

# Trade in Value Added and Multinational Groups\*

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**Preliminary and incomplete - Do not quote**

## **Abstract**

We relate the patterns of trade in value added as derived in Koopman et al. (2014) and Wang et al. (2013) to the underlying distribution of multinational groups across countries. In particular, using firm-level data on property linkages from ORBIS, we identify all the co-affiliates of business groups that are jointly present in each country-industry and in any given trading partner (and industry) over time. Based on such information, we replicate the country-industry structure of value-added trade at the bilateral and sector level with the corresponding bilateral indicators for the joint presence of multinational groups across the same countries and industries. We also add to this information the characteristics of business groups in terms of size and ownership, as well as geographical and industrial diversification.

We find different metrics of bilateral trade in value added to be positively related to the bilateral presence of co-affiliates of multinational groups, with rich patterns emerging as we move to considering also the characteristics of the corresponding groups. The characteristics of multinational groups in terms of geographical or industrial coverage and organization are also found to influence in several ways the indexes of participation and positioning along the global value chain.

**JEL classification:** L22; L23; F23; L25; D24, G34

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# 1 Introduction

Investment and trade are inextricably intertwined. Traditionally, the link between trade and foreign direct investment (FDI) has been explained in terms of substitution vs. complementarity effects, with one effect or the other prevailing as a function of specific firms' strategies.<sup>1</sup> Since around 2000, global trade and FDI flows have however both grown exponentially, significantly outpacing global GDP growth: compared to 1980, global trade flows have increased tenfold, while FDI inflows, although more volatile, have increased by around 30 times. Most notably, the ratio between inward FDI stocks and total imports at the world level, a widely used proxy for the complementarity between FDI and trade (Helpman, 2008), has almost doubled over the last decade, increasing from 50 to almost 100 per cent, in line with a surge in the rate of participation in global trade and investment of developing countries.

One of the key drivers of this increasing complementarity in trade and investment is the emergence of global value chains (GVCs), i.e. the break-up of production processes into ever narrower discreet activities and tasks, combined with the international dispersion of these activities and tasks across the border. Miroudot and Ragoussis (2009) report that 'vertical trade' i.e. the displacement of goods (intermediate or final) associated with an evolution in the production chain represents about 31% of total trade among OECD countries; most notably, they also find that vertical trade, FDI and sales of foreign affiliates are all positively correlated in their data.

More in general, UNCTAD (2013) estimates that nowadays 70 to 80 percent of world trade flows are somehow correlated to the international production networks set up by multinational groups (MGs). In particular, intra-group flows are estimated to account, on average, for some 30% of world trade flows; international outsourcing between a multinational enterprise and another company for some 15%; and arm's length international transactions having as one of the counterparts a parent or a foreign affiliate of a MG for another 30%. In other words, nowadays less than 30 per cent of world trade takes place between the 'stand-alone' independent companies traditionally considered in economic models.<sup>2</sup>

In this paper we capitalize on the latter linkage between trade flows and the activities of multinational companies, exploiting a new dataset that maps some 200,000 multinational groups worldwide [**check n. of multinational parents**]. Endowed with these data, we set to provide some microeconomic evidence on whether and to what extent the pattern of participation of countries and industries to Global Value Chains is indeed correlated with the cross-presence of multinational groups.

In particular we match disaggregated bilateral country-industry data on trade in value added as derived by Koopman et al. (2014b) to the underlying distribution of multinational business groups across countries and industries available in our novel dataset, identifying all the co-affiliates of business

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<sup>1</sup>In seeking access to foreign markets for its products or services, a firm can choose either to export or to establish a foreign affiliate in order to produce and sell locally, thus generating a negative correlation (substitution) between trade and FDI flows; however, under a different strategy, the same firm could export goods produced domestically while leaving complementary activities (distribution, sales and after-sale tasks) to an affiliate set up in the destination market.

<sup>2</sup>In the United States the BEA reports that, in 2010, local affiliates of multinational business groups accounted for 20% of exports and 28% of imports of goods, while US parents of multinational business groups accounted for 45% of exports and 39% of imports. Thus some two-thirds of both exports and imports of goods of the United States can be considered correlated to the activities of MBGs. Incidentally, some 45% of US imports and 30% of US exports are intra-group flows.

