The blurring of corporate investor nationality and complex ownership structures

Eleonora Alabrese and Bruno Casella*

Recent years have seen a significant increase in the complexity of multinational enterprise (MNE) ownership structures. Complex corporate structures raise concerns about the effectiveness of national and international investment policies, based on the notion of investors' nationality. This motivates this research effort, aimed at analysing the ownership structures of some 700 000 foreign affiliates (FAs). A new methodology, the bottom-up approach, is introduced. The main objective is to empirically map the "shareholder space" of FAs, along the vertical dimension, from the direct shareholders to the ultimate owners. We find that FAs are often part of transnational investment chains; more than 40 per cent of foreign affiliates have direct and ultimate shareholders in different jurisdictions ("double or multiple passports"). Based on shareholders' nationality, we then propose and empirically analyse the salient features of four main archetypes of FAs ownership structure: plain foreign, conduit structures, round-tripping and domestic hubs. Each poses specific challenges to policymakers.

Keywords: firm-level, investors' nationality, multinational enterprises, ownership structures

JEL Classification: F23, G32, H87

1. Introduction: multinationals' ownership structures

Recent years have seen a significant increase in the complexity of multinational enterprise (MNE) ownership structures. On the one hand, as the global economy becomes more integrated, and industrial production processes increasingly fragmented across countries, the enhanced complexity of corporate structures seems a natural outcome of a search for efficiency; see for example the World Investment Report (UNCTAD, 2013) on the link between global value chains and MNEs' activity as captured by foreign direct investment (FDI). On the other, there is a widespread sentiment that MNEs "artificially" add complexity mostly for tax and

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financial purposes. Indeed, the UNCTAD report (2015) provides evidence that investment schemes involving offshore financial centres (OFCs), special purpose entities (SPE) and transit FDI are important tools in MNE tax minimization efforts.

This may result in the increased depth of corporate structures, with affiliates ever further removed from corporate headquarters in chains of ownership, dispersed shareholdings of affiliates (with individual affiliates being owned indirectly through multiple shareholders), cross-shareholdings (with affiliates owning shares in each other), and shared ownerships (e.g. in joint ventures).

The increased complexity of corporate structures raises important concerns about the effectiveness of national and international investment policies relying on the notion of investors' nationality. To address this possible challenge one needs to characterize ownership structures based on clear features and identify them via a well-defined toolkit. This paper seeks to provide an answer to both demands. Our effort intends to map the ownership structures of foreign affiliates (FAs) with the use of a new methodological approach. The methodology allows a simple systematic characterization of intricate conglomerates for a large number of observations. To our knowledge, we are the first to look at the shareholder space of numerous FAs along a vertical dimension moving up from the individual affiliate level. We can therefore investigate traits of FAs based on the so identified jurisdictions of their direct and ultimate shareholders, and examine their policy impact.

This work contributes to a promising and expanding literature. La Porta et al. (1999) provide one of the earliest attempts to describe ownership patterns of large corporations across countries. The study looks at the beneficial ownership of a sample of large corporations in rich countries, to assess the level of concentration of their ownership, who exerts control and how. The authors document the presence of pyramidal structures of control and rare cases of cross-shareholding.

A later stream of academic research investigates specific factors influencing the financial and investment choices of MNEs, which may in turn affect the structure of ownership chains. Many look at possible tax considerations: Althshuler and Grubert (2002) analyse how multinationals use affiliates to implement investment-repatriation strategies; Desai et al. (2003) look at ownership chains to quantify the extent to which location of investment and reported profits are sensitive to tax rate differentials; Desai et al. (2006) explore tax avoidance strategies of multinational firms and report evidence suggesting that affiliates in tax havens are used to reallocate income and defer home country taxation; Grubert (2012) estimates suggest that foreign tax differentials may have significantly raised the foreign share of multinationals' worldwide income. Other factors were also considered, for example: Desai et al. (2004a) explore trends in joint venture (JV) formation looking at both tax changes and coordination incentives; Desai et al. (2004b) investigate how financing frictions and general local capital market conditions influence multinationals' choices

in capital structure; Desai et al. (2008) study how multinationals can overcome financial constraints using their internal capital market.

With the exception of the pioneering paper of La Porta et al. (1999), in all these studies the analysis of complexity in corporate ownership structures was incidental rather than the focus. Only recently a stream of literature has emerged that directly focuses on links in the global ownership chains of multinational corporations to explore their configurations, their complexity, the heterogeneity of these structures and the factors driving their evolution. Mintz and Weichenrieder (2010) analyse the ownership chains of German MNEs with specific focus on the role of conduit entities and holding companies. They first document the increasing relevance and complexity of both holding companies and indirectly-owned subsidiaries in German FDI over the 1990s. The study further shows that factors influencing the existence of these complicated ownership structures are withholding taxes, the possibility of group consolidation and the type of credit system of the capital exporting country.

Another relevant contribution comes from Lewellen and Robinson (2013). The paper analyses the ownership structures of U.S. multinationals and explores the determinants of their complexity. It shows that complex structures are widespread, involving as many as half of the MNEs in the sample. At the same time, there is a divergence in complexity trends. While there has been a steady reduction in the overall share of complex firms between 1994 and 2009, complex MNEs are becoming increasingly complex. Lewellen and Robinson (2013) find that specific tax motives, including the minimization of U.S. tax on income earned abroad, as well as withheld income and capital gains tax imposed abroad, are prominent determinants of complex structures. In addition, concerns about political and expropriation risks, prompt investors to seek out investment protection through international agreements (bilateral investment treaties (BITs)), while considerations on financial exposure, financing strategies and the broader institutional environment of the host country may also play a role.

Analysis on U.S. MNEs by Dyreng et al. (2015) confirm that both considerations about tax on equity distribution, as well as other country characteristics, such as corruption and foreign investment risk, influence the structure of equity chains.

A important recent research stream, laying at the intersection between international business, economics and computer science, applies the powerful analytical toolkit provided by network theory to the analysis of complexity in corporate structures. The aim is that of identifying trends and patterns in global corporate control (Vitali et al., 2011; Rungi et al., 2017). Recent work of Garcia-Bernardo et al. (2017) also uses network theory to examine the role of offshore financial centres (OFCs) in global corporate structures.

The above-mentioned studies have generally applied a "top-down" approach, looking at all possible ownership links in a given corporate group (i.e. starting from the parent company). This paper is the first to employ a "bottom-up" approach. Complexity here is seen from the perspective of the individual affiliate and the host country rather than the parent and the investor country. In line with this approach, immediate policy applications addressed in this analysis primarily concern national investment policies in FDI host countries and, more specifically, the effectiveness of investment rules and regulation based on the notion of foreign ownership.

2. Analytical perspective

2.1 The bottom-up approach

A parent entity is connected to its subsidiaries through layers of equity ownership links that determine its direct or indirect level of control. Affiliates can have one or more direct shareholders and numerous indirect shareholders in addition to their ultimate owner, all potentially located in different countries.

Looking at the depth and the transnationality of these ownership chains is crucial to understand elements of complexity of multinationals most relevant to investment policy.

