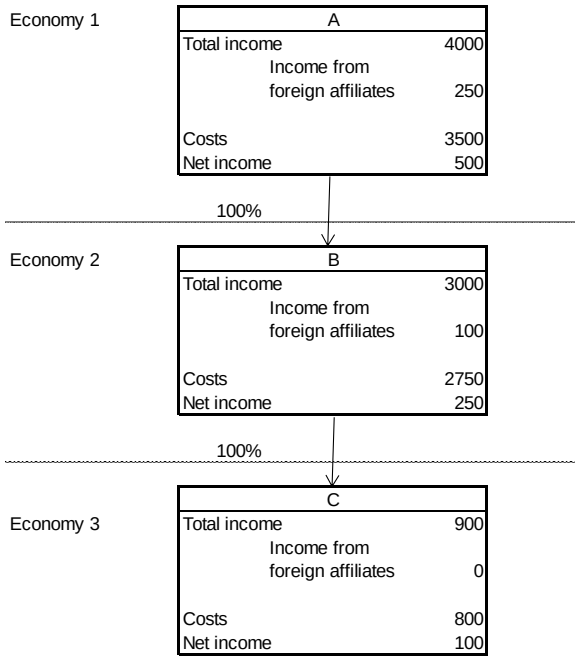


Table 6: FDI income by immediate partner country and consolidated income by ultimate partner country

Partner country	Reporting economy											
	Standard FDI statistics by immediate partner						Consolidated FDI statistics by ultimate partner					
	Economy 1		Economy 2		Economy 3		Economy 1		Economy 2		Economy 3	
	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In
1	0	0	0	250	0	0	0	0	0	150	0	100
2	250	0	0	0	0	100	150	0	0	0	0	0
3	0	0	100	0	0	0	100	0	0	0	0	0
Total	250	0	100	250	0	100	250	0	0	150	0	100

As with the positions, the total amount of income recorded in the consolidated statistics is equal to the earnings of the MNE from its foreign operations, and, so, the double-counting resulting from income-in-transit has been removed. The amounts shown for income payments for economies 2 and 3 represent the income generated within their economies and are allocated to economy 1, who ultimately has the claim on the earnings.

III.C. Pass-through capital in financial flows

Another method that FDI statisticians have used to produce estimates of pass-through capital in response to the concerns expressed by data users is to identify the capital coming into and passing out of a direct investment enterprise in the same period (Kocerka and Makowski (2017) and Montvai (2016)). As Blanchard and Acalin (2016) noted, these estimates do not appear to completely resolve the problem of pass-through capital. An important issue that arises when trying to identify capital coming into and going out of the same enterprise is timing. As the Swiss Central Bank noted in its analysis of pass-through capital, it can be a gradual process. First the entity in Switzerland is capitalised and not until later is the capital transferred abroad, for example, through the acquisition of enterprises abroad (Swiss Central Bank, 2017).

Second, the acquisition of domestic MNEs can result in pass-through capital, which is not captured by identifying flows going in an out. The acquisition of a domestic MNE can involve a significant inward FDI flow but much of this could represent funds to purchase assets in other countries that are part of the MNE; since they are already owned by the domestic parent, there would be no subsequent outflows to those foreign affiliates associated with this transaction. For example, in 2016, when Annheuser Busch InBev acquired SAB Miller for USD 103 billion, there was a large inflow to the United Kingdom, where SAB Miller was headquartered, even though much of those funds were payment for the operations of SAB Miller outside of the United Kingdom. Defining pass-through capital as is done in this paper would recognise that a substantial portion of that inward flow was for foreign assets and would produce a smaller estimate of genuine FDI to the United Kingdom. Leino and Yrkko (2014) provide a good example of the impact this can have on measures of pass-through capital as they measure pass-through capital based on positions[6] as well as according to the difference between inflows and outflows to direct investment enterprises in a given year. They find that between 2002 and 2011, the accumulated pass-through flows were €5.7 billion, but the increase in the stock of pass-through investments was almost €12 billion. They attribute this difference to the acquisitions of Finnish MNEs by foreign investors.

In theory, the definition of pass-through capital in financial flows can be derived from the positions because the change in the position between two periods is the result of financial flows and valuation changes, the pass-through financial flows. However, the interpretation of these flows would be complicated because there would not necessarily be any flows recorded in the standard FDI statistics due to differences in timing.

