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Micro-Evidence on Corporate Relationships in Global Value Chains

THE ROLE OF TRADE, FDI AND STRATEGIC
PARTNERSHIPS

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OECD TRADE POLICY PAPER

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MICRO-EVIDENCE ON CORPORATE RELATIONSHIPS IN GLOBAL VALUE CHAINS

THE ROLE OF TRADE, FDI AND STRATEGIC PARTNERSHIPS

Andrea Andrenelli, Iza Lejàrraga,
Sébastien Miroudot, and Letizia Montinari (OECD)

Global value chains (GVCs) have sharpened the interdependencies between trade and foreign direct investment (FDI). Using a novel micro-level dataset covering about 27 000 corporate relationships of 147 multinational enterprises (MNEs) in 13 sectors, new evidence is provided on how firms organise their production globally by combining trade with investment, and on a range of non-equity, contract-based partnerships. The analysis leads to five stylised facts. First, MNE activities are a combination of trade, FDI and strategic partnerships. All firms rely on a mix of these different types of corporate relationships. Second, the configuration of trade, investment and strategic partnerships varies across sectors, firms and markets. The results highlight considerable firm-level heterogeneity within the same industry and across the different modes of entry. Third, investment performs various functions in GVCs. In addition to traditional forms of FDI such as “market-seeking” or “input-seeking”, investment “in capabilities” or “conglomerate” FDI also account for a relevant share of equity-based relationships. Fourth, support business functions emerge as key building blocks in GVCs, which suggests that policy reforms in transversal services sectors that support all GVCs should merit special attention. Fifth, GVCs display a clear geographical organisation. While domestic corporate relationships may lead to higher volumes of activities, in terms of the number of relationships MNEs have more partners abroad. Moreover, the large majority of GVC interactions take place within OECD countries. Overall, the complex and heterogeneous interlinkages observed in modern firm strategies highlight the importance of ensuring a level playing field for both trade and investment.

Keywords: Trade, investment, multinational enterprises

JEL Codes: L23, L24, F23

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Table of contents

Executive Summary	5
1. Background and motivation	7
2. Mapping business relationships in GVCs: Data and methodology	11
3. How do MNEs participate in GVCs? Evidence from a new firm-level dataset	18
4. Concluding remarks	46
References	49

Tables

Table 2.1. List of industries and companies used in the analysis.....	12
Table 2.2. Stylised typology of GVC relationships.....	14
Table 2.3. Types of supply chain relationships covered by FactSet (FactSet definitions).....	15

Figures

Figure 3.1. Number of relationships per unit of sale (USD billion), Apparel and Footwear.....	19
Figure 3.2. Composition of trade, strategic partnerships and investment of Boss and PVH.....	19
Figure 3.3. Types of FDI – Non-alcoholic beverages.....	21
Figure 3.4. Participation strategies in GVCs: MNEs in Motor vehicles.....	22
Figure 3.5. Complementarity between trade and investment – Kraft.....	23
Figure 3.6. Relevance of strategic partnerships in GVCs.....	24
Figure 3.7. Overlap between trade and strategic partnerships – Sony.....	26
Figure 3.8. Complementarity between investment and strategic partnerships – Merck & Co.....	28
Figure 3.9. Overlap between Investment and Strategic Partnership – Naver.....	28
Figure 3.10. Nike and Sony: Core and support business functions.....	30
Figure 3.11. Nike and Sony: Core and support functions in the value chain.....	31
Figure 3.12. Core and support business functions for agricultural commodities.....	32
Figure 3.13. GVC participation modes of MNEs in Telecommunications Equipment.....	33
Figure 3.14. Participation modes in GVCs for MNEs in Pharmaceuticals.....	33
Figure 3.15. Participation modes in GVCs for MNEs in non-alcoholic beverages.....	34
Figure 3.16. Number of relationships per unit of sale (USD billion).....	35
Figure 3.17. GVC participation modes in services sectors.....	36
Figure 3.18. Exclusive and other suppliers.....	39
Figure 3.19. Distribution of total linkages.....	40
Figure 3.20. Share of domestic and foreign companies by entry mode, Internet software/services...	42
Figure 3.21. Share of companies located in OECD and non-OECD countries by entry mode, ZTE Corporation (Headquarter: China).....	42
Figure 3.22. Geographical distribution of trade, strategic partnerships and investment, Telecommunications Equipment.....	43
Figure 3.23. Geographical distribution of trade, strategic partnerships and investment, Apparel and Footwear.....	44

Boxes

Box 1.1.	The boundaries of the firm: Transaction costs and capabilities	9
Box 2.1.	Type of FDI: Horizontal, vertical and other.....	16
Box 2.2.	Core and support functions	17
Box 3.1.	FDI and market power.....	38

Executive Summary

In today's world, activities of multinational enterprises (MNEs) are increasingly organised within global value chains (GVCs), where trade and investment are combined with new contract-based forms of corporate relationships. Yet, the interaction between various cross-border economic relationships in new business models has not been fully mapped or understood, and their co-existence may not be sufficiently considered in policy reforms. The combination of various modes of internationalisation can generate cross-effects by which a barrier to one cross-border relationship could cause significant disruptions for the other economic activities of the network. This underlines the importance for trade and investment disciplines to be sufficiently comprehensive and inter-linked to address the reality of production sharing models pursuing joint trade and investment strategies.

Using a novel micro-level dataset covering about 27,000 corporate relationships of 147 MNEs in 13 sectors, we shed light on how firms combine trade with foreign direct investment (FDI), as well as a range of non-equity, contract-based partnerships which are inter-woven in the GVC network. This information allows us to obtain a comprehensive picture of a company's business relationships, their nature and dependability. In each sector, we cover 8 to 16 key MNEs which represent an important share of the sector's global revenues. Still, given that we only cover a sub-sample of companies in each sector, the generalisability of results should be treated with caution.

Our analysis leads to five stylised facts that summarise the different findings of the report. First, we observe that MNE activities are a combination of trade, FDI and strategic partnerships. All firms rely on a mix of these different types of corporate relationships, implying that they cannot be looked at in isolation from a policy perspective. While less discussed in terms of policy-making, strategic partnerships play an important role in GVCs. In particular, we find that certain types of strategic partnerships are frequently used in knowledge-intensive and high-technology sectors, which are more dynamic and may therefore need more flexible arrangements.

Second, the configuration of trade, investment and strategic partnerships varies across sectors, firms and markets. We observe sector specificities in the relative intensity and types of these entry modes, which can be useful to consider for sectoral reforms and trade negotiations. But our results also show considerable firm-level heterogeneity within the same industry and across the different modes of entry. This marked heterogeneity suggests that policies cannot be tailored for specific sectors or firm strategies and should provide a policy environment favourable to a variety of corporate relationships.

Third, our analysis brings to the forefront the role of investment in GVCs. In line with previous contributions, we find that horizontal (or "market seeking") FDI remains an important motive behind cross-border investment decisions. In some sectors, we identify significant shares of vertical (or "input-seeking") FDI in line with the concept of vertical integration in GVCs. However, there are other forms of FDI in GVCs. Investment "in capabilities" or "conglomerate" FDI account for a relevant share, consistent with existing evidence of MNEs pursuing alternative strategies when integrating foreign subsidiaries into their organisational structure.

Fourth, an interesting finding is the relevance of support business functions (i.e. marketing, distribution, IT services, etc.) in MNE activities. Support business functions emerge as key

building blocks in GVCs, which suggests that policy reforms in transversal services sectors that support all GVCs should merit special attention.

Finally, our results show that GVCs display a clear geographical organisation. While domestic corporate relationships may lead to higher volumes of activities, in terms of the number of relationships we find that MNEs have more partners abroad. Moreover, the large majority of GVC interactions take place in OECD countries, which might point at the importance of economic institutions (e.g. better property right protection, regulatory quality, etc.) in driving MNE interactions. It also implies that differences in the policy regime could explain patterns of trade, investment and strategic partnerships, with distortions as opposed to the preferred strategy of firms.

1. Background and motivation

Today's global economy is characterised by global value chains (GVCs), in which Multinational Enterprises (MNEs) combine trade, investment and strategic partnerships to organise and co-ordinate their operations globally. Yet, the interaction between these cross-border economic relationships has not been fully mapped or understood, and interdependencies may not be sufficiently considered in policy reform efforts. The co-existence of various modes of internationalisation within a firm implies that a barrier in one cross-border relationship could cause significant disruptions for the other economic activities of the network. The co-dependency of various types of cross-border corporate relationships motivates the need for comprehensive and coherent policy frameworks.

Yet, despite the recognition that these relationships are closely intertwined in a firm's global strategy, they remain fragmented in policy-making processes, both at the domestic and international level. This is reflected in the global regime, where trade and investment rules are perceived to be insufficiently comprehensive or inter-linked to address the reality of production sharing models pursuing joint trade and investment strategies. This paper aims to address these gaps by deepening our understanding of how trade and investment interact in GVCs. It presents results using a novel dataset of multinational enterprises and their cross-border economic relationships in international production networks.

We exploit the FactSet database, which provides information pertinent to the multinationals customers, suppliers, strategic partners and competitors. This information allows us to obtain a comprehensive picture of a company's business relationships, their nature and dependability. While the quantitative macro-foundation of trade and FDI in GVCs has advanced considerably through TiVA and the analytical AMNE database (Cadestin et al., 2018^[11]), this micro-level analysis can portray the interactions between trade and FDI at the level of the firm. Moreover, an important benefit of using firm-level data is that it allows us to observe the considerable heterogeneity across firms, which is associated with important intra-industry variation in the way MNEs organise their global supply chains.