Official figures for Japan reported by UNCTAD (2013) show that parent companies based there accounted for 85% of exports of goods and services, while foreign affiliates contributed a further 8%. Altomonte et al. (2013) estimate that some 64% of total French exports and 62% of total French imports of goods in 2009 can be considered as within the international production networks of multinational groups.

groups that are jointly present in each country-industry and in any given trading partner (and industry) over time. Based on such information, we replicate the country-industry structure of value-added trade at the bilateral and sector level as derived in Wang et al. (2013) with the corresponding bilateral indicators for the joint presence of multinational groups across the same countries and industries, in order to check the correlation between flows of trade in value added and the presence of MGs. We also explore the possible channels through which this correlation takes place, looking at how different characteristics of multinational groups in terms of size, ownership, geographical and industrial diversification map into a different pattern of participation of countries and industries to GVCs.

**[We find that ....]**

The paper stems from the combination of two different strands of literature. The first strand explores the evolution of Global Value Chains worldwide, and develops both theoretical models and suitable metrics able to assess the interdependencies across countries and industries ensuing from this phenomenon. Costinot et al. (2013) in particular have developed a trade model in which they show how vertical specialization might shape the inter-dependence of nations. They propose a model with sequential production, where absolute productivity differences are a source of comparative advantage among countries. This elementary theory of global supply chains predicts that differences in country technological characteristics shape the trade relationships and competitiveness among nations. The key feature of the theory is that the technological characteristics are exogenous and are approximated by the higher or lower probability of making mistakes along a sequential production chain. The model aims to capture the idea that because of inefficient economic environment, which leads to less skilled worker, worse infrastructure, or inferior contractual enforcement, countries would have different comparative advantages (i.e. a different position) in the global value chains.

The position of a country or industry within a GVC is also explored by Antràs et al. (2012), which build a metric of ‘upstreamness’, i.e. the average distance of a country/industry exports from final use. In line with the findings of Costinot et al. (2013), also Antràs et al. (2012) find that country institutions such as the rule of law and financial development appear to be correlated with the relative production line position of a country’s exports. They also uncover some evidence that factor endowments, namely physical capital and skill abundance, matter in this regard.

Detailed metrics for the effects of Global Value Chains on trade flows are then provided in the contribution of Koopman et al. (2014a), who provide a unified framework to completely decompose gross exports into its various components, including exports of value added, domestic value added that returns home, foreign value added, and other additional double-counted terms. The latter is important, as a precise assessment of the relative importance of different double-counted items in a country’s gross exports can be used as a refined metric to gauge the depth and pattern of that country’s participation in GVCs.

The fact that some institutional characteristics might affect the pattern of participation of countries and industries to GVCs, eventually measured through the indicators developed in Koopman et al. (2014), provides a natural link between the GVC literature and the one on Multinational Groups, the second strand of literature which we exploit in this paper. In fact, in order to generate a nontrivial tradeoff between integration and outsourcing, and thus justify the emergence of MGs, institutional

elements that are either industry or country specific (e.g. imperfect contractibility or financial constraints) have to be introduced as explanatory factors.<sup>3</sup>

It then follows that the evidence of a relation between a given pattern of participation of countries and industries to GVCs and the set of institutional variables driving contract enforceability or access to finance in the same countries and industries could be endogenously related to the presence of multinational groups stemming in equilibrium from the same set of institutional variables. Or, in other words, the extent of the complementarity between trade (and trade in value added) and multinational activities stems from a given configuration of institutional variables across countries and industries.

The remaining of the paper is dedicated to explore this idea.

## 2 Value Added decomposition of trade flows

We rely on the gross export accounting methodology recently developed by Wang, Wei and Zhu (2014). Their framework has generalized the country-level decomposition by Koopman et al. (2014), allowing for a decomposition of gross export flows in several value added components at the sector, bilateral and bilateral-sector level. In particular, in our analysis the observational units are constituted by "triplets", defined as follows: home country-home sector-partner country. That is, we are going to look at the decomposition of the export flow from any country-sector pair towards any partner country. For example, we will study how differences in the decomposition of exports from the automotive industry of Germany towards the US, as compared to the same exports towards China, can be put in relation to the underlying distribution of multinational business groups across the different triplets.