III.D. Producing statistics according to these definitions

The statistics separately identifying pass-through capital could be produced by FDI statisticians by linking the inward and outward FDI position and income statistics at the micro level. The compilers would then be able to see the outward positions and income receipts and inward positions and income payments for foreign-owned parents and to calculate how much of the position is located and income

[6] Their preferred measure of pass-through capital adjusts for the source of funding by using the portion of FDI liabilities in total liabilities to determine the amount of pass-through capital.

is generated within the economy rather than passing through. As a first step, and subject to the usual confidentiality restrictions, countries could identify the FDI outward position and income receipts of all foreign-owned parents, and not just SPEs, in their outward investment statistics. Then, data users interested in identifying the pass-through capital and income in transit could use this published information. The Austrian Central Bank and the Swiss Central Bank already publish such statistics.

As for publishing the information by ultimate investing country, the process for reallocating the inward position with pass-through capital removed could be done as many countries are currently doing with their inward FDI positions.[7] The presentation could also be extended to income to help in the analysis of income flows along GVCs. However, unlike the case for determining the UIC where countries only need information on the profile of the multinational and, in particular, the share of control of the ultimate parent in the immediate partner, the presentation by UHC is more problematic as it would require additional information on how flows/positions are channelled through countries, requiring some form of cross-border statistical collaboration or data collection for the MNE and all of its affiliates in the compiling country. Very few countries currently collect these data as either part of their FDI data collection or their FATS data collection. However, initiatives by international organisations, such as the Eurogroups Register, the Global Group Register, and the forthcoming OECD MNE database, could provide important information to compilers to help them reallocate their outward positions to the UHC as well as to reallocate inward positions to the UIC. The use of common registers would also help to ensure that all countries are using the same information when doing the reallocation.

IV. Evidence on the prevalence of pass-through capital

To assess the importance of pass-through capital through operating affiliates one needs good quality firm level microdata. Such information, covering the entire activity of an MNE and its affiliates across borders, is not typically available or publishable by national statistics authorities. However, Bureau van Dijk's ORBIS database provides financial information on enterprises in 158 countries and also includes detailed information on their ownership structure. So, it is possible to use these data to derive broad estimates of the extent of pass-through capital using the methods described above.

For this exercise, ORBIS data for some of the European members of the OECD were examined to assess the extent of capital passing through 'operating entities' (as opposed to SPEs) as most of these countries already produce FDI statistics that separately identify the FDI associated with SPEs.[8] The data appendix provides detail on the data from ORBIS and how it was used to identify non-SPE entities potentially used to pass capital to other parts of the MNE.

To estimate the importance of pass-through capital, the first step is to identify all of the direct investors in ORBIS from a country and to calculate the total amount of shareholders funds these direct investors hold in their foreign subsidiaries; entities that appear to be SPEs are dropped from the ORBIS sample to focus on capital passing through non-SPE, or operating, affiliates. The next step is to use the information on the Global Ultimate Owner (GUO) included in ORBIS to identify the direct

[7] This effort is aided by the fact that many countries already collect information on the country of the Ultimate Controlling Parent to apply the extended directional principle.

[8] It was decided to focus on European countries as they are generally considered to have among the best coverage in ORBIS. Data were used for the following countries: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

investors in the country that are in fact ultimately controlled by an investor in another country. Then, the total amount of shareholders funds of these foreign-owned direct investors is calculated. With this information, it is possible to calculate the share of foreign-0owned direct investors in the total for all direct investors. Finally, this share calculated from the ORBIS data is combined with the official outward FDI statistics of the country to develop an estimate of the amount of pass-through capital in the economy. The official FDI statistics used exclude resident SPEs to focus on the pass-through capital through operating, affiliates.

This provides a rough estimate of the amount of pass-through capital in the economy. These estimates are only rough approximations, partly because they rely on certain assumptions as highlighted above but also for other reasons. First, they only consider equity and not debt because the ORBIS data do not provide information on intragroup lending. Second, the sample from ORBIS only focus on control relationships, but they are combined with official FDI statistics that cover both influence and control relationships. Third, the method used to drop possible SPEs from the ORBIS data was based ono industry codes and is, thus, very broad and likely captured non-SPEs as well. Finally, it is not known how representative the samples are for each of the countries. Nevertheless, the goal was only to give an indication of how important the phenomenon of pass-through capital is.