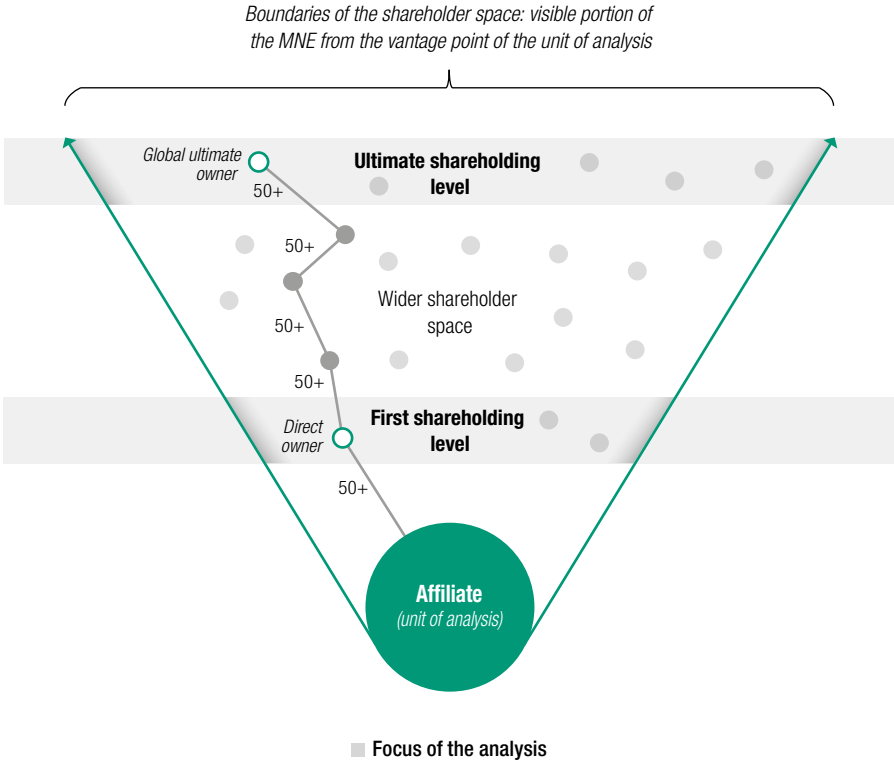
This work empirically analyses FAs ownership scenarios based on the nationality of its shareholders. For this purpose, we introduce a new "bottom-up" approach that looks at the ownership chain starting from the foreign affiliate. The approach is then applied to the analysis of a large database of FAs extracted from Bureau van Dijk's Orbis database.

Compared to the approach in the literature this far, the bottom-up approach (Figure 1) shifts the focus form the parent to the single affiliate company and analyses its *shareholder space* all the way up to the parent entity. While this space consists of all companies that directly or indirectly own a stake in the target unit, this analysis specifically focuses on two main shareholders: the direct owner and the ultimate owner (i.e. global ultimate owner or GUO, as defined in Orbis). The direct owner is the direct shareholder holding a majority stake; the ultimate owner is the last corporate entity connected to the direct owner through a chain of majority shares. In principle, the direct and the ultimate owner may not exist when the shareholder structure is fragmented; however, previous UNCTAD research (see for example UNCTAD, 2016) has proven that the vast majority of FAs, up to 90 per cent, do have a majority shareholder (that may or may not coincide with the GUO, depending on the vertical complexity of the ownership chain). In addition to the mapping of direct and ultimate owners, this methodology also permits the derivation of auxiliary indicators of complexity of ownership, e.g. number of links from the

affiliate to its GUO (hierarchical distance or HD) or the number of jurisdictions crossed by the majority ownership chain.

This approach is not meant to explore the full complexity of a corporate group. Yet, it is helpful to describe the salient features of the shareholder space for individual affiliates, to map the main ownership chain from the direct shareholder level to the ultimate owner, and to assess the complexity of ownership networks for aggregates of companies (e.g. by country, by region or by industry), mainly in terms of their "depth" and "transnationality".

Figure 1. A "bottom-up" perspective on MNE ownership structures: the view from the host country



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.

Note: The direct owner and the global ultimate owner are identified among shareholders owning a majority stake (i.e. at least 50 per cent of ownership shares).

2.2 Data extraction

The bottom-up analysis requires a massive extraction of firm-level ownership information from Bureau van Dijk's Orbis database.

Bureau van Dijk's Orbis database is widely recognized as the most comprehensive firm-level database of its kind. At the time of the extraction (November 2015) it provided information on 136 million active companies across over 200 countries merged from different sources (e.g. official administrative registries). Starting from the full sample of Orbis, we progressively refine the perimeter of interest, to finally target 4.5 million companies, of which 700,000 foreign affiliates, the focus of this study (see appendix for description of the steps for the construction of the database).

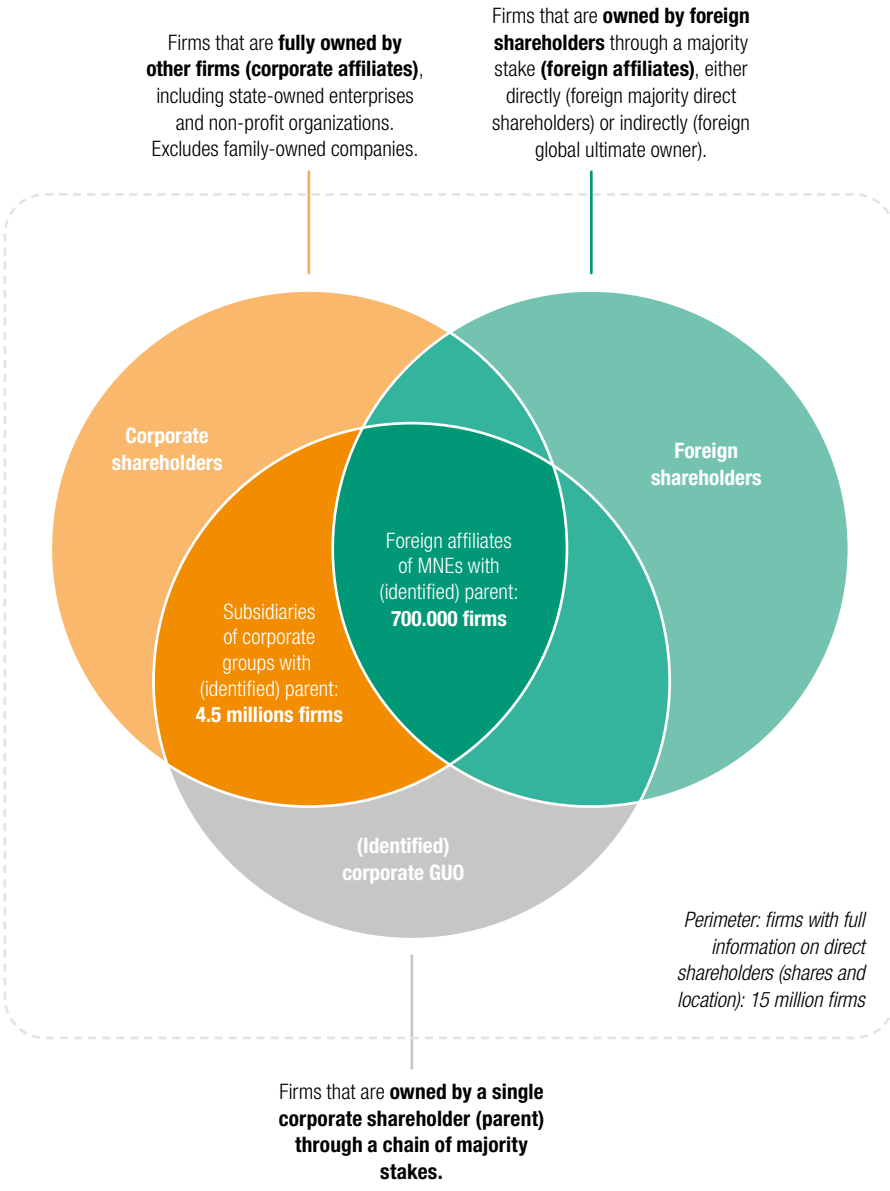
The final sample emerges from the combination of three main criteria (Figure 2). (1) Corporate shareholding confines the analysis to corporate entities. (2) Identified corporate GUOs focus the scope to majority-owned links. (3) Foreign shareholding further zooms in on foreign affiliates, i.e. companies with a foreign ownership component, either at the level of the direct or of the ultimate owner.