Wang et al. (2014) have performed the decomposition of export flows for the 40 countries and 35 industries covered by the WIOD database, over the time span 1995-2011. Countries and industries are reported in Tables Y and Z. For the purposes of our analysis, given that we have information on the distribution of multinational business groups only for the year 2010, we are going to employ the results from the decomposition of gross exports at the level of triplets only for that year.<sup>4</sup>

As a first step, the employed methodology allows to decompose a given export flow at the triplet-level in 4 major value-added components, as reported in Figure 1, whose sum is equal to the gross export flow. Each of these major components can be further decomposed in several disaggregated terms, as presented in Figure 2 and 3. In what follows, we provide a description of each element of the decomposition.

The term marked DVA is the domestic value added of the home country (the exporting one) which is absorbed abroad. Important to notice, this is a "backward linkage" based measure of value added exports. This means that it takes into account the domestic value added embodied in the exports of a given industry, no matter in which domestic industry such value added has been generated. Thus, it considers the creation of domestic value added along all the vertically related industries, finally embodied in the exports of the industry considered in the triplet.

As it can be seen in Figure 2, this domestic value added can be embodied in final goods that are consumed abroad (DVA\_FIN), or in intermediates. The latter can be either absorbed by the

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<sup>3</sup>On this and the related literature see the recent survey by Antràs and Yeaple (2014).

<sup>4</sup>We are very grateful to Zhi Wang, Shang-Jin Wei, and Kunfu Zhu for having shared their results from the exports' decomposition with us.

Figure 1: Gross Exports Accounting: Major Categories (from Wang et al., 2014)

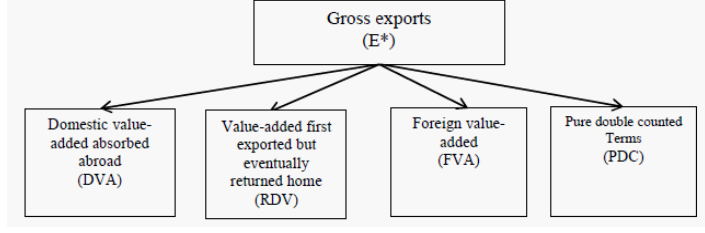
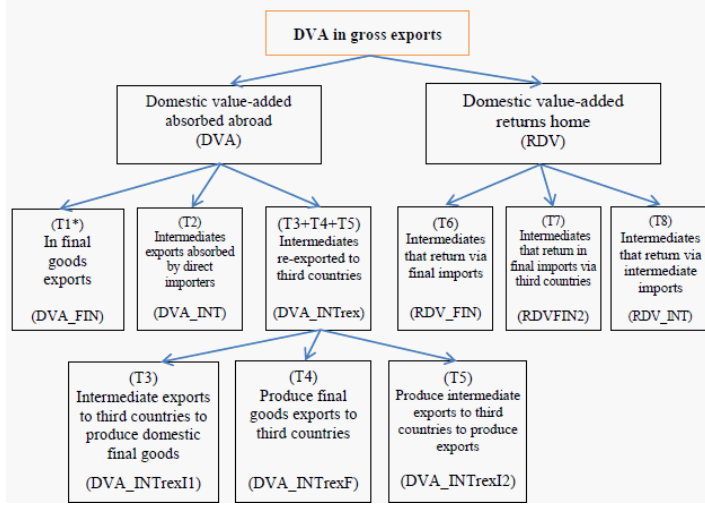


Figure 2: Gross Exports Accounting: Domestic Value Added (from Wang et al., 2014)



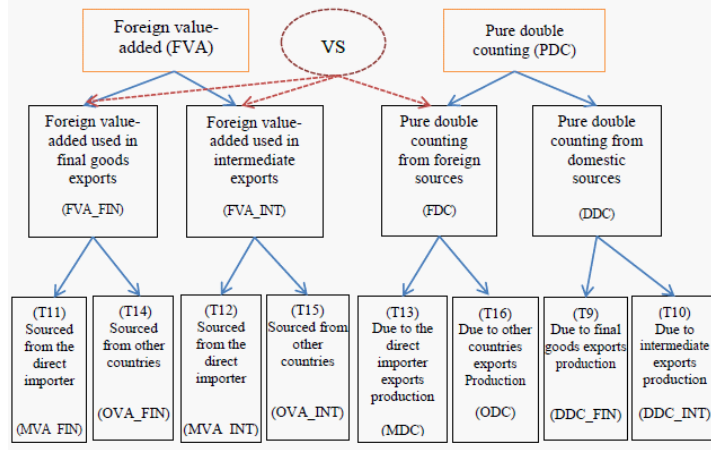
direct importer, i.e. the partner country considered in the triplet (DVA\_INT), or can be re-exported by the direct importer to third countries (DVA\_INTrex). The latter component can be further decomposed in three elements: (1) DVA\_INTrexI1 including intermediates used in third countries to produce final goods consumed domestically; (2) DVA\_INTrexF including intermediates used in third countries to produce final goods that are exported; (3) DVA\_INTrexI2 accounting for exports of other intermediates by the third countries.