Table 7 presents evidence for 2014 on the importance of pass-through capital for each country. The first column is the estimate of pass-through capital through operating affiliates estimated as described above; it is presented as a share of the total inward position in the country excluding resident SPEs. To compare to the importance of pass-through capital through SPEs, the last column shows the share of SPEs in the total inward investment position of each country as reported in their official statistics.[9]

Only a few countries have published information that can serve as a basis for comparison to these estimates. Switzerland is the most problematic as the Swiss Central Bank estimates that 53 percent of the inward position in 2016 is pass-through capital under a broad definition that capture both SPEs and operating affiliates (Swiss Central Bank, 2017). This could be because the coverage of Swiss companies in ORBIS is not representative or that the method used to identify resident SPEs in the ORBIS data captured entities that do not, in fact, meet the definition of SPEs. For Austria, the estimates look reasonable as the Austrian Central Bank estimated that about half of the inward FDI position, excluding SPEs, represented pass-through capital in 2012 (Austrian Central Bank, 2015). This could reflect Austria's role as a gateway to investment in Central and Eastern Europe (Cernohous, 2017). As mentioned above, Leino and Yrrko (2014) estimates that about 28 percent of the inward investment position is pass-through, so the estimate here looks a little low. For Ireland, it is estimates that foreign-owned direct investors accounted for about two-thirds of FDI liabilities in 2014 (Lane, 2015). So, the estimate in table 7 appears to be a little low, but this could be because the estimated share from ORBIS excluded SPEs but the FDI position includes resident SPEs.

The extent of pass-through capital varies significantly across countries. Comparing the two columns, some of the countries with significant presence of SPEs, such as Austria, Luxembourg and the Netherlands, have higher rates of capital passing through operating affiliates than other countries as MNEs find it beneficial to take advantage of the benefits that these countries offer through their operating affiliates as well as by establishing SPEs. It is also apparent that some countries with little or no presence of SPEs can still have pass-through capital through operating affiliates. In some cases,

[9] Countries with 0% of outward investment accounted for by SPEs either do not host SPEs or they are insignificant. Data on SPEs are currently not available for Ireland; the United Kingdom only identifies SPEs in their detailed statistics and not in the aggregate statistics.

this could be the result of the purchase of domestic MNEs by foreign investors. However, some of the shares, such as in Belgium, appear too high.

Table 7: Importance of pass-through entities 2014

Reporting country	Share of pass-through capital in inward positions, excluding resident SPEs	Share of SPEs in inward investment positions
Austria	64%	33%
Belgium	90%	11%
Czech Republic	4%	0%
Denmark	56%	23%
Estonia	21%	(D)
Finland	11%	0%
France	34%	0%
Germany	23%	0%
Greece	9%	0%
Hungary	25%	56%
Iceland	1%	29%
Ireland	40%	n.a.
Italy	58%	0%
Latvia	54%	0%
Luxembourg	64%	92%
Netherlands	50%	82%
Norway	19%	1%
Poland	52%	1%
Portugal	26%	14%
Slovakia	56%	0%
Slovenia	39%	0%
Spain	15%	5%
Sweden	63%	8%
Switzerland	6%	14%
United Kingdom	15%	n.a.