A few caveats should be kept in mind. First, even though the cases of cross-shareholdings, preferential shares and voting blocs should not be common, restraining the sample to majority ownership chains inflates the share of simpler ownership structures. Second, the focus on corporate boundaries excludes de facto beneficial ownership from the scope of the analysis.[1] Third, selected entities with more complete data may bias the sample coverage toward bigger and potentially more complex firms. Finally, but crucially, coverage of companies' information in Orbis is highly heterogeneous across countries, being significantly higher for developed countries than for developing ones.[2]

[1] However, companies with corporate shareholders have better information than those with individual or family-shareholders. For example, 95 per cent of the corporate-owned companies (with known shareholders) also report information on shares and location of the shareholders while the share decreases to 60 per cent for family-owned companies.

[2] This is a very well-known limit of any firm-level analysis based on Orbis, partially mitigated in this study by two considerations. First, foreign affiliates, the focus of this analysis, are less exposed to sample heterogeneity because they are generally larger and subject to more stringent reporting standards compared to domestic firms. Second, coverage of ownership information in Orbis is significantly better than financial information, even in developing economies.

Figure 2. Perimeters of interest

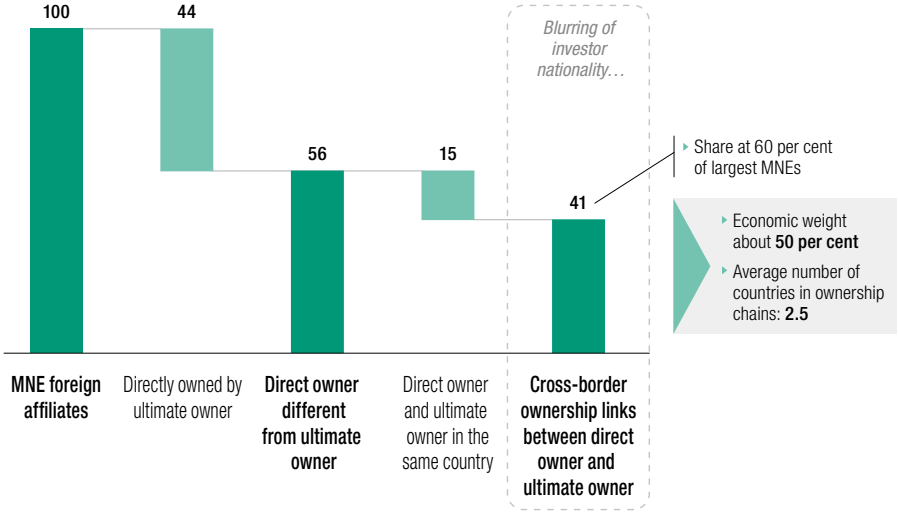


Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: Abbreviations stand for: multinational enterprises (MNEs), global ultimate owner (GUO).

3. Investor nationality mismatch

Comparing the nationalities of the direct and the ultimate owner for the 700,000 foreign affiliates in the sample, it emerges that in 40 per cent of the cases they are from different countries, resulting in *investor nationality mismatches* (Figure 3). Indeed, the mismatch index represents the share of cases of nationality mismatch between the direct and the ultimate owner in a group of affiliates – an indicator of the transnationality of the ownership chain.

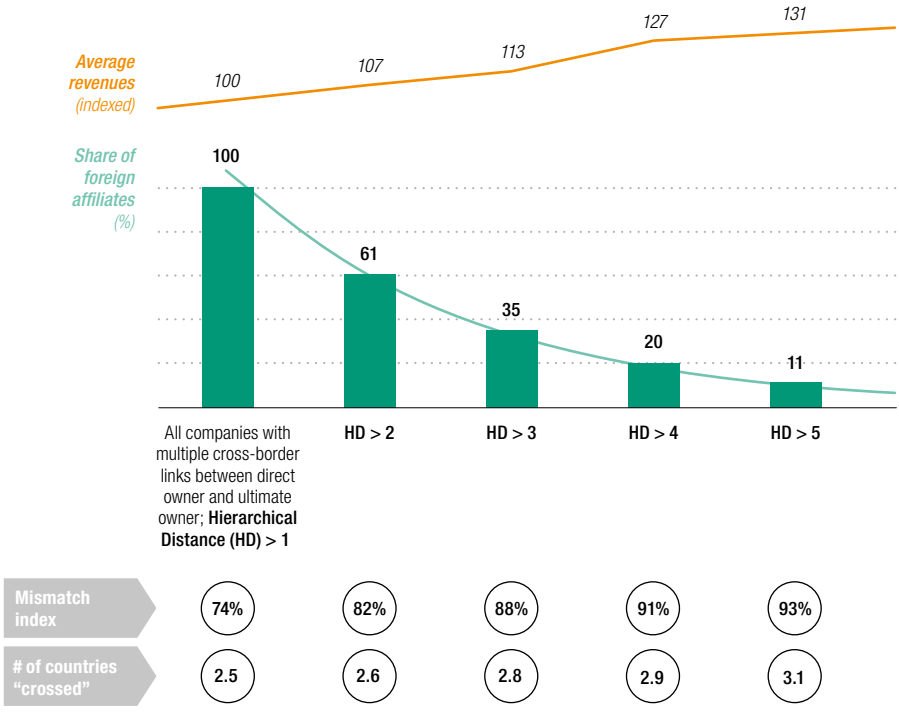
Figure 3. Investor nationality: the big picture



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.

Nationality mismatches are linked to vertical complexity. The mismatch index and the transnationality of the ownership chain (number of countries involved) increases with the depth and complexity of the ownership chain, as measured by the hierarchical distance (HD), i.e. the number of ownership steps between the ultimate owner and the target affiliate (Figure 4). While in the main sample the mismatch index is at 41 per cent (see Figure 1), FAs part of multi-step chains (HD>1) exhibit a share of mismatch cases of over 70 per cent. Highly complex and transnational ownership chains, however, are not so common, involving a relatively limited number of large foreign affiliates.