RDV is the domestic value added embodied in the export flows which returns home. As shown in Figure 2, RDV can be further decomposed in three terms. RDV\_FIN includes the export of intermediates that are processed abroad and return home as final goods from the direct importer. RDV\_FIN2 accounts for intermediates exports returning home as final goods via third countries, i.e. implying additional cross-border trade. Finally RDV\_INT includes domestic value added embodied in intermediates that return home as intermediate imports.

The term FVA in turn is the foreign value added component of gross exports. As shown in Figure 3, it can be further decomposed in several sub-components, at two different levels of disaggregation. First, FVA can be obtained as the sum of two elements: FVA\_FIN+FVA\_INT, where FVA\_FIN is foreign value added used in final goods exports, while FVA\_INT is foreign value added employed in intermediate exports. Both FVA\_FIN and FVA\_INT can be further decomposed in two terms, accounting for foreign value added sourced from the direct importer considered in the triplet (the MVA terms) vs. third countries (the OVA terms). In particular, the following two equalities hold:

$$FVA\_FIN = MVA\_FIN + OVA\_FIN$$

Figure 3: Gross Exports Accounting: Foreign Value Added (from Wang et al., 2014)



$$FVA\_INT = MVA\_INT + OVA\_INT$$

The term PDC stands for pure double counting, as generated by intermediates crossing borders several times before being finally absorbed. As such, it can be considered as a sort of indicator for the extent of production sharing across countries (Wang et al., 2014). As visualized in Figure 3, also PDC can be decomposed in multiple terms, at two different levels of disaggregation. First, distinguishing the source of value added that is double counted, one can obtain PDC as the sum of FDC and DDC, where FDC is pure double counting from foreign sources, while DDC is pure double counting from domestic sources. In turn, FDC can be further decomposed in two parts, depending on whether the foreign value added is generated by the direct importer exports production (MDC), or other countries' exports production (ODC). Finally, DDC can be obtained as the sum of DDC\_FIN, which is pure double counting from domestic sources due to final goods exports production, and DDC\_INT, which is pure double counting from domestic sources due to intermediate exports production.

In our analysis, we are going to start by considering the 4 major components of the value added decomposition presented in Figure 1, that is DVA, RDV, FVA and PDC. In particular, we are going to explore how their patterns across triplets are associated to the underlying distribution of multinational business groups. In subsequent refinements, we are going to extend our analysis by considering also more disaggregated components of trade in value added.

A practical example may help understanding the concept of triplets and the decomposition of bilateral exports in different value added components. Consider the exports of the automotive sector (sector *c15* according to WIOD classification) towards the USA originated from three European countries, Italy, Germany and France, reported in the first three rows of table Z.

Column 1 and 2 in Table 1 report the exporting country and sector considered, while column 3 reports the (importing) partner country. Column 4 reports the amount (in millions of US dollars) of total export from the specific sector of the exporting country to the partner country: in 2010, the German automotive sector has exported approximately 26 billion dollars of both final and intermediate goods to the US. Columns from 5-8 decompose this export flow in the four major value added components, DVA, RDV, FVA and PDC. To allow for comparison across countries, the 4 components