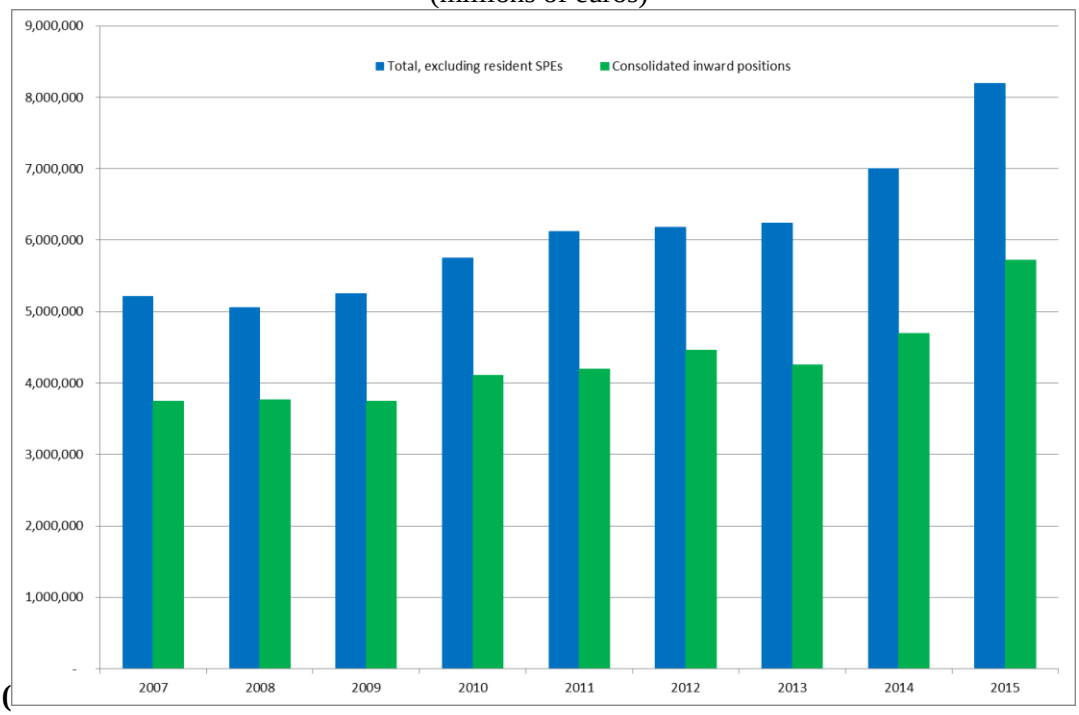
n.a. Not available.
(D) Not publishable.
Source: OECD FDI Statistics database and author calculations based on ORBIS

Figure 3 presents the total inward FDI positions for these countries between 2007 and 2015; the blue bars represent the standard inward FDI positions excluding resident SPEs as reported to the OECD. The green bars represent the consolidated FDI positions as estimated in this paper. Overall, the consolidated positions are about one-third lower than the standard positions. They also grew slightly less over the period: the 2015 consolidated position is 53 percent higher than the 2007 position while the 2015 standard FDI position is 57 percent higher than the 2007 position. This indicates that pass-through capital could be growing faster than 'real' FDI.

The data in ORBIS can also provide information on the country of the Global Ultimate Owner of the MNE Group. An examination of these data reveal that US MNEs appear to be more involved in pass-through activity than MNEs from other countries. For example, in 2014, US-owned MNEs account for about 14 percent of all foreign-owned firms in these countries, but account for about 30 percent of the entities with pass-through capital. This is not surprising given the complexity of the ownership structures of some US MNEs. The practical impact of this is that while FDI statistics by immediate

partner country would understate the importance of the United States as an investor, the reallocation of the inward position to the UIC would overstate the importance of the United States because some of that position represents funds passing through the economy.

Figure 3: Inward FDI Positions Excluding SPEs and Consolidated Positions, 2007-2014
(millions of euros)



Source: OECD FDI Statistics database and author calculations based on ORBIS

V. Related Statistics and Measurement Issues

This section begins by examining some related sets of statistics, including consolidated statistics as well as those on the operations of MNEs and on international investment. Then, it will examine some measurement issues that are relevant to consolidated FDI statistics but also more broadly, including determining the value and location of intangible assets.

V.A. Related statistics

The Bank for International Settlements publishes two sets of nationality-based statistics. The first of these was the Consolidated Banking Statistics (CBS). The CBS are collected by the country where the international bank is headquartered. While the consolidation practices vary across countries, the CBS includes claims of the bank's foreign affiliates but removes the intragroup positions. The statistics are presented on both an immediate counterparty basis as well as by the ultimate risk basis. For example, if a German bank makes a loan to a Canadian company that was guaranteed by a United States entity, then Canada would be the immediate counterparty while the United States would be the country of ultimate risk. The BIS also compiles the International Debt Securities on a nationality basis so that debt securities of foreign affiliates are attributed to the country where the MNE is headquartered. These statistics demonstrate the contribution that nationality-based and consolidated statistics to the analysis and monitoring of financial developments.

Statistics on the activities of MNEs (AMNE/FATS statistics) are closely related to FDI statistics. Due to this close relationship, the WGIIS has developed a framework to harmonise and align the definitions, concepts, and classifications used for the two sets of statistics so that they could be used together (OECD, 2011). This framework, the MNE Framework, is the one used to capture the total financing of the MNE as in section III.A.3 of this paper.