This analysis aims to make several contributions to help deepen the understanding of trade and investment interactions. First, it brings to the forefront the role of investment in GVCs. Foreign direct investment (FDI) is an important engine in global value chains and drives a large share of trade flows. Yet, the research and policy discussions on GVCs have largely focused on trade flows, and it is necessary to bring FDI to the core of this discussion. Hence, the analysis aims to explore the motives and composition of FDI ("horizontal" or "market seeking" FDI vs "vertical" or "input seeking"; or other new forms identified in the literature) and analyse the complexity of MNEs' equity structure.

In addition, the analysis aims to shed light on the role of non-equity, contract-based cross-border relationships which are important in the business models of some MNEs. The activities of multinationals abroad are more complex and heterogeneous than FDI, and need to be better mapped and linked to trade flows. It is widely perceived that these non-equity forms of control, dubbed as strategic partnerships, are becoming growing building blocks in GVCs. Given that they are "hidden" and therefore difficult to discern in aggregate data, company-level information is instrumental to learning more about their role and their implications for trade and FDI. Overall, it is important to get a comprehensive picture of under-studied cross-border relationships in GVCs that may also have implications for the evolution of investment and trade policy frameworks.

Moving beyond the traditional understanding

The conventional starting point to make sense of the international activities of firms and their preferred mode of integration is the OLI framework (Ownership-Location-Internalisation), developed by John Dunning (1977^[2]) and also called the “eclectic paradigm”. It addresses two important questions: first, it explains why companies become multinational and, second, it explores the determinants of MNE choices to adopt trade, investment or strategic partnerships with other firms in the value chain.

The paradigm identifies three types of advantages in this regard: first there are ownership advantages: MNEs own assets which mark them apart from other firms. These could be proprietary technology and knowledge, specific design, brand names, production processes, etc. The ownership of these valuable resources is key to overcoming the downsides of maintaining a presence abroad.

Second, firms become multinational in the search for location advantages, which could be tied to a specific city, region or country. This type of advantages could be related to the supply side, as in, for example, access to abundant natural resources, a vast and cheap labour supply, or particular technological skills. Yet, they could equally be related to demand factors: a large or thriving market clearly attracts MNE activities, especially investment.

Third, MNEs opt for ownership of affiliates abroad due to internalisation advantages. This is to say that internalising foreign companies will help preserve firm-specific knowledge capital, and avoid facing the drawbacks of contractual relationships and arm’s length trade with independent firms.

This general scheme helps answering the question of why companies become multinational: firms invest abroad in the search for location advantages. One way to do so is through vertical FDI or “efficiency-seeking” FDI, in order to make the best possible use of local production factors abroad (Helpman, 1984^[3]). Alternatively, horizontal FDI or “market-seeking” FDI follows demand factors, as MNEs establish foreign subsidiaries with an interest in supplying foreign markets with their goods and services.

Thinking about vertical and horizontal FDI helps to reflect upon the determinants of MNEs choices to adopt trade, investment and/or strategic partnerships as mode of integration in the value chain. If FDI was indeed considered as purely horizontal, MNEs would opt either for trade or for investment strategies to participate in GVCs, as in a proximity-concentration trade-off (Brainard, 1997^[4]). This is because MNEs would either choose to export their goods and services or to supply foreign markets through commercial presence, thus avoiding trade costs by “tariff-jumping” and saving transport costs.

However, if FDI was assumed to be purely vertical, trade and investment would then be complementary. As MNEs’ production processes would be split across borders, the various units would need to be able to trade in intermediate inputs to perform their functions, meaning that high trade costs would actually discourage investment abroad. MNEs would then engage in both trade and investment.

In addition, internalisation advantages would determine whether MNEs adopt trade, investment or strategic partnerships to integrate GVCs. The decision to internalise the activities of foreign affiliates, often referred to as the “make or buy” decision, may easily be linked to ownership advantages: multinationals may want to safeguard firm-specific knowledge or brand, and thus internalise activities abroad to avoid dissipation (Rugman, 1986^[5]).

Alternatively, the “hold-up” problem could be explaining investment, as the impossibility of writing complete contracts may impose costs for the supplier as well as the customer to a transaction (Grossman and Hart, 1986^[6]). This would not be the case if the MNE had the sole ownership of an affiliate. Furthermore, agency costs, if high, could push MNEs to opt for the establishment of own foreign affiliates abroad (Horstmann and Markusen, 1996^[7]). Box 1.1 provides some further explanation on the boundaries of the firm literature.

Box 1.1. The boundaries of the firm: Transaction costs and capabilities

The meaning of the terms ‘hold-up’, ‘dissipation’ or ‘agency costs’ are tied to a specific strand of the economic literature, which is namely the internalisation literature (Coase, 1937^[8]; Buckley and Casson, 1976^[9]), a key pillar in the OLI theoretical framework.

To begin with, we can make sense of MNEs as having to make a decision between internalising a foreign activity in order to produce goods and services, meaning acquiring a foreign affiliate for these purposes, or buying the desired good or service from an independent supplier, which means engaging in “arm’s length contract” trade.

The ‘boundaries of the firm’ then refer to where enterprises delimit their internalisation activity and start engaging in trade with independent suppliers. In the conventional understanding, this decision is determined by transaction costs: where these are high, MNEs will opt for internalising subsidiaries involved in the production process, while engaging in arm’s length contract trade when transaction costs are low.

Transaction costs can take a variety of forms, starting with the “hold-up” problem (Grout, 1984^[10]). This refers to the situation in which two independent firms agree to a contractual relationship, as for example the provision on inputs by an affiliate company for the production process of the parent company. This form of association has disadvantages because both the parent and affiliate companies might find themselves “held-up” in the relationship, as their contract is “incomplete”, meaning that it cannot cover all eventualities which might arise.

For example, the parent company could claim that because of a fall in demand it can no longer afford to pay its supplier and thus bargain for lower prices, while the supplier, which has already invested in the making of relationship-specific inputs, is in a weaker bargaining position and will accept the price change to recover sunk costs. Similarly, the parent company might be “held-up” in the relationship when the independent affiliate produces key components which are indispensable for the successful completion of the production process of the parent company.

Yet transaction costs might equally arise from dissipation of firm-specific assets (Rugman, 1986^[5]). If, for example, an MNE makes use of firm-specific knowledge tied to its Ownership advantages, affiliates could “learn by doing” in a contractual relationship and enter in the possession of these assets, competing at a later stage with the parent company (Ethier and Markusen, 1996^[11]). Moreover, affiliate companies entrusted with the provision of the parent company’s goods and/or services could provide lower quality products to their customers, while free-riding on MNE reputation and gaining therefrom (Horstmann and Markusen, 1987^[12]).

Then, transaction costs could also take the form of “agency costs”, which draw from the traditional “principal-agent” problem. For example, the parent company might rely on an independent affiliate for the sale and distribution of its goods or services, by virtue of the affiliate’s better knowledge of the market. In this situation, a drop in sales could be due to lack of effort by the firm’s salesforce, or equally be due to market conditions. The independent firm might thus have an incentive not to share market information with the parent company, in order to be less accountable for losses, while it would actually be in the best interest of the MNE to access this knowledge (Barba Navaretti and Venables, 2004_[13]).

While the traditional OLI framework offered revealing insights into the organisation of MNEs activities, it does not come to grips with recent developments in business models, as well as with a number of results emerging from our data. This is because FDI flows can hardly be explained by using the traditional dichotomy of vertical and horizontal investment: not only is FDI both vertical and horizontal at the firm-level, indicating that trade and investment are not simply substitutes nor complements, but also we observe significant shares of investment which cannot be classified as either vertical nor horizontal.

Similarly, internalisation advantages need to be reappraised in light of the rise in strategic partnerships as collaborative modes of production. In addition, firms display a wide heterogeneity in their business models, even where OLI advantages would predict similar models of organisation. At last, the OLI framework focuses primarily on *greenfield* investment, where parent companies build production plants anew in host countries. The bulk of FDI however takes the form of mergers and acquisitions (M&A), meaning that interactions between parent and affiliate companies are important determinants of strategies of integration.

Although a full discussion on new theoretical paradigms to replace the OLI framework is outside the scope of this report, our results elicit a new narrative of the determinants of MNEs’ modes of integration in GVCs, which is developed in parallel to the analysis of our main findings.

The remainder of this report is organised as follows. In Section 2, we describe the data and methodology that are used to construct a new firm-level dataset on relationships between companies within GVCs. In Section 3, we offer a synthesis of the main observations that emerge from the sample of MNEs examined and try to interpret them in the light of old and new paradigms on how MNEs organise their operations in GVCs. Section 4 concludes with stylised facts that have implications for policy-making.

2. Mapping business relationships in GVCs: Data and methodology

Trade, investment, and other cross-border activities of MNEs are not conducted in isolation; they all co-exist in the global value chain. Companies expand their supply and customer networks beyond their domestic markets through various types of cross-border relationships. Mapping the full eco-system of cross-border business relationships of MNEs is crucial to understanding how trade and FDI are intertwined in firms' strategies. An important benefit of using firm-level data is that it allows us to observe firm-specific heterogeneity.

In order to derive firm-level insights on these inter-connections in GVCs, we exploit the FactSet Supply Chain Relationships database. To the best of our knowledge, this is the most comprehensive source of micro-information uncovering business relationships among companies that are part of a GVC, including the lead firm and all of its disclosed competitors, suppliers, customers, and strategic partners. FactSet Supply Chain Relationships currently covers more than 16,100 publicly traded companies around the world, comprising over 221,000 business relationships. Companies are classified into 148 industries and 20 economic sectors.