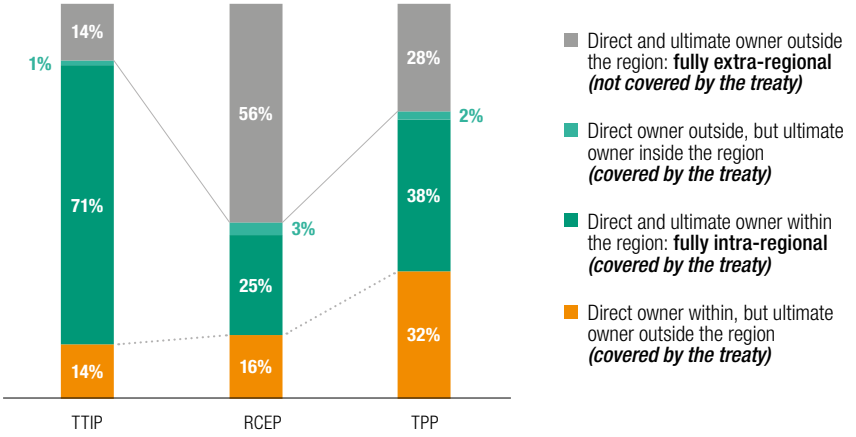
Figure 4. Nationality mismatches and MNE complexity



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.

The policy implications of investor nationality mismatches are discussed in great detail in the World Investment Report (UNCTAD, 2016). The multilateralizing effect of complex structures lies at the core of the policy discussion for international investment policies. The possibility of designing ever more "inclusive" corporate structures expands *de facto* the coverage of multilateral treaties way beyond their original scope. Investors can even engage in treaty shopping to deliberately chase the most convenient treatment. Up to a third of apparently intra-regional parent-FA relationships in major prospective mega-regional areas are in reality controlled by ultimate owners outside the region (Figure 5). This clearly raises concerns about ultimate beneficiaries of these treaties and negotiations. National investment policies too can be affected by mismatches in investor nationality. The set of implications depend on the specific scheme generating the nationality mismatch; they will be discussed in the next section introducing ownership archetypes.

Figure 5. Ownership of foreign affiliates in some mega-regional areas
(as discussed at the time of the analysis)



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: The trade areas considered are the Transatlantic Trade and Investment Partnership (TTIP), the Trans-Pacific Partnership (TPP) and the Regional Comprehensive Economic Partnership (RCEP).

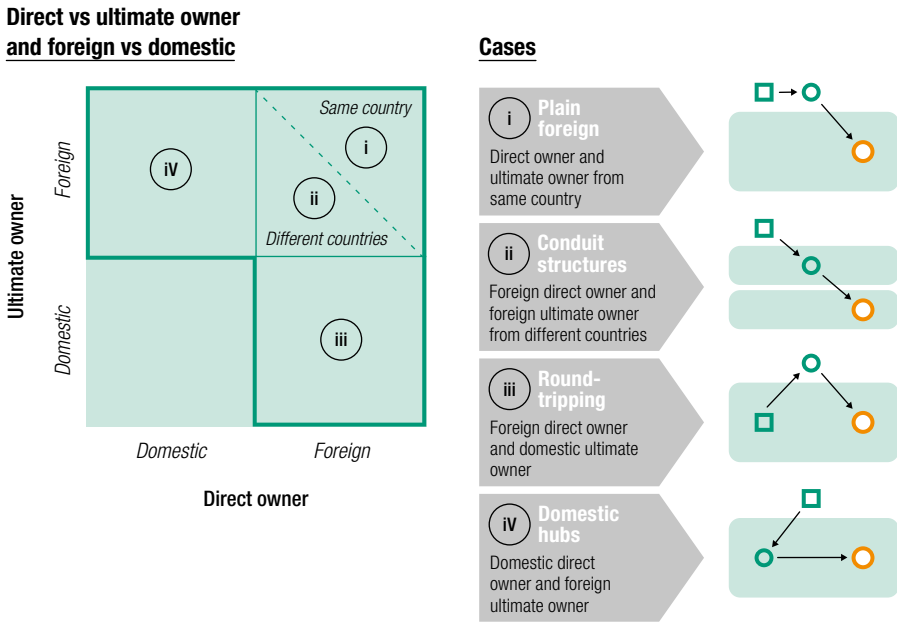
4. The ownership matrix and archetypes

In addition to high-level mapping of FA investors' nationality, the bottom-up approach allows a closer look at the most relevant shareholding schemes. Comparing the location of the direct and the ultimate owners of all 4.5 million companies in the perimeter (i.e. including domestic ones) yields a two-by-two matrix, the *ownership matrix*, summarizing the relevant investor-nationality scenarios by means of four main archetypes (Figure 6). Excluding then domestic companies (bottom left quadrant in the matrix), the resulting ownership archetypes for FAs are: i. Plain Foreign; ii. Conduit Structure; iii. Round-tripping; and iv. Domestic Hubs.

(i) Plain foreign

This is the simplest case with both the direct and the ultimate owner from the same (foreign) country (Figure 6). Numerically it is the most frequent scheme, covering almost 60 per cent of the FAs in the sample. However, in operational terms, the average size of both FAs and MNEs involved is significantly smaller than that of any other archetype (Table 1).

Figure 6. The ownership matrix and archetypes



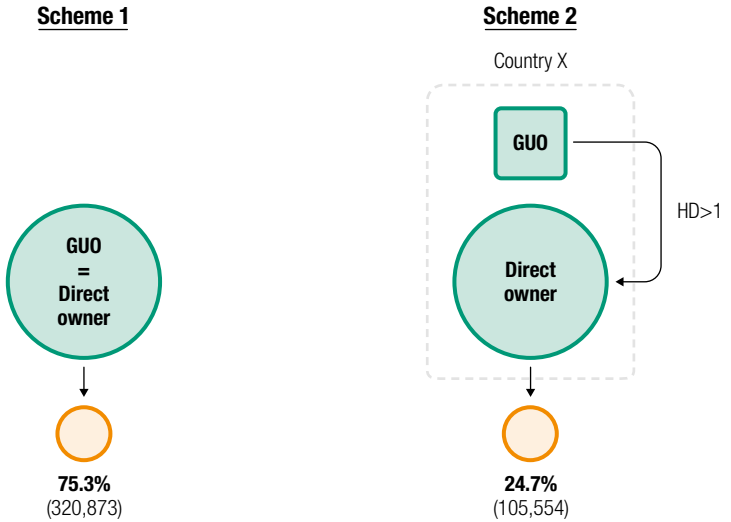
Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: To better illustrate different archetypes we use: large green rectangles to exemplify country areas, small green-outlined rectangles to represent ultimate owners, green-outlined circles to indicate direct owners, orange-outlined circles to mark affliates, and arrows to represent ownership links.

Table 1: Key statistics by archetype

	Archetype i (Plain Foreign)	Archetype ii (Conduit)	Archetype iii (Round-Tripping)	Archetype iv (Domestic Hubs)
N of cases	426,427	78,722	7,903	209,229
Frequency	59%	11%	1%	29%
Avg. Hierarchical Distance	1.39	3.15	3.19	3.31
Subsidiary Avg. Revenues (milion $)	0.07	0.11	0.14	0.10
GUOs Avg. Revenues (milion $)	10.56	19.60	12.01	23.66
Share Conduit OFCs	30%	51%	60%	14%
Share GUOs OFCs	30%	32%	27%	34%

This scheme does not raise any issue of investor nationality mismatch.[3] Around 75 per cent of archetype (i) cases, corresponding to half of the entire sample, are just one-to-one links between an investor and a recipient (hierarchical distance equal to 1), where the direct and the ultimate owners coincide. This is the simplest possible type of shareholding structure (Figure 7). By construction, the distribution of the direct and ultimate owners across different countries is the same, and roughly reflect the economic size of the countries (Figure 9). The share of OFCs, at 30 per cent, is limited compared to more complex schemes such as conduit structures (archetype ii) and round-tripping (archetype iii), but sizable (and larger than expected based on the economic size of OFCs) (Table 1).