Trade in Value Added (TiVA) statistics were developed in response to the growth of global value chains (GVCs) and increased globalisation. These statistics focus on the value added in each country in the production of goods and services that are traded. TiVA statistics identify the domestic value added of a country that ends up in foreign final demand as well as the ultimate destination for that domestic value added; similarly, they identify the foreign value added in domestic final demand as well as the ultimate source of that value added. These statistics have provided important insights into the economic relations between countries that could be obscured by the increasing complexity and globalisation of economic production (OECD and World Trade Organisation, 2015).

The OECD has been developing a methodology to integrate FDI income statistics into the TiVA Framework to understand where the income is generated along GVCs and where that income accrues (OECD, 2016). This work highlighted the limitations in FDI statistics that inhibited their use for such globalisation analysis, including income-in-transit and the presentation by immediate rather than ultimate partner country. The consolidated FDI statistics proposed in this paper address these issues and should enhance the integration of FDI statistics into TiVA and the ensuing analysis.

V.B. Some remaining measurement issues

The methodology proposed in this paper relies on being able to identify where the assets of the MNE are located so that the consolidated view of the MNE can be attributed to specific economies. While this is usually straightforward for tangible assets with some exceptions, it is much more difficult for intangible assets. MNEs can move their intangible assets to economies that offer advantages, such as concessional tax rates, while continuing to use these assets in their production in other countries. The determination of the location of intangible assets within MNEs is not straightforward (UNECE, 2015). Improved guidance on determining the location of intangible assets using economic rather than legal ownership would enable better recording of transactions and positions in intangible assets in FDI statistics. The framework developed here could be used to present the recording of intangible assets on an ownership, or nationality, basis rather than residency basis.

The value of intangible assets also poses difficulties for FDI statisticians. Market values are considered to be the appropriate valuation for FDI positions. However, in practice, market values are only available for a small portion of FDI positions because most of the equity of direct investment enterprises is not listed. As such, it is necessary for FDI statisticians to estimate market values. The international guidelines offer several methods for doing this (see Annex 10 in OECD, 2008), but most of these methods exclude intangible assets from these market value estimates. For example, the most common method used, Own Funds at Book Value, relies on the accounting records of the direct investment enterprise kept according to International Financial Reporting Standards. These standards do not include the revaluation of intangible assets. Better methods to estimate market values of FDI positions would improve the comparability across functional categories in the BOP and IIP statistics as well as better reflect the important contribution of intangibles to the value of corporations, particularly MNEs, and to global production arrangements.

Another phenomenon that has affected FDI statistics is the decision by MNEs to move their headquarters to new countries to take advantage of benefits from the relocation, such as lower taxes. This phenomenon, sometimes called redomicilation, can result in significant FDI flows that are almost completely offset by portfolio investment flows (Irish Central Statistics Office, 2016); in addition, there is likely very little change in the actual operations of the MNE. It is possible that the methods used here to identify pass-through capital in FDI could be extended to portfolio investment to encompass these transactions. By doing so, the flows and positions associated with these transactions could be eliminated from the consolidated FDI statistics to reflect their limited impact on the economies involved.

VI. Potential Policy Issues

Consolidated FDI statistics by ultimate partner economy would have many uses. First, they would provide better measures of financial integration between economies. By eliminating pass-through capital, the statistics would represent true financial integration and not financial intermediation between countries. In addition, the statistics by ultimate partner would provide better bilateral statistics for understanding the financial linkages between specific countries, which could be used to analyse how a wide range of policies, such as traden and investment agreements and tax policies, affect such integration. Such statistics would help better understand the financial interdependencies between countries.

Second, the statistics would enable better analyses of the impact of FDI on an economy. A key use of the statistics, for example, could be to integrate them into the Trade in Value Added (TiVA) Framework. Because the new statistics would more accurately measure the FDI income generated within an economy and the ultimate destination of that income, it would be useful for identifying where the income is being generated along a global value chain (GVC) and where it ultimately accrues. Moreover, the nationality approach in which outward FDI flows and positions are identified only for domestic parent companies, and not foreign-owned parent companies, are essential to quantifying the benefits to home countries of their ownership of foreign production facilities.