Apart from its comprehensiveness, a key advantage of FactSet is its timeliness. The company data in FactSet are maintained current, allowing us to have real-time information on GVCs. This can be important in view of the dynamic and rapidly changing nature of some GVCs, where it is important to keep abreast of how value chains are initiated, why some value chains grow, and why some value chains expire. Company information is fully reviewed annually, and changes based on press releases and corporate information. The result is a comprehensive, detailed and up-to-date dataset of material inter-company relationships. Only primary sources of information disclosed directly by companies via regulatory filings and investor reports are used.

For this analysis, we have used a sample of 147 MNEs from 13 sectors contained in FactSet, with about 27,000 corporate relationships, covering both high technology and low technology sectors. The analysis encompasses 9 manufacturing sectors (telecommunication equipment, electronic appliances, motor vehicles, apparel and footwear, pharmaceuticals, chemicals, agricultural commodities, food and non-alcoholic beverages) and 4 services sectors (banks, internet services/software, information technology services and advertising/marketing services).¹ We further enrich the data for these companies by complementing it with other information coming from several sources, including input-output tables and Bloomberg. The sample of firms and sectors used in the analysis are shown in Table 2.1.

¹ One sector, "agricultural commodities", covers both the processing and distribution of agricultural products. It allows us to study a GVC related to agriculture but the sector is still classified as manufacturing.

Table 2.1. List of industries and companies used in the analysis

FactSet Sector	FactSet industry	Companies
Electronic Technology	Telecommunications Equipment	Apple (US), Samsung (South Korea), Ericsson (Sweden), Nokia (Finland), Qualcomm (US), HTC Corporation (Chinese Taipei), ZTE (China), Tcl Corporation (China), LG Uplus Corp (South Korea), ARRIS International Plc (US), Garmin Ltd. (Switzerland), EchoStar (US)
Consumer Durables	Electronics/Appliances	oshiba (Japan), Sony (Japan), Panasonic (Japan), LG Electronics (South Korea), Haier (China), Midea (China), Whirlpool (US), FUJIFILM Holdings Corp (Japan), Electrolux (Sweden), Sharp (Japan), Qingdao Haier (China), SEB SA (France)
Consumer Durables	Motor Vehicles	BMW (Germany), Fiat-Chrysler (Italy), General Motors (US), Renault (France), Toyota (Japan), Volkswagen (Germany), Tata Motors (India), Dongfeng Motor (China), Peugeot SA (France), Hyundai Motor (South Korea), SAIC Motor (China), Nissan (Japan), KIA Motor (South Korea)
Consumer Non-Durables	Apparel/Footwear	Adidas (Germany), Dior (France), Hermes (France), Kering (France), Levis (US), Nike (US), PVH (US), Pou-Chen (Chinese Taipei/China), VF (US), Yue-Yuen (Hong Kong/China), Industria de Diseno Textil (Spain), Asics (Japan), Burberry Group (UK), Prada (Italy) and Hugo Boss (Germany), Gap (US)
Consumer Non-Durables	Beverages: Non-Alcoholic	PepsiCo (US), Coca-Cola (US), Suntory Holdings (Japan), Fomento Economico Mexicano SAB de CV (Mexico), Red Bull GmbH (Austria), Dr Pepper Snapple Group (US), Arca Continental SAB de CV (Mexico), ITO EN (Japan), Embotelladora Andina (Chile), Refresco Group (Netherlands), Lotte Chilsung Beverage (South Korea), Britvic (UK).
Consumer Non-Durables	Food: Major Diversified	Nestle (Switzerland), Kraft Heinz Company (US), Danone (France), Kellogg Company (US), CJ Corporation (South Korea), Associated British Foods (UK), UniPresident Enterprises Corp (Chinese Taipei), Barilla (Italy), General Mills (US), Bonduelle (France).
Health Technology	Pharmaceuticals: Major	GlaxoSmithKline (UK), C.H. Boehringer (Germany), Merck & Co. (US), Les Laboratoires Serviers (France), Johnson & Johnson (US), Sun Pharmaceutical Industries (India), Pfizer (US), Sanofi (France), Roche Holding (Switzerland), Novo Nordisk (Denmark) and Takeda Pharmaceutical Co. (Japan)
Process Industries	Chemicals: Major Diversified	DowDuPont Inc. (US), Mitsubishi Chemical Holdings Corporation (Japan), Johnson Matthey Plc (UK), Formosa Chemicals & Fibre Corporation (Chinese Taipei), Arkema SA (France), Hanwha Chemical Corporation (South Korea), Kemira Oyj (Finland), Godrej Industries Limited (India), Hanwha Corp.(South Korea), I AECI (South Africa).
Process Industries	Agricultural Commodities/Milling	Cargill (US), Archer-Daniels-Midland (US), Wilmar International Limited (Singapore), Charoen Pokphand Foods Public (Thailand), Dansk Landbrugs Grovvarereselskab (Denmark), Inner Mongolia Yili Industrial Group Co. (China), Bunge (United States), Golden Agri-Resources (Singapore, China).
Finance	Bank: Major	Bank of China (Hong Kong/China), Bank of Communications (Hong Kong/China), Deutsche Bank (Germany), HSBC (UK), Lloyds (UK), Mizuho (Japan), Societe Generale (France), BNP Paribas SA (France), Banco Santander (Spain), Unicredit (Italy), UBS Group (Switzerland), Barclays (UK).
Technology Services	Internet Software/Services	Criteo (France), Expedia (US), Facebook (US), Tencent Holdings (China), Recruit Holdings (Japan), NAVER (South Korea), United Internet (Germany), MercadoLibre (Argentina), Twitter (United States), Freenet (Germany), Yandex (Netherlands).
Technology Services	Information Technology Services	SoftBank Group (Japan), IBM (US), Fujitsu (Japan), Accenture (Ireland), Tata Consultancy Services (India), Capgemini (France), CDW (US), Atos (France), Infosys (India), Wipro (India).
Commercial Services	Advertising/Marketing Services	WPP (UK), Omnicom Group (US), Hakuholdo Dy Holdings Incorporated (Japan), Publicis Groupe (France), Interpublic Group of Companies (US), Cheil Worldwide (South Korea), GfK (Germany), Jdcaux (France), Groupon (US), Havas (France).

Source: OECD elaborations based on *FactSet Supply Chain Relationships*.

Given that the focus of this study is on companies which engage in cross-border supply chain activities² and due to the large number of missing companies in FactSet, we did not use probability sampling techniques (i.e. random selection) to generate our sample.

Nevertheless, the selection of MNEs in our sample follows some well-defined criteria in terms of the coverage of sectors, market shares, and countries. To begin with, we have selected 13 sectors which cover both high-tech and low-tech goods and services. We have focused on the key players in each sector, i.e. companies with the largest market shares (based on the revenues provided by the companies themselves and reported by FactSet Supply Chain Relationships).³ In each sector, the selected MNEs account together for a market share ranging between 20% (Internet software/services) and 77% (Telecommunications equipment). In addition, our selection was guided by the objective of having a sample representative of both developed and emerging countries.⁴ Finally, the choice of sectors, companies and countries was also influenced by the availability of data.

Although a probability sampling technique would provide us with greater external validity for our findings, we are still able to draw important conclusions on the business strategies of key players in the chosen sectors. Our analysis and results is mostly descriptive and explorative and sets the scene to more rigorous and quantitative work in this area.

Cross-border relationships in GVCs


The main value-added of this database is that it covers (almost) the full range of relationships of multinationals within GVCs, allowing to see how MNEs pursue and combine different channels of internationalisation in their global strategies. While data on direct investment is comparatively rich (M&A deals, announced Greenfield projects), there is little information on other forms of supply chain governance in traditional data, and firm-level information is only starting to uncover them. A stylised representation of the types of GVC relationships, and the degree of influence that the MNE exerts over them is presented in Table 2.2.

² Companies that trade, invest and/or have strategic partnerships abroad represent a much smaller subset of the 16,000 companies contained in FactSet.

³ As FactSet only covers listed companies and revenues are not available for all companies in the dataset, market share might be overestimated. However, we have compared the market shares obtained using FactSet with the market shares provided by other sources (e.g. Statista) and results are often consistent with each other.

⁴ In general, less information is available for companies headquartered in emerging countries, which increases the probability of a bias in a randomly selected sample.

Table 2.2. Stylised typology of GVC relationships

Relationship	Description
 <p>Full control</p> <p>No control</p>	<i>Branch/ Subsidiary</i> A direct investment enterprise that is fully (100%) or majority (>50%) owned by its parent company.
	<i>Equity Investment</i> A direct investment of up to 50% of an enterprise's voting power, i.e. the parent company influences but does not have full control of the affiliate's strategic decisions.
	<i>Joint Venture</i> An entity created by two or more parties to undertake a specific project. Profits, expenses, and risks associated with the project are shared for the duration of the project, but the parties involved remain separate legal entities.
	<i>Franchising</i> The practice of using a firm's successful business model and brand name to operate an independent branch of the firm (or franchiser) in exchange for payments. The franchiser maintains significant control over the operations and processes of the franchisee, while providing branding and marketing support, and ensuring that franchises do not cannibalize each other's revenues.
	<i>Licensing</i> An agreement between an owner (licensor) of intellectual property (patents, trademarks, copyrights, trade secrets) (IP) and a licensee, authorizing the licensee to make, use, or sell, the specified IP of the licensor, normally for a limited period of time, in specified locations, under voluntary and mutually agreed terms and conditions, including compensation (royalty) paid by the licensee to the licensor. The licensor exercises control over how its IP is used under the terms of the license, but does not control the business operations of the license.
	<i>Collaboration agreements</i> Entities collaborating for a specific purpose (e.g. research and development, new product development, integrated product offering, etc.).
	<i>Independent Supplier</i> An independent enterprise from which a firm purchases a standardised product or service that is used to provide its end product, but may also be sold to other customers.

Source: OECD elaboration based on based on FactSet Supply Chain Relationships (2015), Data and Methodology Guide.