Table 1: Value added decomposition, four major components: an example

| Home country | Home sector | Partner country | Total Exports |         |         |         |         |
|--------------|-------------|-----------------|---------------|---------|---------|---------|---------|
| DEU          | c15         | USA             | 26.093        |         |         |         |         |
| FRA          | c15         | USA             | 7.793         |         |         | .333387 |         |
| ITA          | c15         | USA             | 2.481         |         |         |         |         |
| DEU          | c15         | CHN             | 22.794        |         |         |         |         |
| FRA          | c15         | CHN             | 4.392         |         |         |         |         |
| ITA          | c15         | CHN             | 5.854         |         |         |         |         |
| DEU          | c15         | POL             | 7.288         | .598111 |         |         |         |
| FRA          | c15         | POL             | 1.203         | .613187 |         |         |         |
| ITA          | c15         | POL             | 1.925         |         |         | .158704 | .142653 |
| DEU          | c03         | USA             | 1.353         |         | .000694 |         |         |
| FRA          | c03         | USA             | 2.457         |         |         |         | .000644 |
| ITA          | c03         | USA             | 2.527         |         |         |         |         |

are reported as shares of total export, and by summing them one obtains 100%, showing that in fact the methodology developed by Wang, Wei and Zhu (2014) allows to successfully decompose gross export at the bilateral-sector level.

Looking at the first row we can observe that, decomposing the German automotive exports towards the US, 66% of it is given by value added produced at home (in any sector of the home country) and ultimately absorbed by other countries (DVA share), 0.18% of total exports is domestic value added initially exported but ultimately returned home and absorbed at home (RDV share), 30% is foreign value added embedded in German exports (FVA share), and 2% is pure double counting, generated by multiple exchanges of intermediate goods across countries before they are finally absorbed (PDC share).

Comparing the German car exports towards the US to the other two European countries we notice that they have different value added structures: Italy has the highest share of domestic value added embedded in its exports, and the lowest share of foreign value added used in the production of its exported goods, while the opposite holds for France, being the country with the highest FVA share among the three. RDV shares are very small for all countries (and in particular for Italy), while PDC is non-negligible for the analyzed economies, implying a certain extent of international production sharing for the car industry.

It might be interesting to compare the value added pattern for the same exporting countries and sector, looking at a different partner country. Quite surprisingly, for the bilateral exports to China, the situation is very similar to the one described above: both the ranking and magnitudes of the value added shares among the three countries are almost the same as the ones found for exports towards the US, suggesting that the same value added structure holds in the exports towards these two very different partner countries.

Different considerations hold, however, while considering export flows towards Poland (rows 7-9): both domestic value added and foreign value added embedded in automotive exports are lower than in the US case, while RDV and especially PDC have higher relevance: for Germany and Italy, 4% of the total exports towards Poland are re-imported and absorbed back home, and around 15% are pure double counting caused by multiple border crossing of intermediate goods. This difference in magnitude of the different elements of the decomposition as compared to the previous cases could easily be caused by the degree of economic integration of the EEA: we could easily imagine a high integration in automotive production between Germany and Poland, with components exported back

and forth at multiple production stages lead to a much higher share of double counting in total export figures.

Finally, we can also compare the value added structures of the same European exporting countries for another home sector, such as food (sector *c03* according to the WIOD classification), for the same partner country, US. Comparing the first and last three columns of Table 1, we notice that domestic value added embedded in bilateral exports is higher for food exports than it was for the automotive one, with France and Italy having the higher shares. FVA share is lower than the one found for the automotive sector, and RDV and PDC have a negligible role in food export production. Food manufacturing seems to rely more on "home made" components and services (especially for France), and to have a less internationally segmented value chain.

These simple descriptive statistics show how value added structures may differ between countries, among sectors in a country, and also for the same home country and sector depending on the partner country towards which the export is directed.

Given the large amount of trade flows associated to international production networks set up by multinational groups (MGs), the presence of business groups and international production linkages between firms belonging to the same multinational groups may help explaining these heterogeneous value added patterns.

### 3 Business Groups Data

Two different sorts of data have been combined to retrieve Business Groups: worldwide proprietary linkages provided by the Ownership Database by Bureau Van Dijk and firm-level financial accounts, from Orbis, by the same Bureau van Dijk. Proprietary linkages data refer to the last available information available in year 2010.

Since we aim to investigate the relationship between Business Group characteristics of multinational groups and value added patterns, we will focus on the sample of countries and sectors for which complete trade value added information is available, i.e. the 40 economies and 35 sectors covered by the World Input-Output Database (WIOD).