Third, these statistics could be linked to AMNE/FATS statistics to analyse the relationship between MNEs' operations and their financing; this would eb especially valuable if the statistics are expanded to capture the total financing of the MNE. Such linked statistics could show, for example, if foreign-owned firms can tap into intragroup financing in times of financial crisis in the host countries, thus contributing to the resilience of these economies. Similarly, it could show how crises in the home countries affect the operations of their foreign affiliates. It could also show how well aligned MNEs activities are with where they attribute the income, shedding light on profit-shifting.

Fourth, to the extent that pass-through capital responds to tax considerations, changes in tax policy can have significant impacts on FDI flows and positions but these changes may not be associated with any real changes in their operations as they only affect the ownership structure and not their actual operations (Foley et al, 2011). With recent or forthcoming tax policy changes in several countries, including the United States, these statistics would allow for the analysis of trends in genuine FDI separately from those related to fiscal optimisation by MNEs. In broader terms, these statistics would enable a better analysis of the factors that attract FDI. Economists usually distinguish the factors that drive FDI, such as market-seeking behaviour or factor cost differences, from those that drive portfolio investment, such as monetary policy or the business cycle. Yet, Blanchard and Acalin (2016) found that the factors usually considered drivers of portfolio investment flows were more highly correlated with FDI flows to emerging markets than to portfolio investment flows to those markets. They

hypothesized that this was due to pass-through capital, so consolidated FDI statistics, from which the pass-through capital has been eliminated, should enable a better analysis of the drivers of FDI.

Fifth, these statistics would allow for better monitoring of commitments made under international agreements, such as free trade agreements, in the area of investment by enabling the monitoring of changes in the amount of assets in the reference economy owned by the partner country. In addition, they could also be used to monitor the contribution of FDI from advanced economies to financing other international initiatives, including the Sustainable Development Goals, the transition to a carbon neutral economy, and official development assistance.

Finally, these statistics would help to monitor the cross-border exposures of MNEs. A true nationality, or ownership-based approach, to measuring the cross-border exposures of MNEs would include borrowing by the foreign subsidiaries of MNEs from unaffiliated parties, either domestic or foreign. Expanding the measures beyond FDI to capture the total assets of the group would provide a more complete picture of the economic involvement of the group as well as its cross-border and local exposures. The nationality approach recognises that the headquarters controls many of the decisions taken by the firm. This means that some aspects of the operations of the foreign-owned firm may respond more to home country policies than host country policies. Differentiating between domestic and foreign-owned entities is necessary to understand who ultimately bears the risk (Lane, 2015). Consolidation would also be a step to developing a consolidated measure of the wealth of nations for their non-financial corporations.

VII. Conclusion and Next Steps

MNEs play a central role in the creation and management of complex production networks. However, FDI statistics reflect not just the FDI associated with these networks but also other factors, such as fiscal optimisation to reduce tax burdens and the increasing sophistication in MNEs' capital structures. This can make it difficult to interpret FDI statistics, in the sense that they are not ‘real’ and provide little in the way of “long-term” investments in a country. In this sense, when MNEs channel investments through several countries, FDI flows and positions may be ‘inflated’ because each flow into and out of each country is counted even if the capital, or income, is just passing through. Moreover, this behaviour can further obscure the ultimate source and destination of FDI when the statistics are compiled by immediate partner country.

This paper proposed a framework to produce consolidated FDI statistics based on the nationality of the MNE group. These statistics would be a complement to the residency-based FDI statistics. While residency-based financial statistics are useful to know where financial claims and liabilities are created and held, nationality based statistics provide information on who makes the underlying decisions, who reaps the benefits, and who takes on the risk and needs to hold sufficient capital to cover potential losses. These statistics would be useful for better measuring financial integration and the links between economies. They could also be used in conjunction with statistics on the operations of MNEs to analyse the relationship between the financing of MNEs and their operations.

Rough estimates of the amount of pass-through capital in operating affiliates, rather than in SPEs, reveals that it is quite extensive, accounting for about one-third of the inward FDI positions in a selection of European countries. It also appears that pass-through capital is growing faster than the 'real' FDI. However, these estimates are very rough, so, the next step is to refine the estimates developed from the micro-level data in ORBIS to provide better estimates of the amount of pass-through capital as well as income in-transit. The data could also be explored to provide more

information on the ultimate partner countries--both UIC and UHC. Finally, it would also be useful to use additional information from the balance sheets included in ORBIS to develop some estimates of the total assets controlled by the foreign investor in the host economies.