Based on the degree of control that MNEs exert on their foreign suppliers, these relationships can be classified into three broad groups:

- *Investment*: The database covers three types of investment interactions which are subsidiaries, equity investment and investors. Direct subsidiaries are companies fully or majority owned by the parent company. Equity investment consists of minority ownership direct investment of the parent company in another company. Finally, investors are companies owning equity shares of the parent company (this category can be regarded as outside the GVC network as it deals with the owners of the parent company). An equity-based relationship implies full control or partial influence of the parent company over another company (or vice-versa), based on the extent of ownership. The data also allows us to explore why companies engage in FDI (“horizontal” or “market-seeking” FDI vs “vertical” or “input seeking”; or other types of FDI) and analyse the length and complexity of MNEs’ equity structure. Quantifying vertical, horizontal and other linkages between the parent company and its subsidiaries (See Box 2.1) allows us to better discern the nature of the relationship between FDI and trade. However, the database does not allow us to distinguish between Mergers and Acquisitions (M&A) and Greenfield investments.

- *Strategic partnerships:* The database includes a wide range of contractual relationships between companies with no equity involvement. In a strategic partnership, a company exerts some influence over the activities of another enterprise. Strategic partnerships include licensing, research collaboration, joint ventures and other contract-based relationships. The dataset covers many of these relationships, but not all of them; for instance, franchising relationships are not covered. Hence, the importance of strategic partnerships is likely to be under-represented in our results.
- *Arm's length trade:* The database has a rich coverage of trade relationships, distinguishing between trade with suppliers (companies from which the parent company purchases goods or services) and customers (companies to which the parent company sells products/services). In these arm's length transactions, the parent company does not exert any influence or very limited influence on its partner firms. Accordingly, the buyer and seller act independently in an arm's length transaction.

Table 2.3. Types of supply chain relationships covered by FactSet (FactSet definitions)

Investment:	
Subsidiaries	A direct investment enterprise that is fully (100%) or majority owned (>50%) by its parent company.
Equity investment	A direct investment of up to 50% of an enterprise's voting power, i.e. the parent company influences but does not have full control of the affiliate's strategic decisions.
Investors	Entities which own equity stake in the parent company
Strategic partnerships:	
Joint Venture	The parent company jointly owns a separate company with one or more companies.
Out-licensing	An owner (licensor) of intellectual property (patents, trademarks, copyrights, trade secrets) (IP) authorizes a licensee to make, use, or sell, the specified IP of the licensor, under voluntary and mutually agreeable terms.
In-licensing	A licensee receives authorization from an owner (licensor) of intellectual property (patents, trademarks, copyrights, trade secrets) (IP) for the licensee to make, use, or sell, the specified IP of the licensor under voluntary and mutually agreeable terms.
Research collaboration	Companies collaborating with the parent company for research and development, generally for new product development, common between science companies and between technology companies. This designation is applicable for products in development, not marketed.
Integrated product offering	Companies with whom the parent company agrees to bundle standalone products/services of each company, which are marketed together as one offering. No money is exchanged upfront, and costs, risks, and profits are shared.
Arm's length trade	
Suppliers	Companies from which the parent company purchases goods or services.
Manufacturing	Entities which provide paid manufacturing services to the parent company.
Distribution	Entities which the parent company pays to distribute this company's products/services.
Marketing	Entities which provide paid marketing and/or branding/advertising services to the parent company.
Customers	Entities to which the parent company sells products/services; the "opposite" of Supplier relationship.

Source: FactSet

A full description of the types of relationships under each of these categories is presented in Table 2.3 using Factset definitions (hence some differences with the definitions we provide in Table 2.2). Apart from the companies involved in the core business functions of the production network, it takes into account the many additional members of the value chain that play a vital but indirect, supportive role in the movement, storage, and transformation of products across organisations. However, FactSet does not provide this important distinction between core and supporting business functions. This is why we use the classification proposed by Nielsen and Sturgeon (2014^[14]) to further group our nine manufacturing industries in three categories: “core business functions”, “support business functions” and “other business functions” (Box 2.2).

Box 2.1. Type of FDI: Horizontal, vertical and other

The methodology that we use to distinguish horizontal FDI, vertical FDI, and other forms of FDI builds on Alfaro and Charlton (2009^[15]). We rely on the 2007 benchmark input-output table from the United States Bureau of Economic Analysis that includes 389 industries. First, we aggregate these industries into the FactSet classification of industries, thus creating a new input-output table. From this table, we identify industries which supply more than 5% of the receiving industry’s total intermediate inputs, thus classifying the affiliate and parent companies in a vertical linkage.

The comparison between the industry of the parent company and the industry of its affiliate then determines whether FDI is horizontal, vertical, or pertaining to the other category. When in the same industry, FDI is classified as horizontal. If the two industries have vertical links, as identified with the US input-output table, FDI is assumed to be vertical. Lastly, if there is no vertical link, FDI is assumed to be of another type, meaning ‘other’ because the two industries are not bound in an input providing relationship. As our data are more aggregated than the US input-output table, we might overestimate horizontal FDI when the input is produced in an industry that becomes aggregated with another in our data.

In this regard, a further qualification needs to be made: we cannot know from our data whether a direct subsidiary is an input receiver or an input provider to the production process of the parent company. This means that there are two ways to read vertical linkages: either by looking at the share of inputs which go from the industry of the parent company to the industry of the subsidiary, supposing the subsidiary to be receiving inputs, or as the share of inputs going from subsidiary industry to parent industry, treating the subsidiary as an input provider. This creates two different measures: on the one hand vertical downward linkages, where the parent companies are supposedly all input receivers, thus generally downward in the value chain, and on the other hand vertical upward linkages, where parent companies are supposedly all input providers, thus generally upward in the value chain. Due to the fact that our parent companies are generally downward in the value chain, this report uses the measure for vertical downward linkages.

This further qualification is important when looking at the distribution of backward, forward and bidirectional linkages of a given MNE, and also when analysing the importance of core and support functions with reference to the position in the value chain.

Despite the comprehensiveness of the information, one key limitation is that we cannot distinguish the relative significance of each supplier. FactSet database has some sales exposure information, but it is unfortunately too sparse to be useful. Hence, we have comprehensive information on the business relationships of an MNE in the GVC, but cannot assess the importance of each relationship in economic terms. However, it would be expected that the most important suppliers are notified, since rules generally call for companies to disclose their customers if their revenue exposure is 10% or greater. Nevertheless, a notable feature of FactSet is that it contains information of both small and large suppliers' customers, including SMEs, while, other sources (Compustat) only contain information on suppliers' major customers. Still, we should be aware that there are potentially unidentified suppliers in the information that we have.

Section 3 presents a selection of the most interesting and innovative findings emerged from the analysis. Detailed results by sector are available upon request in a separate document.

Box 2.2. Core and support functions

We use the classification proposed by Nielsen and Sturgeon (2014_[14]) to further group our nine manufacturing industries in three categories: “core business functions”, “support business functions”, and “other business functions”. According to Nielsen and Sturgeon (2014_[14]) a core business function consists of the “production of goods and services intended for the market or third parties carried out by the enterprise and yielding income”. The core business function equals in most cases the primary activity of the enterprise. On the other hand, support business functions are defined as “ancillary activities that are carried out by the company to permit or facilitate the production of goods and services intended for the market or for third parties by the company. The outputs of support business functions are not themselves intended directly for the market or third parties”. Originally designed for manufacturing sectors, we only provide the classification into core and support functions for the nine good sectors, but not for the four services sectors.

3. How do MNEs participate in GVCs? Evidence from a new firm-level dataset

This section presents the results from a new firm-level dataset that are relevant for understanding the trade and investment relationship and link them with old and new theories of trade and investment.

The analysis below is based on a sample of firms engaged in GVCs across a selection of sectors. In total, 147 MNEs with their corresponding network of subsidiaries, suppliers, buyers and strategic partners (about 27,000 corporate relationships). These MNEs cover nine manufacturing sectors (Telecommunications equipment, Electronics, Motor vehicles, Apparel and footwear, Pharmaceuticals, Chemicals, Agricultural commodities, Food, and Non-alcoholic beverages) and four services sectors (Internet software/services, Information technology services, Advertising/Marketing services, and Banks). Each sector contains between 8 and 16 major multinationals which represent an important share of the sector's global revenues. Still, the generalisability of these findings should be taken with caution.

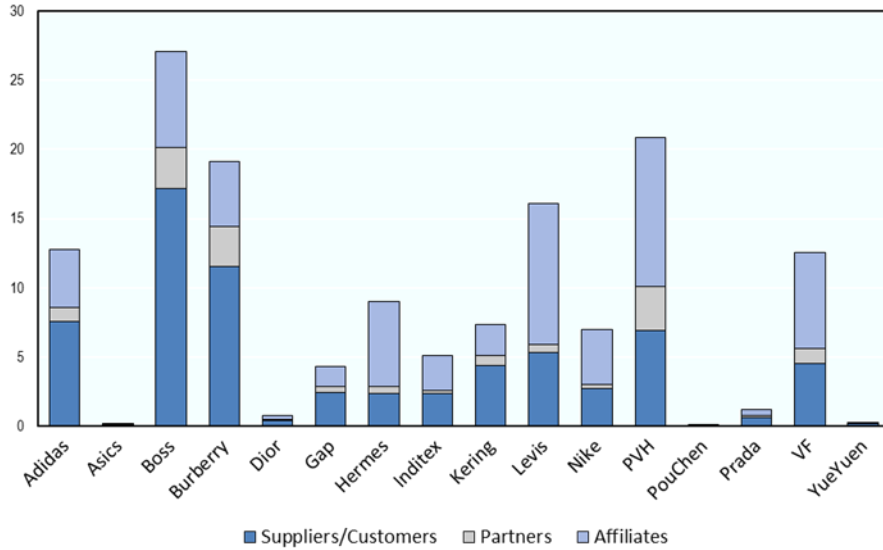
3.1. Firm heterogeneity in GVC strategies

A key result emerging from our dataset is that of firm-level heterogeneity. First, this finding is in line with the empirical literature in economics, which in the last 15 years uncovered the importance of firm and product market characteristics in the economics of international trade (Bernard et al., 2012_[16]). Second, our findings underline the important differences even within the category of MNEs with regards to their strategies of integration in GVCs.