Figure 7. A closer look to plain foreign archetype: frequency of simple schemes



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: Bold numbers represent the share of each scheme within the subgroup of plain foreign FAs, while the corresponding number of observations are presented in parentheses. HD stands for hierarchical distance; GUO stands for global ultimate owner.

[3] Its frequency, at 59 per cent, corresponds to the complementary of the mismatch index (at 41 per cent; Figure 4 and 5). In principle it is possible to have multiple investor nationalities also in this case when direct and ultimate owners are from the same (foreign) country but some intermediate shareholder from a different country. However, this option is residual.

(ii) Conduit structure

Conduit structures arise when direct and ultimate owners are from two different foreign countries. This is typically a result of transit or conduit FDI. These schemes are particularly complex because they involve at least three countries, the domestic country of the foreign affiliate and two foreign countries (of the direct and the ultimate owner, respectively), and potentially more intermediate jurisdictions. The minimal hierarchical distance is two, with the average above three (Table 1). Archetype (ii) covers 11 per cent of the FAs in the sample, confirming that highly complex structures, although not prominent, they are not residual either. In financial and operational terms, their weight is likely to be higher as conduit structures are generally associated with bigger companies (both at the parent and foreign affiliate levels).

In around half of the cases, the conduit jurisdictions (i.e. the jurisdictions of the direct owner) are OFCs (Table 1 and Figure 9). The composition of GUOs instead reflects more closely the economic size, even though the share of OFCs among the GUOs (at about 30 per cent) is somewhat surprising. Conduit structures are challenging from the investor nationality perspective; indeed they are one of the components of the mismatch index. The relative weight of conduit structures is higher for developing than for developed countries, both in the whole sample (16 per cent against 10 per cent) and, more visibly, as a share of the mismatch cases (59 per cent vis à vis 21 per cent) (Figure 10).

(iii) Round-tripping

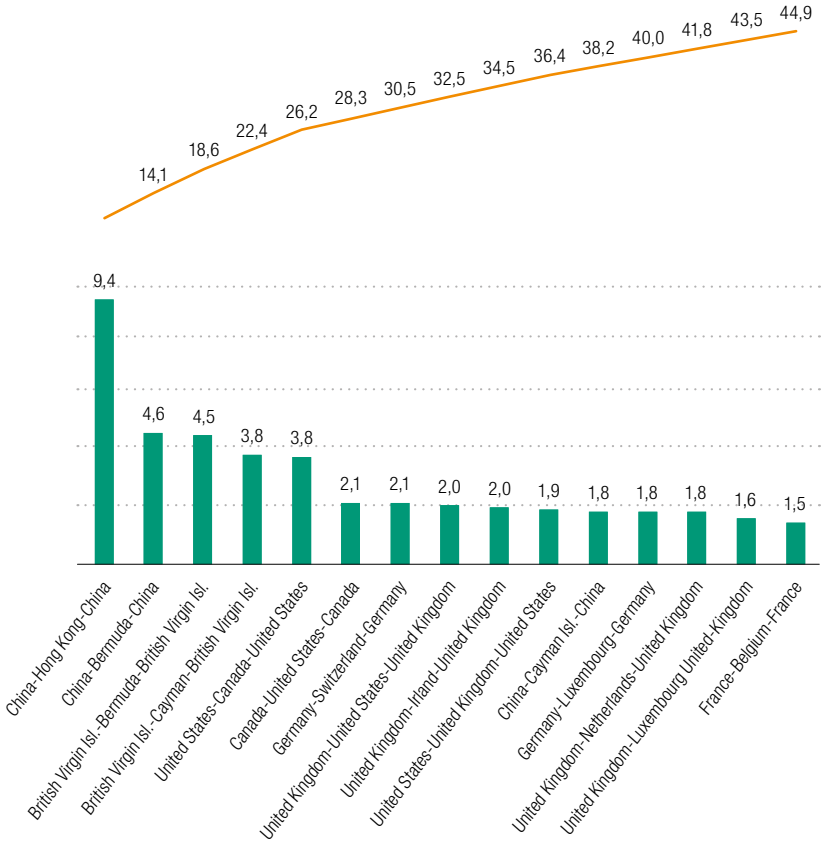
Round-tripping describes a situation where the affiliate is from the same county as the ultimate owner, while the direct owner is foreign; in other words, the parent invests domestically through a foreign intermediate subsidiary (Figure 6). It is the most controversial archetype, often brought up as an example of a harmful or abusive MNE practice. Looking at the frequency of this scheme, at only 1 per cent of all FAs in the sample, its relevance in the world of international production is likely to be smaller than generally perceived (Table 1).[4] Not only is round-tripping quite limited, but it is also very much confined to a small set of identifiable cases;

[4] As a caveat, such a small share of round-tripping can be partially due to the fact that the foreign conduit jurisdictions employed in round-tripping schemes typically have strong confidentiality standards, to disguise the "real" domestic nature of the investment. In such cases, Orbis may not detect upper layers in the ownership chain, and the bottom-up approach may stop at the level of the conduit jurisdiction, qualifying the archetype as plain foreign or a conduit structure with an OFC GUO rather than round-tripping (with domestic GUO). Balance of Payment statistics on ultimate investors available for a limited sample of countries suggests a share of round-tripping in FDI stock at about 5 per cent, with significant variability across countries.

the first fifteen schemes in order of frequency cover almost half of the cases of round-tripping (Figure 8).

Round-tripping and conduit structures have in common the heavy use of offshore financial centres as direct investors (reaching here 60 per cent of cases) (Table 1). Interestingly though, large MNEs rely more on conduit structures and are less involved in round-tripping, which is instead more popular among small and medium-sized multinationals.

Figure 8. The most common round-tripping schemes (Per cent)



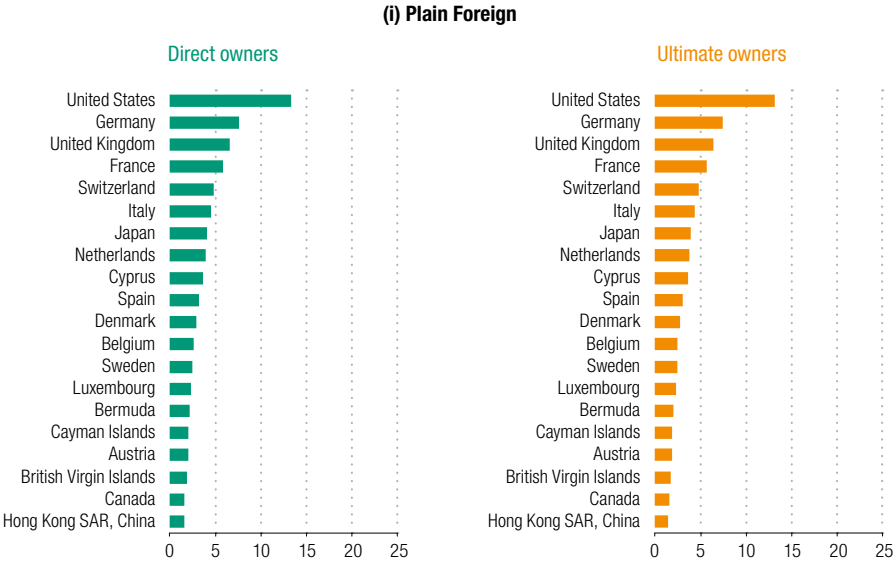
Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: Schemes are listed in decreasing order of frequency from left to right. Bars refer to the frequency of individual schemes while the line refers to cumulative frequency.