It would also be useful to identify steps that countries could take to help shed light on the extent of pass-through capital overall and not just through SPEs. This could include publishing a limited set of data based on the nationality of the ultimate investor; that is, identifying the outward investment positions of a country accounted for by direct investors in the reporting country that are in fact foreign-owned. Finally, it would be useful to have countries attempt to use these methods. This could provide additional complexities in the financial structure of MNEs that need to be addressed as well as giving an indication of the feasibility of these methods.

Bibliography

Austria Central Bank (2015), "Whi is the Investor? A Simple Question that May Improve FDI Statistics," presentation to the WGIIS, 18 March 2015.

Bank for International Settlements (2015), "Consolidation and Corporate Groups: An Overview of Methodological and Practical Issues," Inter-Agency Group on Economic and Financial Statistics (IAG), IAG reference documents.

Benetrix, Agustin S., Robert N. McCauley, Patrick McGuire, and Goetz von Peter (2017), "The Consolidated Wealth of Nations: A First Step," mimeo. (Check with Caroline that it is okay to cite)

Blanchard, Olivier and Julien Acalin (2016), "What Does Measured FDI Actually Measure?", Peterson Institute for International Economics, PB16-17, October 2016.

Caballero, Julian, Ugo Panizza, and Andrew Powell, "The Second Wave of Global Liquidity: Why Are Firms Acting Like Financial Intermediaries?" Graduate Institute of International and Development Studies, International Economics Department, Working Paper HEIDWP21-2015.

Central Statistics Office of Ireland (2016), "The Impact of Redomiciled Companies on the Balance of Payments and International Investment Position."

Cernohous, Thomas (2017), "FATS and FDI Statistics: Close Connections, Different Focus," *Focus on Extneral Trade 2016/2017: Foreign Direct Investment and Trends, Drivers Limiting Factors*, Austrian Central Bank.

Eggelte, Juriaan, Melle Bijlsma, and Krit Cartier (2016), "What Shall We do With Pass-through? DNB's Experiences with Special Financial Institutions," mimeo, Dutch National Bank.

Foley, Fritz C., Dhammika Dharmapala and Kristin J. Forbes. "Watch What I Do, Not What I Say: The Unintended Consequences of the Homeland Investment Act," *Journal of Finance*, 66, no. 3 (June 2011): 753-788.

International Monetary Fund and the Financial Stability Board (2009), "The Financial Crisis and Information Gaps," Washington, DC.

International Monetary Fund (2017), "Preliminary Report of the Task Force in Special Purpose Entities," Balance of Payments Committee Meeting, BOPCOM-17/05.

Irish Central Statistics Office (2016), "Redomiciled PLCs in the Irish Balance of Payments," http://www.cso.ie/en/media/csoie/methods/balanceofinternationalpayments/RedomiciledPLCs.pdf.

Kocerka, Jacek and Krzysztof Makowski (2017), "Does Pass-through Funds Require Their Own Functional Category," ISI World Statistics Congress.

Lane, Philip R. (2015), "Cross-Border Financial Linkages: Identifying and Measuring Vulnerabilities," mimeo, Trinity College Dublin and CEPR.

Lane, Philip R. and Gian Milesi-Ferretti (2017), "International Financial Integration in the Aftermath of the Global Financial Crisis," International Monetary Fund, WP/17/115, May 2017.

Leino, Topias and Jyrki Ali-Yrkko (2014), "How Well does Foreign Direct Investment Measure Real Investment by Foreign-Owned Companies?", Bank of Finland, Bank of inland Research Discussion Paper No. 12/2014, May 2014.

Mahoney, Paul (2007), "Developing a Consolidated Approach to Identifying Pass-through Capital and Reallocating Positions to Ultimate Investors and Ultimate Investees," paper fo the Research Agenda of the OECD Workshop on International Investment Statistics, mimeo, October 2007.

Montvai, Beata (2016), "Towards Interpretable FDI Data in External Sector," Hungarian Central Bank, www.ksh.hu/cess2016/prezi/cess2016_b6_beata_montvai.pptx.

Organisation for Economic Cooperation and Development (2006), "A Method for Allocating the U.S. Direct Investment Position Abroad to the Country and Industry of Ultimate Destination," Note by the United States, Paris, France.

Organisation for Economic Cooperation and Development (2008), *Benchmark Definition of Foreign Direct Investment, 4th edition*, Paris, France.