In order to conceptualize heterogeneity in our sample it is useful to think of it on three levels. First, MNEs differ in terms of the total amount of linkages they rely on to perform their production functions, regardless of the type of linkages binding parent and partner companies. Second, MNEs differ in the type of linkage prevailing in their integration strategies in GVCs: while some companies would mainly make use of arm's length trade in the performance of their economic activities, others might rely more on investment or even on strategic partnerships

These two types of heterogeneity can already be grasped by looking at the distribution of MNEs linkages in the Apparel and Footwear sector in our sample, displayed in Figure 3.1. First, while firms like Hugo Boss would have more than 25 linkages for every one USD billion units of sales, other companies would display lower levels of extensions in GVCs. Secondly, while MNEs like Burberry and PVH exhibit significant numbers of strategic partnerships and trade relationships for one USD billion units of sales, MNEs like Levis and Hermes would rather integrate the value chain through investment strategies.

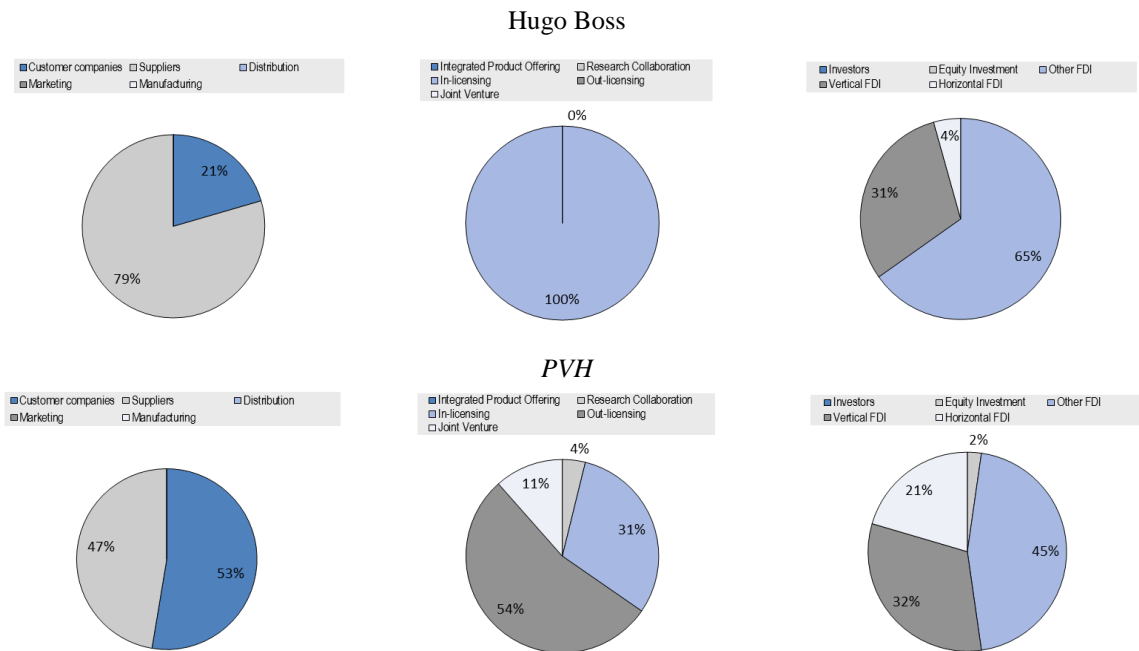
Figure 3.1. Number of relationships per unit of sale (USD billion), Apparel and Footwear



Source: OECD elaborations based on FactSet Supply Chain Relationships.

Third, even where parent companies are comparable in these two respects, they might vary significantly with regards to which type of strategy they employ within the three main categories of trade, investment and strategic partnerships. If Boss and PVH can indeed be considered as two comparable MNEs by virtue of the extent of their participation in GVC, since they both have more than 20 linkages for each one billion USD unit of sales, they differ significantly with respect to the exact strategies they employ (Figure 3.2).

Figure 3.2. Composition of trade, strategic partnerships and investment of Boss and PVH



Source: OECD elaborations based on FactSet Supply Chain Relationships.

Where indeed 79% of Hugo Boss’s trade partners are suppliers, 53% of PVH trade linkages occur with customers. In terms of strategic partnerships, 100% of these are in-licensing for Boss, while PVH shows a majority of out-licensing relationships (54%) and a mix of in-licensing, joint ventures and research collaborations. At last, PVH’s linkages are also more mixed with regards to investment, as Figure 3.2 shows a rather balanced mix of vertical, horizontal and “other” investments. Boss’s investment is instead largely classified in the “other” category.

Many factors might stand behind the heterogeneity identified above, going from business model, sourcing strategy or industry characteristics to availability of data in our sample. While therefore our analysis can overcome the obstacles of heterogeneity by concluding on general trends identified in the dataset, a first important finding is that MNEs display idiosyncratic features in relation to their strategies of integration.

3.2. Investment is important: Vertical, horizontal and “other”

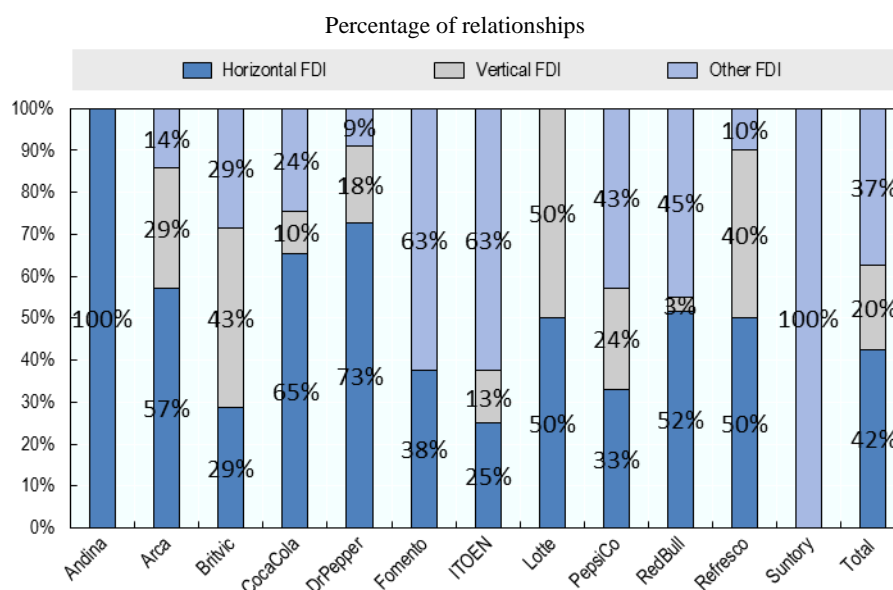
Beyond firm heterogeneity, a first result emerging from our data is that investment constitutes an important share of MNEs’ integration strategies. In this regard, it is important to contextualise findings in the recent empirical literature looking at the distribution of FDI. It is indeed the case that the traditional dichotomy between vertical and horizontal investment does not come to grips with firms’ actual economic behaviour (Alfaro and Charlton, 2009^[15]; Atalay, Hortaçsu and Syverson, 2014^[17]; Ramondo, Rappoport and Ruhl, 2015^[18]; Herger and McCorriston, 2016^[19]).

An important finding emerging from the empirical literature is that a significant share of investment is not classifiable as purely vertical nor horizontal (Herger and McCorriston, 2016^[19]; Ray, 2016^[20]). This raises the question of why MNEs would integrate with affiliates which do not provide inputs to the production process of parent companies and which do not fulfil the function of serving foreign markets. This form of not purely vertical nor horizontal investment is dubbed “other” in this report, and results confirm that significant shares of investment are classified in this category, as the example of Non-alcoholic beverages demonstrates (Figure 3.3).

The significant shares of “other” investment can be interpreted by moving away from conventional understanding towards “strategic asset seeking” motivations for investment. This category was later acknowledged by Dunning (1993^[21]) himself as somehow neglected by the traditional OLI framework.

This is because MNEs are conventionally understood as having ownership advantages *ex-ante* which allow them to overcome difficulties in foreign markets. On the contrary, strategic asset seeking rather describes the opposite phenomenon: MNEs seek to gain access to knowledge or capabilities which are not inside the firm, as in an “asset-seeking” or “competence-creating” investment (Cantwell and Mudambi, 2005^[22]). MNEs would then invest in affiliates in order to acquire capabilities, and not necessarily to serve foreign markets or produce intermediate goods.

The importance of “other” investment might also be related to digitalisation trends: digital firms tend to set up affiliates in traditional sectors while MNEs in traditional industries increasingly engage in digital investment (Gestrin and Staudt, 2018^[23]). This is also coherent with empirical evidence demonstrating that Information Technology has indeed reduced the scope of vertical integration and increased firms’ diversification, not least due to lower costs of coordination (Culnan, Armstrong and Hitt, 1999^[24]).

Figure 3.3. Types of FDI – Non-alcoholic beverages

Source: OECD elaborations based on FactSet Supply Chain Relationships.