(iv) Domestic hubs

Foreign affiliates may be directly owned by a domestic corporate entity, acting as a domestic hub, while the ultimate owner, the MNE parent, is located in a different country (Figure 6). This archetype is quite common, covering up to a third of foreign affiliates (Table 1). It implies the establishment of a local network of affiliates and it is more widespread in mature and large economies, such as those of the larger members of the European Union (EU) or the United States (Figure 10). It can also emerge as the result of merger and acquisition (M&A) operations, whereby local affiliates of an MNE acquire companies operating in the host country.

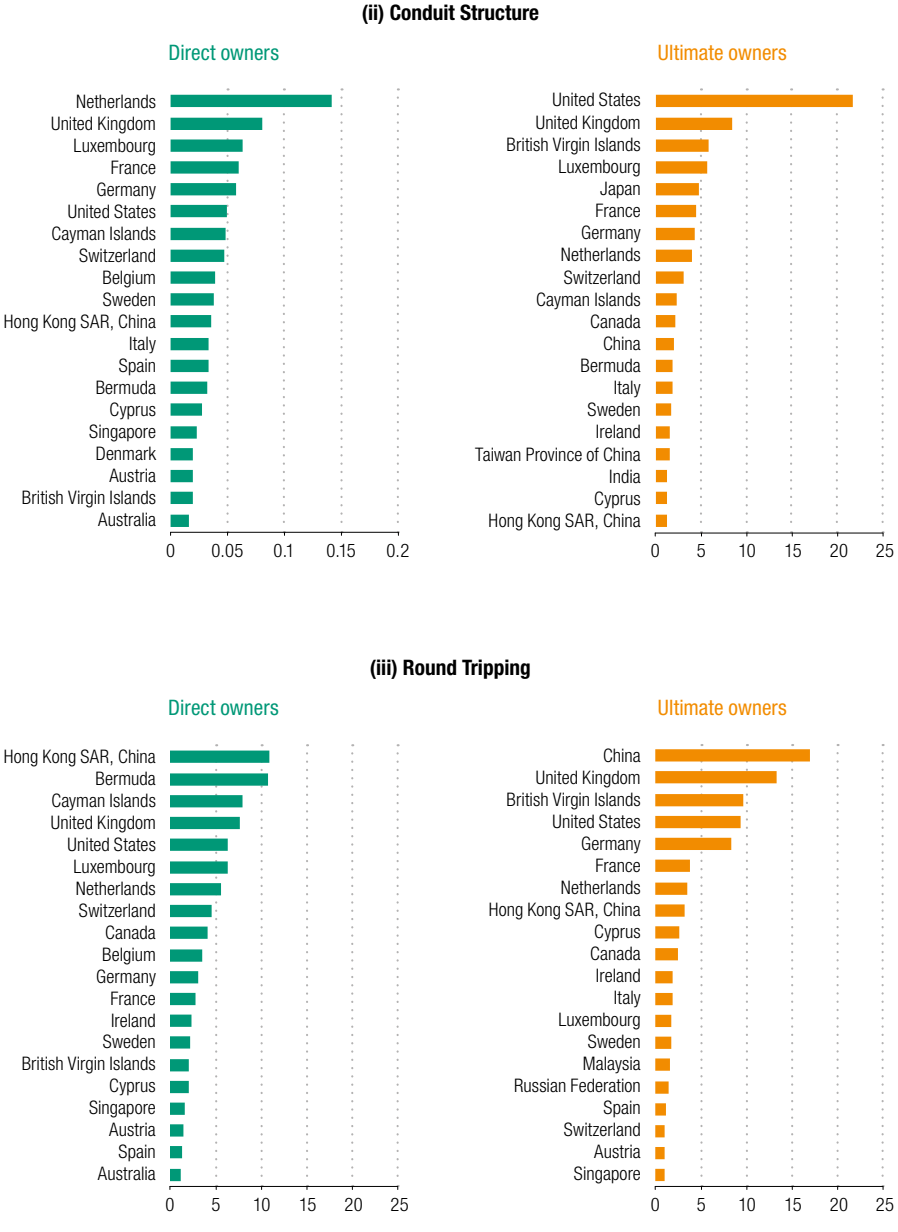
Domestic hubs are generally associated not only with major economies, but also with large MNEs, with a need to establish a multiple and capillary presence in some important host markets (Table 1). Similar to conduit structures (archetype ii) and round-tripping (archetype iii), this archetype generates mismatches in investor nationality (i.e. between a domestic direct owner and a foreign ultimate owner). However, in many respects it is less problematic. It is characterized by a limited use of OFCs and both the distribution of direct shareholders and GUOs tend to reflect the economic size of the investor countries (Table 1 and Figure 9).

Figure 9. Top 20 largest investor countries by archetype: share of total
(continued)



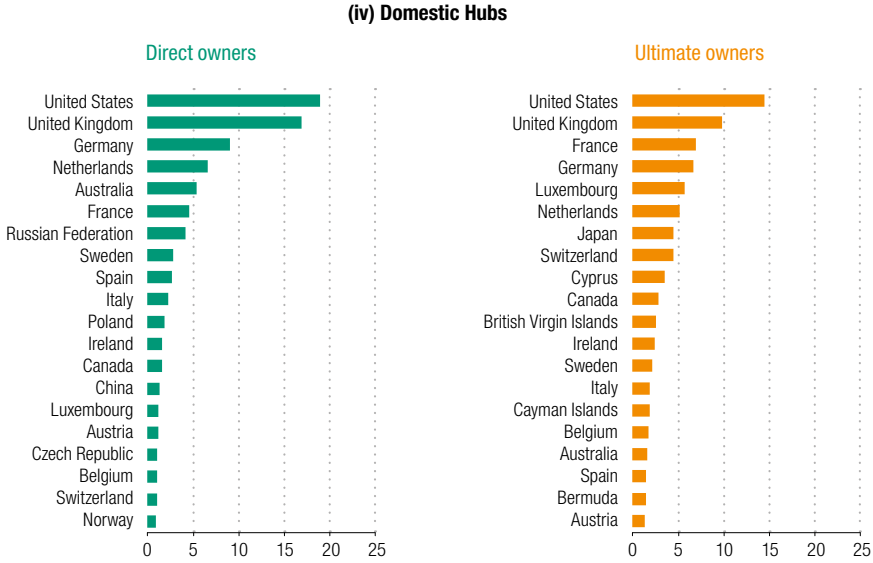
Note: Bars represent frequencies of country appearances as direct or ultimate owners.