After considering (direct and indirect) control through majority ownership, we end up with 24,138 headquarters of multinational Business Groups, i.e. business groups controlling at least two subsidiaries in a country different from the country of origin of the parent company. Groups which have only domestic subsidiaries are excluded from the sample, and so are multinational groups which have no affiliates in any of the 40 countries object of our study. Affiliates operating in one of the 40 considered countries and belonging to groups whose headquarters are in countries located in the rest of the world are included, but the parents are not considered in our figures. The 24,138 multinational groups operating in the selected countries control a total of 247,380 affiliates (both domestic and foreign) in the year 2010.

In Table 2 we provide a geographical coverage of the whole sample by some main countries/areas. The headquarters of Business Groups (parents) are classified by their home country in the second column, while in the third column we report the total number of affiliates present in a geographic area, either owned by domestic or foreign Business Groups, a distinction provided respectively in



Table 2: Geographic coverage of Business Groups (main countries/areas) by headquarters and affiliates

| Economy              | N. of parents | Total affiliates in the economy (A+B) | N. domestic affiliates in the economy (A) | N. foreign affiliates in the economy (B) | N. affiliates abroad (C) | Total affiliates owned by domestic parents (A+C) |
|----------------------|---------------|---------------------------------------|---|--|--------------------------|--|
| OECD                 | 21.901        | 245.601                               | 120.676                                   | 124.925                                  | 110.004                  | 230.680  |
| non-OECD             | 2.237         | 22.216                                | 12.516                                    | 9.700                                    | 4.184                    | 16.700   |
| European Union       | 15.156        | 194.745                               | 90.155                                    | 104.590                                  | 99.358                   | 189.513  |
| USA                  | 4.842         | 37.545                                | 24.703                                    | 12.842                                   | 516                      | 25.219   |
| China                | 272           | 3.133                                 | 1.232                                     | 1.901                                    | 579                      | 1.811  |
| Japan                | 1.099         | 7.825                                 | 6.454                                     | 1.371                                    | 3.813                    | 10.267   |
| Latin America        | 254           | 7.195                                 | 1.537                                     | 5.658                                    | 813                      | 2.350  |
| Rest of Asia         | 926           | 2.453                                 | 1.325                                     | 1.128                                    | 2.276                    | 3.601  |
| Total WIOD Countries | 24.138        | 267.817                               | 133.192                                   | 134.625                                  | 114.188                  | 247.380  |

column 4 (domestic affiliates, i.e. affiliates owned by a domestic Business Group) and 5 (foreign affiliates, i.e. resulting from inward FDI). In column 6 we report the affiliates abroad, i.e. outward FDI by parents in the reported areas. Finally, in our last column we report the total number of affiliates owned by the domestic business groups, both domestically and abroad.

More than 90% of Business Groups in our sample are originated in OECD economies, with those headquarters controlling around 90% of affiliates present in the 40 countries in our sample (50% of which are domestic). Headquarters located in countries of the European Union, in particular, control more than 70% of the affiliates located in the studied countries. Looking at the affiliates located in the EU, 54% belong to foreign multinational groups.

Comparing columns 5 and 6 of Table 2, we can see how the OECD countries attract the vast majority of the 134.625 foreign affiliates recorded in our data. We can observe the difference between outward and inward FDI stock (as proxied by number of affiliates) in developed economies. For European Union members, intra-EU FDI activities that makes the net position almost in balance. In developing countries the inward FDI stock of firms is almost twice as large as the outward one.

Starting from the retrieved information on Business Groups, we can proceed analyzing the extent of multinational linkages across WIOD countries, the countries and sectors in which multinational business groups are present, their size and diversification.

We were able to construct several indicators on business group characteristics which are useful to describe the presence and composition of multinational business groups for each home country-home sector/partner country triplet in our sample.

Of our business groups indicators, four variables are informative about the number of affiliates and co-affiliates in a specific home country-home sector/partner country triplet.

1. " $A_e$ " tells us the number of affiliates of multinational business groups operating in a certain sector of the home country, and whose parent companies are active in the partner country as well. If we consider France as home country, Food as home sector and Italy as partner country,  $A_e = 145$  means that in the French food sector there are 145 affiliates owned by multinational groups (no matter where they are originated) which operate in Italy as well.
2. " $A_a$ " is a measure of the number of co-affiliates (i.e. affiliates in the partner country) of groups operating in a specific home country-home sector. Considering our previous example,  $A_a = 230$  means that, given the multinational groups operating in the French food sector, these groups have 230 affiliates in Italy, in any sector. The information in  $A_a$  is further decomposed in:

- 2.1. " $A_b$ ", the number of co-affiliates in the same sector (in our example,  $A_b = 110$  means that the

multinational groups operating in the French food sector own 110 affiliates in the Italian food sector) and

- 2.2. " $A_c$ " the number of co-affiliates in sectors different from the home sector considered (we would have  $A_c = 120$ , and it would imply that the above mentioned multinational groups have 120 affiliates operating in Italy, in all sectors but food).