In addition, other investment does not only aim at the acquisition of firm-specific assets *per se*, but also serves the search for capabilities which are complementary to those owned by parent companies. The MNE may have the intangible technological advantages and organisational capabilities but needs also to rely on the market expertise of local firms which is imperfectly mobile (Nocke and Yeaple, 2007^[25])

These imperfectly mobile, complementary assets include marketing and distribution, institutional competency, familiarity with the local market and relationships with suppliers and buyers, as these cannot be easily moved across countries (Anand and Delios, 2002^[26]).

This important development from the OLI framework helps address a major conceptual fallacy the paradigm is built upon: the eclectic paradigm often focuses on *greenfield* forms of FDI, meaning the setting up of new plants in foreign locations from square one. However, Mergers and Acquisitions are just as important, accounting in 2016 for a total value of \$869 billion worldwide, compared to \$828 billion in greenfield investment (UNCTAD, 2017^[27]). Synergies between parent and affiliate companies thus play a pivotal role in explaining FDI flows, and complementarities between capabilities are a driving force of integration.

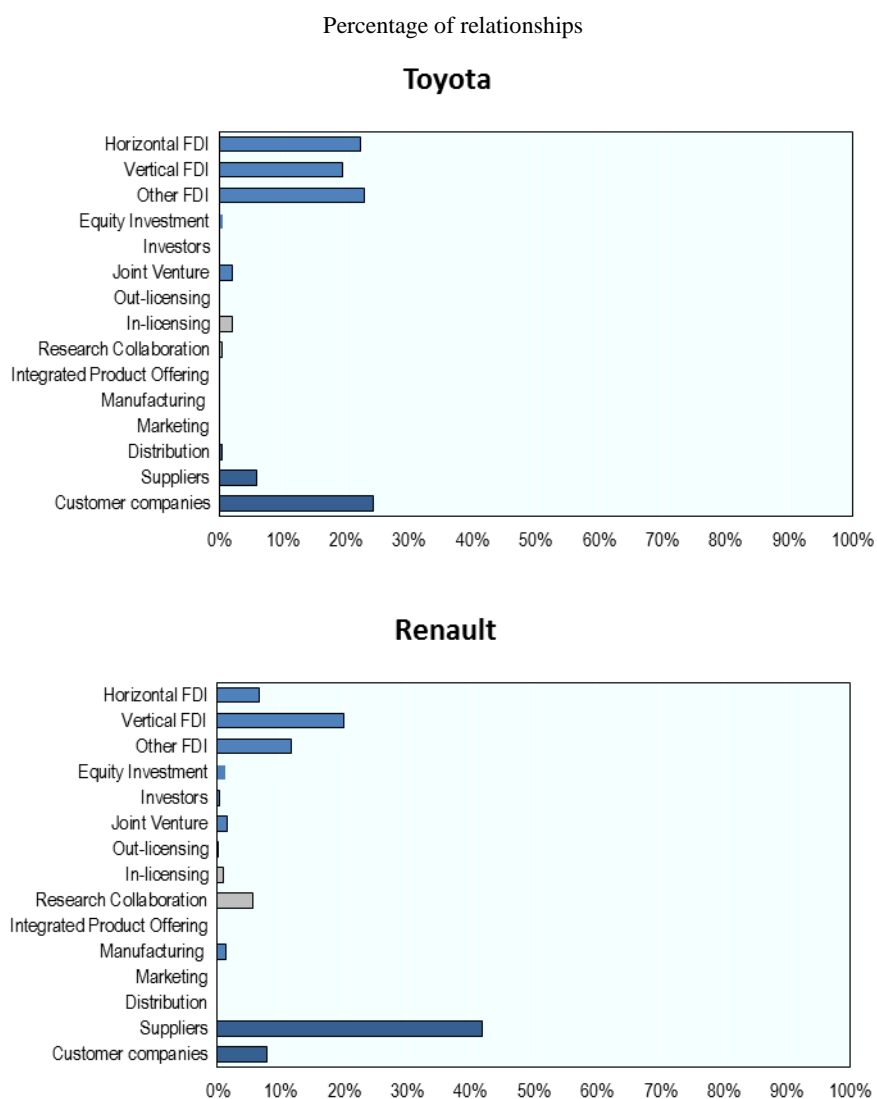
3.3. Trade and investment in firm strategies: A complex relationship

The economic theory suggests that trade and investment can be both complementary or substitute, and co-exist in the value chain. This is largely confirmed by the data. An important insight is that the choice between trade and FDI appears to a large extent to be driven by corporate strategies.

Our results show that the way MNEs combine trade and investment can differ markedly across firms. Within the same sector, firms display very different configurations in their prevalence of trade and FDI relationships with foreign companies.

As an example, Figure 3.4 shows the GVC participation strategies of Toyota and Renault, two multinationals in Motor vehicles that see themselves as competitors. Toyota largely relies on investment and horizontal or “market-seeking” FDI appears to be more relevant than vertical or “input-seeking” FDI. In addition, customer companies have a larger share than suppliers within trade. On the other hand, Renault’s GVC network is dominated by trade interactions. The number of relationships with suppliers is considerably higher than the number of relationships with customer companies. Moreover, for the company the share of vertical FDI is larger than the share of horizontal FDI.

Figure 3.4. Participation strategies in GVCs: MNEs in Motor vehicles



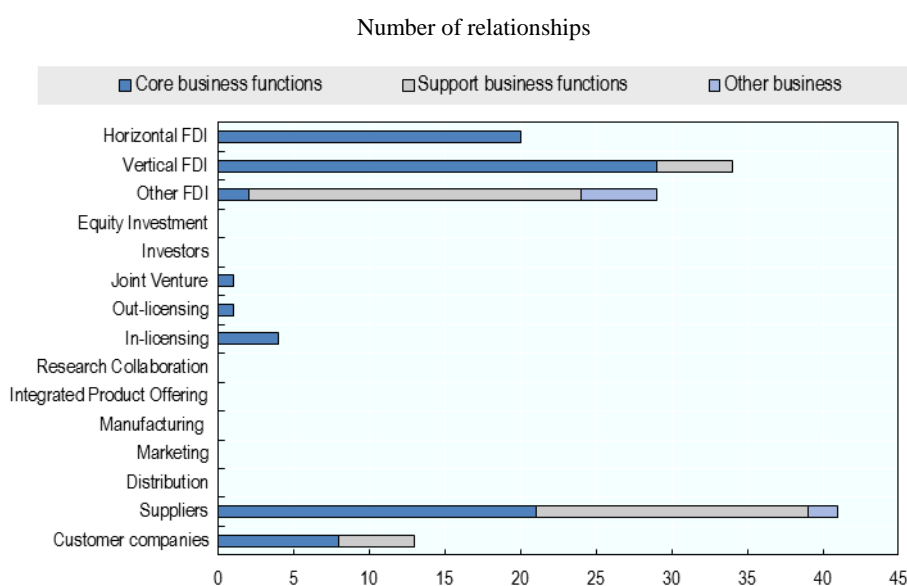
Source: OECD elaborations based on FactSet Supply Chain Relationships.

This marked heterogeneity which characterises MNEs’ participation in GVCs is also reflected in the way companies combine trade and investment, as alternative or complement strategies. The theory of firm internationalization provides a useful framework to analyse such relationship. In particular, the existence of location and ownership advantages help

understanding why companies use trade and investment in parallel or as alternative strategies.

One way to look at it is from the point of view of MNEs acquiring inputs for their production activities. MNEs face a “make or buy” choice: they can acquire the inputs from independent suppliers or rely on their network of affiliates. Kraft in the Food sector uses both trade (independent suppliers) and investment (vertical FDI)⁵, which denotes a complementary rather than substitutionary relationship (Figure 3.5).

Figure 3.5. Complementarity between trade and investment – Kraft



Source: OECD elaborations based on FactSet Supply Chain Relationships.

Although we cannot draw general conclusions, the data shows that companies often use trade and investment in parallel, which denotes a complementary rather than a substitutionary relationship. Nevertheless, we find large variation across firms and sector, reflecting different business models and supply chain strategies.

This confirms that neither horizontal nor vertical FDI are the only strategies of investment, meaning also, by the same token, that trade and investment are not simply substitutes nor complements. The combination of vertical and horizontal investment for a same MNE might be interpreted in different ways.

Companies might for example employ horizontal strategies of FDI in some countries and vertical strategies in others. In addition, proximity and concentration might not be related by a trade-off, as in the case of “export-platform FDI” (Ekholm, Forslid and Markusen, 2003_[28]): MNEs might decide to concentrate their value chain abroad (vertical investment) while at the same time serving proximate foreign markets through horizontal investment.

⁵ The co-existence of trade and investment relationships generally involves different partners but the same partner can also be in a trade and investment relationship. See sub-section 3.7 for the prevalence of such overlap.