Figure 9. Top 20 largest investor countries by archetype: share of total
(continued)



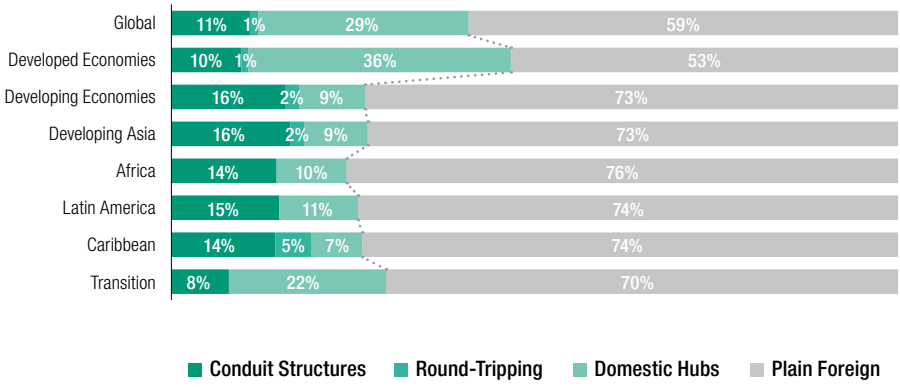
Note: Bars represent frequencies of country appearances as direct or ultimate owners.

Figure 9. Top 20 largest investor countries by archetype: share of total
(concluded)



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: Bars represent frequencies of country appearances as direct or ultimate owners.

Figure 10. Share of archetypes by region



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: The dashed line helps visualize the share of archetypes with investor nationality mismatch (i.e. green and light green).

5. Summary and policy challenges

This work adds several contributions to the existing literature. We propose a way to categorize the complexity of large conglomerates based on the identification and the comparison of direct and ultimate owners' nationalities. The issue of mismatch in investor nationality is assessed at the aggregate level, based on a large firm-level sample of around 700,000 FAs. The identification of these investors is conducted starting at the foreign affiliate level with the use of a new "bottom-up" approach. This allows a more granular view on the underlying shareholding schemes, leading to the definition of four relevant archetypes: plain foreign, conduit structure, round-tripping and domestic hubs.

Figure 11 summarizes the main empirical findings from the analysis of the archetypes. Contrary to the perception, complex multi-country structures are not the norm. Most ownership structures are quite simple (plain foreign); half are limited to a one-to-one relationship between the shareholder and the foreign affiliate. However, nationality mismatches are relevant (40 per cent) and remains a challenge in the current FDI landscape. Nationality mismatch does not necessary imply highly complex ownership structures; complexity is mostly confined to conduit structures and round-tripping. Conduit structures are not prominent but sizable; round-tripping is residual (and less common than perceived). Both conduit structures and round-tripping make heavy use of offshore financial centres. The use of domestic hubs is a common feature of nationality mismatch, not associated with particularly complex structures. It is concentrated in large and mature markets. The distribution of ownership archetypes is not uniform across level of development and MNE sizes. Smaller companies tend to prefer simpler solutions (plain foreign) while larger MNEs are more prone to build complex network, either in the form of domestic hubs (developed economies) or transnational conduit structures (developing economies). Round-tripping schemes are instead limited to few jurisdictions, usually involving smaller sized MNEs.

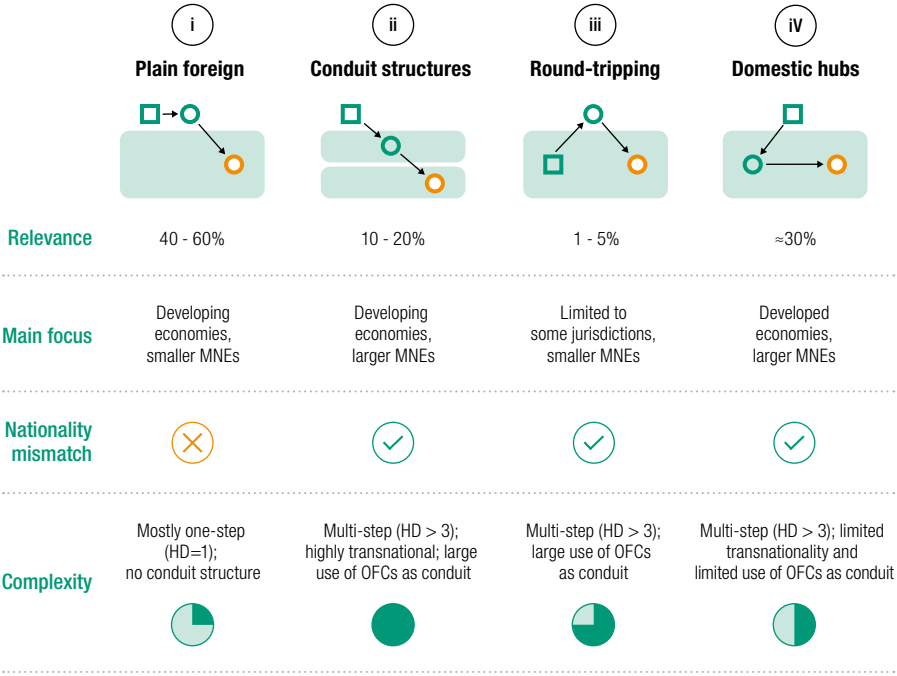
On the policy side, this paper focuses on the implications of archetypes from the perspective of the recipient country (figure 12).

Compared to the standard case with only one foreign investor (archetype i), conduit structures (archetype ii) pose a problem of international investment coverage, as international agreements with two countries A and B may indirectly benefit an ultimate investing country C (multilateralizing effect). Round-tripping (archetype iii) has similar policy implications as conduit structures in terms of international investment policies. At the national level, it is also relevant to the extent that nationals can gain access to benefits (for example incentives) reserved for foreign investors. Archetype iv – domestic hubs – are less challenging from an international policy perspective: their rationale is largely determined by economic and business considerations rather than international regulatory arbitrage. Still, at the national

level, concerns may arise about national investment policies, as disguised foreignness may lead to the circumvention of foreign ownership restrictions.

The policy relevance of these archetypes goes well beyond the domain of investment policies. Tax policy is the most obvious example as complex ownership structures have recently been under spotlight for issues related to tax avoidance. Particularly, indirect structures through third foreign countries (archetype ii and iii) play a major role in tax avoidance practices, where the use of offshore financial centres as intermediate countries allows for entities to shift profits from high-tax to low-tax jurisdictions (UNCTAD, 2015; Bolwijn et al., 2018).