The variable  $A_e$  thus provides an indication of the intensity of the multinational presence (i.e. FDI inflows) in a given home country-sector, conditioning for the partner country. The variables  $A_a$ ,  $A_b$  and  $A_c$  are instead informative of the intensity of the business group connections between countries in which the same multinational groups operate: we can imagine for example that a higher  $A_b$  implies closer ties between the French and Italian food sector, since a larger number of affiliates belonging to the same multinational groups is operating in both countries.

Complementary to those, four additional variables are informative about the business groups characteristics. Two indicators provide information on the average size of the groups operating in the triplet:  $AVG\_N$  simply considers the average number of affiliates worldwide of business groups operating in a triplet;  $AVG\_SALES$  considers the average sales of those groups. In our example,  $AVG\_N = 87$  would mean that the groups operating both in the French food sector and in Italy have, on average, 87 affiliates across the 40 countries;  $AVG\_SALES = 1000$  would give you the average turnover of the same groups.

Finally, we have two diversification indicators:  $GEO\_DIV$  is the average number of countries covered by business groups present in home country-home sector /partner country, while  $IND\_DIV$  is an average of the number of sectors in which these groups are active. In our example,  $GEO\_DIV = 7$  and  $IND\_DIV = 10$  mean that the groups present both in the French food sector and in Italy operate, on average, in seven different countries and are active in ten different industries.

Recall that the last four indicators refer to groups which are operating in the triplet, but this doesn't pose any limitation to the country and sectors in which they operate. To make it clear, groups operating both in French food sector and in Italy (the triplet in our example) may also operate in other French sectors, different sectors in Italy, as well as in China. In this case, they will be included in the calculations of the group characteristics averages of every triplet in which they operate.

Table 3 presents a summary of these indicators, by main countries.