3.4. Looking beyond trade and investment in GVCs: Importance of strategic partnerships

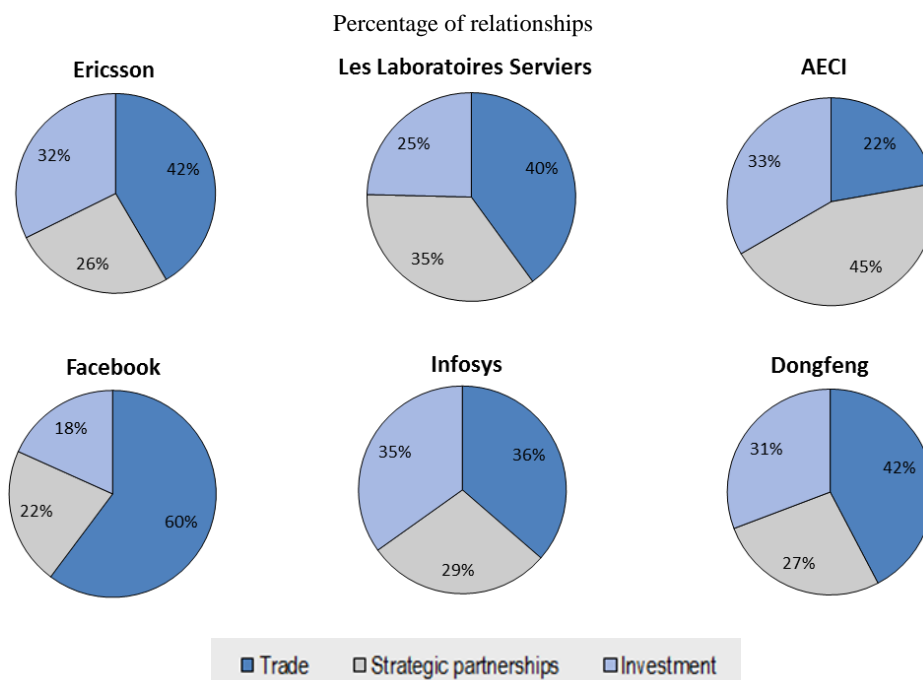
While contract-based cross-border relationships have been recognised as important building blocks in GVCs, they are difficult to identify in existing data, and hence have received limited attention in GVC research.

A strategic partnership occurs when an MNE externalises part of its operations to a partner company in which it has no ownership stake, while maintaining a level of influence or control over the operation by means of a contract. UNCTAD's World Investment Report (2011_[29]) referred to these relationships as “non-equity modes”, defined them as “contractual relationships between transnational corporations and their partner firms, without equity involvement” (p. 127_[29]). The distinguishing feature is “control over a host-country business entity by means other than equity holdings” (p. 127_[29]).

The generic term of strategic partnerships hosts a multiplicity of non-equity, contract-based relationships. The strategic partnerships covered by *FactSet Supply Chain Relationships* include licensing (in-licensing and out-licensing), research collaboration, joint venture and integrated product offering (Table 2.3). Other relevant forms of strategic partnerships such as franchising, concessions, etc., are not captured by the database, suggesting that the share of strategic partnerships might be underestimated in our analysis.

Our findings on MNE strategies of integration provide two useful insights: first, as shown in Figure 3.6 strategic partnerships often account for a significant share of total GVC linkages and, second, we find some sector specificities in the types of partnership used, although we observe a high degree of heterogeneity among firms even within the same sector.

Figure 3.6. Relevance of strategic partnerships in GVCs



Source: OECD elaborations based on FactSet Supply Chain Relationships.

The relevance of strategic partnerships in the business model of some firms challenge the traditional economic theory on firm internationalisation, in which trade and investment are the solely modes of internationalization. However, a number of studies have tried to explain the existence of strategic partnerships using traditional conceptual frameworks.

For example, strategic partnerships and in particular joint ventures and licensing can be seen as intermediate stages between exporting and investing, as their fixed costs are lower than those associated with FDI and yet higher than those of exporting (Buckley and Casson, 1976^[9]). Other studies suggest that specific market conditions should materialise in order for a strategic partnership to occur. This is the case of licensing which can take place only in highly mature industries and under strict regulation (Rugman, 1981^[30]).

However, while the internalisation literature and its numerous branches provide useful interpretative tools to make sense of where MNE establish their fences, it still arguably neglects capabilities and complementarities between firms as drivers of international interactions. While the presented paradigm indeed suggests that parent companies would opt for the governance mode which minimises transaction costs, MNEs also privilege considerations related to the development of capabilities in their internalisation decisions (Madhok, 1998^[31]) (Tece, 2014^[32]).

Strategic partnerships are indeed difficult to interpret in the context of transaction cost theories, since they seem to possess the disadvantages of arm's length trade (hold-up and principal-agent problem) without the advantages of internalisation. However, a capability perspective can again shed light on this form of GVC participation, and uncover the motivations which drive MNEs to integrate in loose networks of cooperation. For example, it would be the degree of complementarity between parent and affiliate companies which would determine whether MNEs will opt for direct subsidiaries, licensing or joint ventures as modes of integration, breaking away from the conventional reading of the OLI and internalisation framework (Hennart, 2009^[33]).

In addition, when looking at strategic partnerships, we find some clear sector specificities. Specifically, the results suggest that strategic partnerships are frequently deployed in knowledge-intensive and high-technology sectors, which rely heavily on research and development. Thus, strategic partnerships seem to matter more in sectors with high-technological content, while they seem to be less important for MNEs in medium and low technology industries. These include Pharmaceuticals (on average, strategic partnerships account for 18% of total supply chain interactions), Telecommunications equipment (15%), and Chemicals (15%). On the contrary, they are much less used in the footwear or food industries. An explanation may be the fast-changing nature of these industries and their products, which may favour the flexibility of strategic partnerships over FDI.

When considering MNEs in the services sectors, results are less clear cut. Strategic partnerships are widely used by multinationals in Information Technology Services (17%) and Internet Software/Services (13%), while we see little or no use of strategic partnerships by multinationals in the Banking sector (0.25%) and Advertising/Marketing Services (2%), which are also characterised by innovation but maybe less product-driven.

As noted above, strategic partnerships take many shapes and forms. When looking at the types of strategic partnerships used by MNEs we find great diversity across sectors, possibly reflecting different business models and industry characteristics. Research collaboration is the first form of strategic partnerships for companies in Telecommunications equipment, Motor vehicles, Internet software/services, Information technology services and the second

most used form for MNEs in Electronic appliances, Pharmaceuticals and Chemicals. The prevalence of research collaborations may be explained by the importance of R&D activities in those sectors where innovation is key to keep products competitive (e.g. smartphones, automobiles).

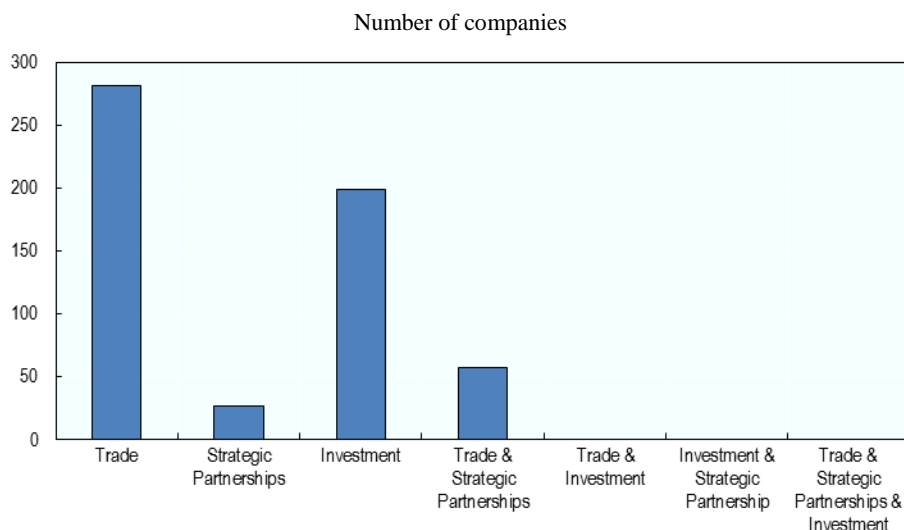
In contrast, licensing is the main type of strategic partnerships for MNEs in Electronic appliances, Apparel and footwear, Pharmaceuticals and Non-alcoholic beverages and Food. This is not surprising given that intellectual property (patents, trademarks, copyrights, trade secrets) and intangible assets (brand recognition) are particularly relevant in those sectors. Finally, joint venture is the main form of partnership in the banking sector and for multinational in chemicals and agricultural commodities.

3.5. Trade and strategic partnerships are used as complementary strategies

The previous section has highlighted the relevance of strategic partnerships in the business model of some firms and in some sectors. Another important result emerging from our dataset is the combination of trade and strategic partnerships as strategies of integration at the firm-level. In other words, parent companies tend to interact with a same company both through a trade relationship and through a strategic partnership. This is for example the case for Sony in Figure 3.7: while the MNE has 27 firms which are exclusively strategic partners, it engages in a combination of trade and strategic partnership with 57 other firms.

This same result is moreover confirmed at the sector-level for Electronics, Non-Alcoholic Beverage, Food, Pharmaceuticals and Apparel and Footwear, where the total number of firms engaging with parent companies in both trade and strategic partnerships is higher than the number of firms linked to the parent company exclusively through a strategic partnership. The shares of this combination are also sizeable in all other sectors.

Figure 3.7. Overlap between trade and strategic partnerships – Sony



Source: OECD elaborations based on FactSet Supply Chain Relationships.

This finding however needs to be analysed in relationship to the heterogeneity referred to at the beginning of this section. While for most of our sectors this combination could be explained by the need of in-licensing and out-licensing to make use of purchased and supplied products and services, thus explaining the association strategic partnership-trade, this would not be the case for Electronics, Telecommunications or Motor Vehicles. For these sectors licensing weights less than research collaborations, joint ventures and integrated product offering in strategic partnerships. The dynamics explaining the overlap would then be rather different.

In addition, these results support the understanding of elements such as history (Gulati and Sytch, n.d.^[34]) and trust (Chiles John F McMackin et al., 1996^[35]) in determining the boundaries of firms in GVCs, which are often neglected in the traditional internalisation paradigm. We could for example infer from the data that firms' establish first contact through trade to then move on into deeper forms of integration such as research collaborations and joint ventures⁶.