Organisation for Economic Cooperation and Development (2011), "Harmonising FDI and Activities of MNE Statistics," Paris, France.

Organisation for Economic Cooperation and Development (2015), "Harmonising FDI and Activities of MNE Statistics: Feasibility of and Priorities for Compilation," Paris, France.

Organisation for Economic Cooperation and Development (2016), "Integration of FDI Statistics in TiVA: Results and Data Challenges," Paris, France.

Organisation for Economic Cooperation and Development and World Trade Organisation (2015), "Trade in Value Added," http://www.oecd.org/sti/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm, Paris, France.

Swiss Central Bank (2017), *Direct Investment 2016*, Volume 17.

Tarashev, Nikola, Stefan Avdjiev, and Ben Cohen (2016), "International Capital Flows and Financial Vulnerabilities in Emerging Market Economies: Analysis and Data Gaps," Note submitted to the G20 International Financial Architecture Working Group, Bank for International Settlements.

United Nations Economic Commission for Europe (2015), *Guide to Measuring Global Production*, "Ownership of Intellectual Property Products inside Global Production," New York and Geneva.

Data Annex

To produce the estimates of pass-through capital, two datasets were used: micro-level data from Bureau van Dijk's ORBIS database and aggregate FDI positions from the OECD FDI Statistics Database.

A. ORBIS

The source database for this analysis is Orbis by Bureau Van Dijk. This is a cross-country firm level panel containing ownership link information. This data is compiled from a variety of documents (company reports and accounts, stock exchange filings, and regulatory records) and includes ownership percentages, types of relationships (such as global or domestic ultimate owner) and dates related to each relationship.

Cross sections of linkages were created for years 2007 to 2015. Each cross section compiles immediate ownership linkages between subsidiaries and shareholders. This was necessary for the identification of the entities within a country that were direct shareholders in another enterprise, i.e., all of the enterprises within a country that have subsidiaries. For each of these entities, the global ultimate owner (GUO) was identified. The GUO_{50} variable in ORBIS was used; ORBIS identifies the GUO_{50} by following the ownership chain of the enterprise through control relationships until an entity that is not controlled by another entity is reached.

Hence, for each linkage, the variables extracted were:

- Subsidiary identifier and country[10];
- Shareholder identifier and country[11];
- Global Ultimate Owner (ownership above 50%) and country[12]; and
- Percentages of ownership.

These were extracted under the following conditions:

- Activity status: active link
- Information year: valid and time-stamped in each year
- Entities at shareholder level (hence, the country of pass-through) limited to be European Union and EEA countries

The regional focus outlined in the third point was chosen to ensure maximum quality and timeliness of data (the higher European coverage is a well-known feature of Orbis). Subsidiaries and Ultimate Owners were however unconstrained in terms of geographic location.

To focus on pass-through capital through operating affiliates, enterprises with NACE codes 6420 and 6430 were dropped from the sample. This was a broad definition of SPE[13] because it only considered the industry code and not other factors, such as the amount of employment or share of foreign assets or liabilities on their balance sheets, that are relevant.

[10] Country was based on the two-letter ISO code prefix contained in the entity identifier.
[11] Ibid
[12] Ibid
[13] For further details, please consider, for example, the Eurostat NACE Rev.2 Introductory guidelines. Units classified in these two classes do not have any revenue from the sale of products, and usually do not employ staff (except possibly one or a few persons acting as legal representatives). Sometimes these units are called "brass plates", or "post boxes" or "empty boxes", or "special purpose entities - SPE", as they just have a name and an address.

For each of the remaining entities, the total assets and shareholders' funds were linked in. Preference was given for subsidiaries to the unconsolidated financial statements. For the shareholders and the GUOs, priority was given to consolidated accounts, but where the shareholder' funds variable was not available, unconsolidated data were retained.

For each country, all of the domestic enterprises with foreign subsidiaries were identified and their total ownership percentage in their foreign subsidiaries was multiplied by the shareholders' funds to estimate the equity claim the direct investors had on the subsidiaries.

B. FDI positions

A time series of inward and outward FDI positions from 2007 to 2015 was constructed from the OECD FDI statistics database. Statistics excluding resident SPEs were used. For countries that did not separately identify the FDI to and from resident SPEs in earlier years, the share of resident SPEs in the total positions for the first year the data were reported was carried back to 2007. No other adjustments were made for the implementation of BD4 so there might be other breaks in series.