Table 3: Multinational Groups indicators, averages by country

| Country | Aa     | Ab    | Ac     | Ae       | GUO sales  | N. of Group affiliates | Industry diversification | Geographic diversification |
|---------|--------|-------|--------|----------|------------|------------------------|--------------------------|----------------------------|
| AUS     | 48,06  | 16,80 | 31,26  | 32,52    | 21.118.339 | 267,59                 | 8,91                     | 13,61                      |
| AUT     | 101,08 | 20,78 | 80,30  | 170,36   | 8.636.551  | 170,62                 | 9,01                     | 10,33                      |
| BEL     | 171,44 | 34,44 | 137,00 | 195,46   | 15.019.741 | 226,97                 | 9,45                     | 12,44                      |
| BGR     | 31,91  | 10,30 | 21,61  | 62,92    | 8.029.890  | 155,95                 | 9,29                     | 6,64                       |
| BRA     | 122,40 | 30,00 | 92,40  | 111,30   | 16.420.596 | 207,81                 | 8,55                     | 11,84                      |
| CAN     | 160,27 | 37,22 | 123,05 | 184,75   | 13.370.595 | 168,57                 | 7,90                     | 9,69                       |
| CHN     | 86,68  | 20,94 | 65,74  | 146,33   | 35.318.657 | 180,70                 | 8,20                     | 9,49                       |
| CYP     | 20,85  | 7,54  | 13,31  | 17,34    | 21.149.815 | 321,19                 | 10,50                    | 18,07                      |
| CZE     | 103,56 | 24,93 | 78,63  | 71,60    | 16.114.594 | 265,12                 | 9,92                     | 13,76                      |
| DEU     | 328,42 | 49,15 | 279,27 | 1.023,91 | 12.176.185 | 182,95                 | 8,83                     | 9,56                       |
| DNK     | 73,25  | 18,86 | 54,39  | 108,61   | 14.993.239 | 157,64                 | 7,13                     | 9,74                       |
| ESP     | 214,57 | 42,92 | 171,65 | 419,33   | 12.165.665 | 185,79                 | 8,06                     | 8,72                       |
| EST     | 27,96  | 9,38  | 18,58  | 25,32    | 7.138.184  | 161,70                 | 6,74                     | 10,72                      |
| FIN     | 58,62  | 15,60 | 43,01  | 65,49    | 12.376.156 | 191,07                 | 8,93                     | 11,79                      |
| FRA     | 252,08 | 45,09 | 206,98 | 626,78   | 17.174.639 | 239,74                 | 9,53                     | 10,71                      |
| GBR     | 329,23 | 55,57 | 273,65 | 1.462,73 | 8.798.558  | 124,47                 | 6,04                     | 6,34                       |
| GRC     | 32,68  | 11,77 | 20,91  | 26,99    | 16.396.385 | 235,75                 | 8,94                     | 13,79                      |
| HUN     | 73,18  | 18,47 | 54,71  | 30,48    | 25.117.440 | 352,13                 | 11,93                    | 18,47                      |
| IDN     | 27,22  | 10,56 | 16,67  | 13,93    | 25.400.546 | 264,27                 | 9,81                     | 14,25                      |
| IND     | 48,51  | 14,45 | 34,06  | 32,56    | 23.161.076 | 249,58                 | 8,82                     | 14,03                      |
| IRL     | 152,26 | 36,05 | 116,22 | 253,15   | 9.855.863  | 155,29                 | 6,88                     | 8,13                       |
| ITA     | 177,87 | 34,64 | 143,23 | 385,04   | 9.124.424  | 182,36                 | 9,58                     | 7,73                       |
| JPN     | 94,77  | 20,00 | 74,77  | 264,87   | 18.052.285 | 153,62                 | 8,51                     | 7,18                       |
| KOR     | 47,22  | 14,29 | 32,92  | 48,57    | 23.586.641 | 182,40                 | 8,97                     | 11,99                      |
| LTU     | 22,81  | 7,37  | 15,44  | 17,52    | 8.246.277  | 152,46                 | 7,21                     | 10,78                      |
| LUX     | 109,19 | 23,32 | 85,87  | 104,80   | 17.384.514 | 269,77                 | 9,60                     | 14,93                      |
| LVA     | 33,29  | 10,70 | 22,59  | 17,41    | 10.106.747 | 196,58                 | 7,64                     | 13,06                      |
| MEX     | 124,76 | 28,71 | 96,05  | 139,61   | 17.018.550 | 192,17                 | 8,47                     | 10,88                      |
| MLT     | 22,39  | 5,79  | 16,60  | 11,04    | 29.937.236 | 295,44                 | 10,20                    | 16,24                      |
| NLD     | 246,28 | 44,08 | 202,20 | 582,82   | 14.045.702 | 209,82                 | 9,27                     | 11,16                      |
| POL     | 137,30 | 31,81 | 105,49 | 171,87   | 13.913.073 | 212,03                 | 9,61                     | 9,95                       |
| PRT     | 74,20  | 20,43 | 53,77  | 87,39    | 15.443.930 | 234,08                 | 9,82                     | 11,64                      |
| ROM     | 50,70  | 16,70 | 34,00  | 24,15    | 21.937.574 | 306,92                 | 10,61                    | 15,65                      |
| RUS     | 95,58  | 21,79 | 73,78  | 263,44   | 15.415.233 | 210,73                 | 12,96                    | 7,64                       |
| SVK     | 50,50  | 14,02 | 36,48  | 27,90    | 18.023.514 | 256,40                 | 9,96                     | 14,20                      |
| SVN     | 24,17  | 8,23  | 15,94  | 21,45    | 10.527.425 | 166,75                 | 9,87                     | 11,42                      |
| SWE     | 120,33 | 24,13 | 96,20  | 169,00   | 11.092.719 | 193,60                 | 9,22                     | 11,21                      |
| TUR     | 35,49  | 12,01 | 23,48  | 30,11    | 21.685.356 | 223,91                 | 9,37                     | 14,21                      |
| TWN     | 18,96  | 5,34  | 13,62  | 24,85    | 13.321.845 | 139,03                 | 5,62                     | 7,68                       |
| USA     | 364,28 | 53,04 | 311,24 | 1.133,72 | 14.490.631 | 174,60                 | 8,20                     | 8,82                       |

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