Figure 11. Archetypes: summary of the empirical features



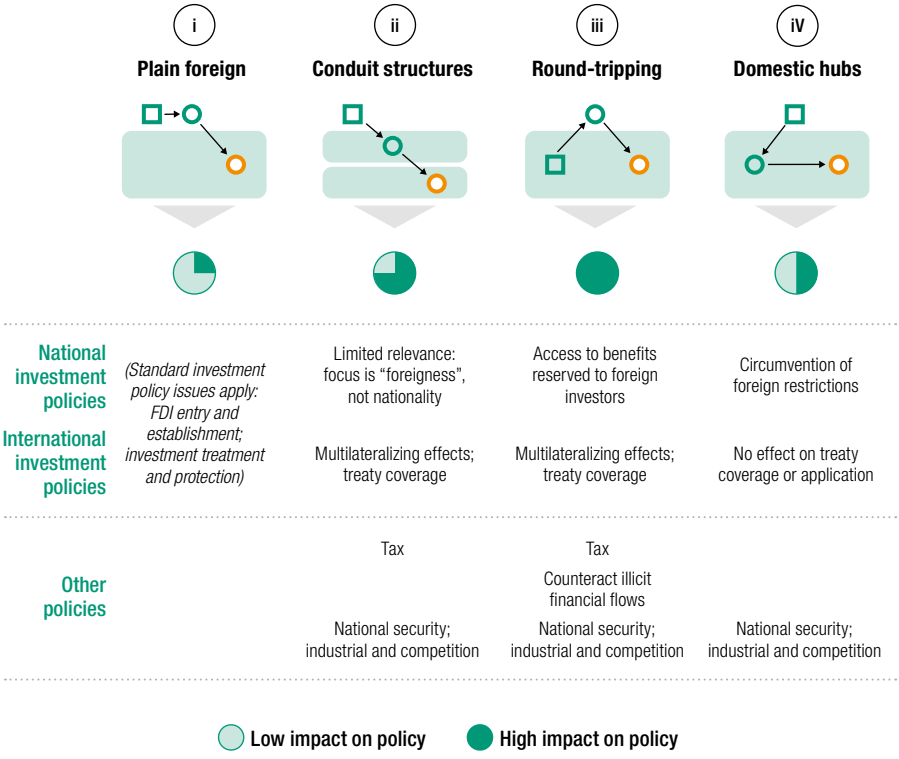
Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.

Note: The "size" is based on the frequency of the archetypes in the sample. However, a range was introduced to adjust upward (i.e. with empirical frequency at the lower bound) archetype ii (conduit structures) and iii (round-tripping) and downward (i.e. with empirical frequency at the upper bound) archetype i (plain foreign). This adjustment accounts for a potential bias in the sample, arising when Orbis GUO in archetype i is an OFC (30 per cent of cases). In these cases, it is possible that Orbis is unable to detect upper layers of ownership due to opaque reporting standards of the GUO and a conduit or round-tripping scheme is then classified as plain foreign (see also footnote 4). HD denotes hierarchical distance; OFC denotes offshore financial centre.

Round-tripping (archetype iii) has also been the centre of attention of policymakers and the public as it is used by national investors to disguise the "real" ownership of the investment when illicit financial flows and money laundering are involved.

Beyond the most striking cases of tax avoidance and illicit financial flows, more generally, complex ownership structures become relevant in all policy areas where the differentiation between investors of different nationalities (foreign and domestic or foreign investors from different countries) matters. This can involve for example national security concerns, when limitations on foreign investment in defence or strategic sectors apply. Similarly, in industrial and competition policies, entry restrictions to foreign investors can be introduced to prevent dominant market positions of large MNEs or crowding out of small domestic firms.

Figure 12. Policy implications of the archetypes



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
Note: The archetypes in the green rectangle country areas are presented as follows: the green rectangles represent ultimate owners, green circles indicate direct owners and orange circles denote affliates.

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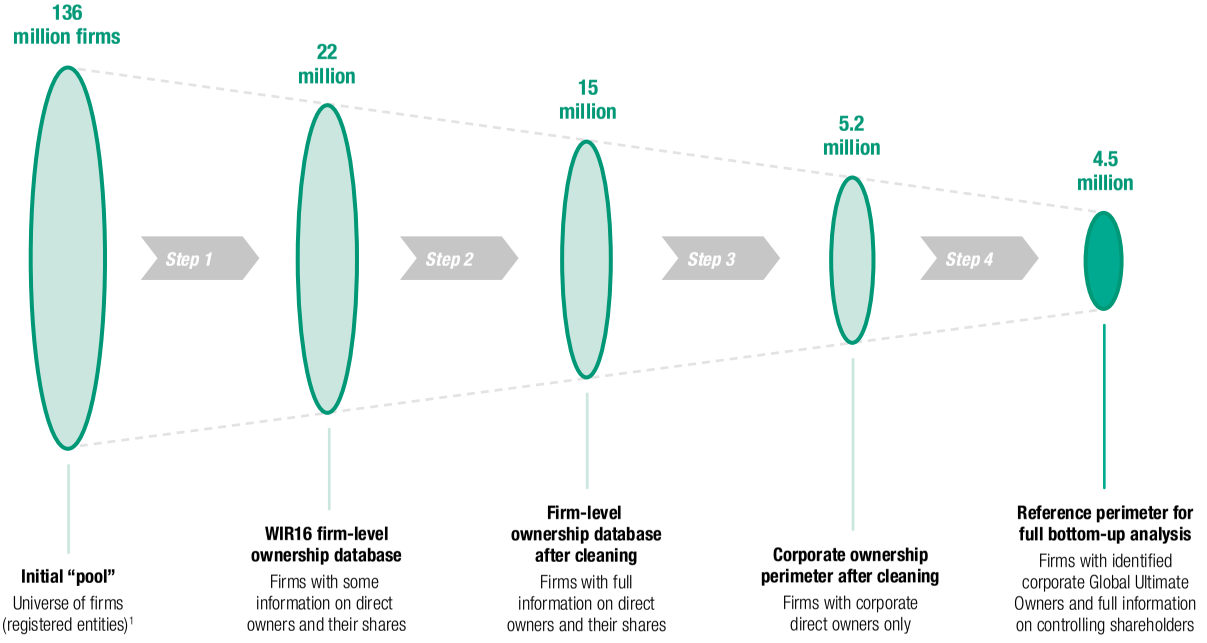
Appendix

Construction of the firm/level database.



Sources: Authors elaboration based on data used in UNCTAD's World Investment Report 2016.
[1] Total number of active firms reported by Orbis as of November 2015.

Step 1. Extract companies reporting at least one shareholder. This initial subsample consists of 22 million firms, mainly private liability companies (almost 80 per cent); it excludes branches, most sole traders and proprietorship and all companies with missing information. For each of the selected companies retained, when available, the following data: name, location, type, key financials (assets, revenues and employees), shareholder (SH) names, SH stakes, SH types, and SH location.

Step 2. Remove all those entities for which the shareholder's location is unavailable or the stakes of direct shareholders are missing or incomplete (i.e. the sum of direct shares is below 50 per cent). The remaining sample presents complete information on direct shareholding and a total sum of direct shares above 50 per cent (for 80 per cent of observations the aggregate share adds up to 100 per cent).

Step 3. Restrict the perimeter of the analysis to corporate boundaries. Specifically, select affiliates with shareholders belonging to the following corporate types only: corporate industrial, corporate financial, foundations/no profit, public entities. This leaves out mainly companies with individual or family shareholders and residual cases of mixed ownership or marginal ownership categories.

Step 4. Retain companies with complete and consistent information on the global ultimate owner. The remaining companies in the sample have one shareholder which qualifies as a corporate GUO and present complete information of the ownership path linking the affiliate to the GUO.

Final perimeter of the analysis includes 4.5 million affiliates with complete information of the majority ownership chain, of which 0.7 million companies qualify as foreign affiliates, i.e. with either a foreign direct shareholder or a foreign ultimate owner or both.