3.6. The choice between ownership and partnerships is analogous to a “make or buy” decision.

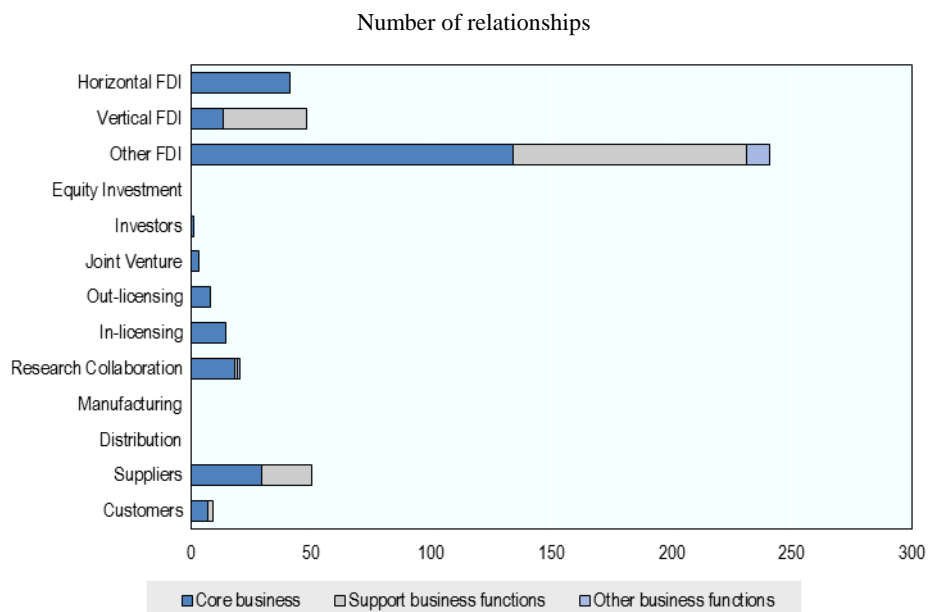
When looking at the relationship between investment and strategic partnerships, some interesting regularities can be identified in the data. An important fact is that the choice is no longer between control through ownership (investment) and no control (trade), but between a range of modes in which control is exercised in various configurations and to various degrees. As forms of supply chain strategies through which MNEs can externalize part of their operations, strategic partnerships may be either complementary or substitutes to investment. In fact, in some parts of the value chain strategic partnerships may be substitute, while in other parts they may be complementary. The relation may also change depending on the type of strategic partnership.

A certain degree of substitutability between licensing and horizontal FDI may be found for MNEs in the pharmaceutical sector, where companies can either build their own plant to access a new market or can provide the license to a local manufacturer to do so. Figure 3.8 shows, indeed, that Merck & Co. may be using horizontal FDI as a substitute of out-licensing.

More generally, we observe a few combinations of investment and strategic partnerships in our dataset, which suggests that these two integration modes are used as alternative strategies. What is more is that this finding is consistent across both manufacturing and services sectors. However, we do observe some overlap between investment and strategic partnerships for some companies in our sample, as in the case of Naver in Internet software/services (Figure 3.9).

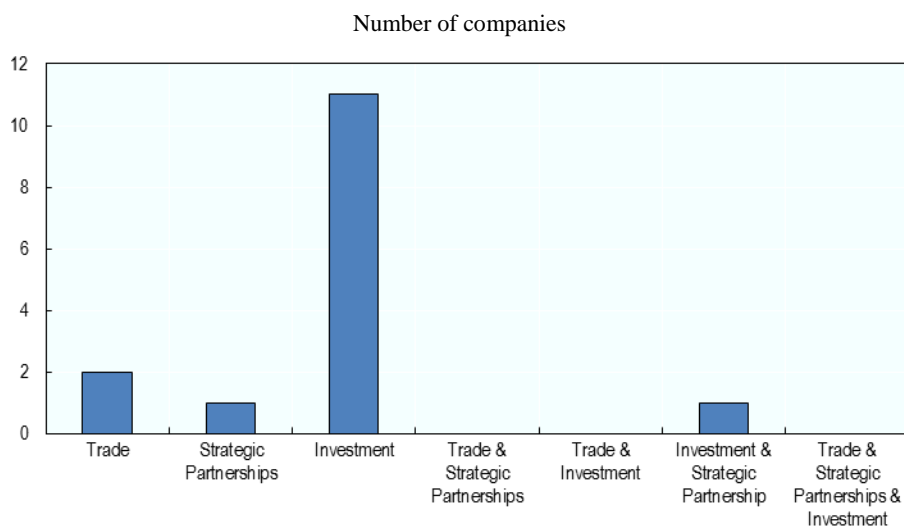
⁶ However, these cannot be regarded as conclusive considerations since we cannot peer through the temporal dimension of our data, meaning that we do not know whether trade partnerships precede strategic partnerships or the other way around.

Figure 3.8. Complementarity between investment and strategic partnerships – Merck & Co.



Source: OECD elaborations based on FactSet Supply Chain Relationships.

Figure 3.9. Overlap between Investment and Strategic Partnership – Naver



Source: OECD elaborations based on FactSet Supply Chain Relationships

3.7. Comment on combinations of trade, investment and strategic partnerships

At last, two important considerations can be made to conclude on trade, investment, strategic partnerships and their respective combinations. First, because of the multi-level heterogeneity identified at the beginning of this section, the overlap between strategies of integration should be carefully interpreted. Secondly, it is worth mentioning that in some instances we observe the overlap of trade, investment and strategic partnerships right with the same firm.

Starting with the first point, the report already commented on the possible ‘physiological’ association between trade and licensing, as firms would need to acquire patents to make use of purchased products. This is however not always the case for the trade-strategic partnership overlap, since trade occurs in parallel to research collaborations in Telecommunications and joint ventures in Chemicals, for example.

Similar considerations can guide the analysis of the trade and investment overlap. First of all, it is worth mentioning that trade relationships are not reported when occurring with fully-owned affiliates, meaning that our data largely underestimate the combination of trade and investment strategies occurring with the same partner firm.

Nevertheless, we do observe for most sectors few combinations of trade and equity investment, where the parent company owns less than 50% of the shares of the firm with which it trades, or alternatively trade and investor relationships, where partner companies own shares in the parent company next to their trading relationship. This occurs 61 times in our sample.

Secondly, we observe in our dataset 56 instances of exceptionally complex linkages between parent and affiliate companies, where the parent company owns shares in partner firms (or vice-versa), the two firms are tied in some form of trade relationship and are additionally engaged in one or more strategic partnerships.

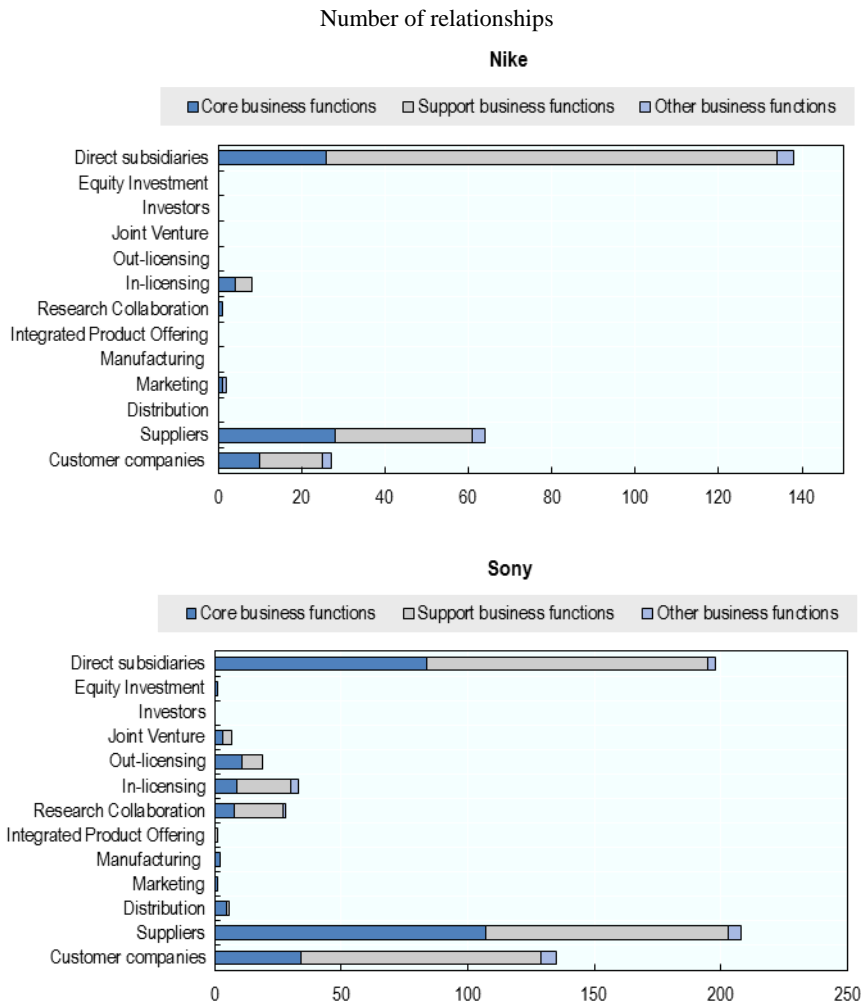
Although these can be considered as rather exceptional, combined strategies of integration in GVCs, our analysis concludes that MNEs overwhelmingly make complementary use of trade, investment and strategic partnerships with the range of companies they interact with. All the three are therefore fundamental building blocks of GVCs.

3.8. Support business functions are key building blocks of GVCs

A further relevant dimension when studying MNEs concerns the nature of linkages, which might indeed occur both in the core and support activities of a given firm. In this regard, integration strategies are also shaped by core-support patterns.

With regards to theoretical understanding, the importance of *support investment* was later acknowledged by Dunning (1993^[21]), and understood as highly complementary to other kinds of FDI or outsourcing decisions, and yet by some means outside the conventional OLI framework. The information at our disposal helps clarify that support activities play an important role in GVCs not only in investment, but also in trade and strategic partnerships, as shown in Figure 3.10 for Nike and Sony.

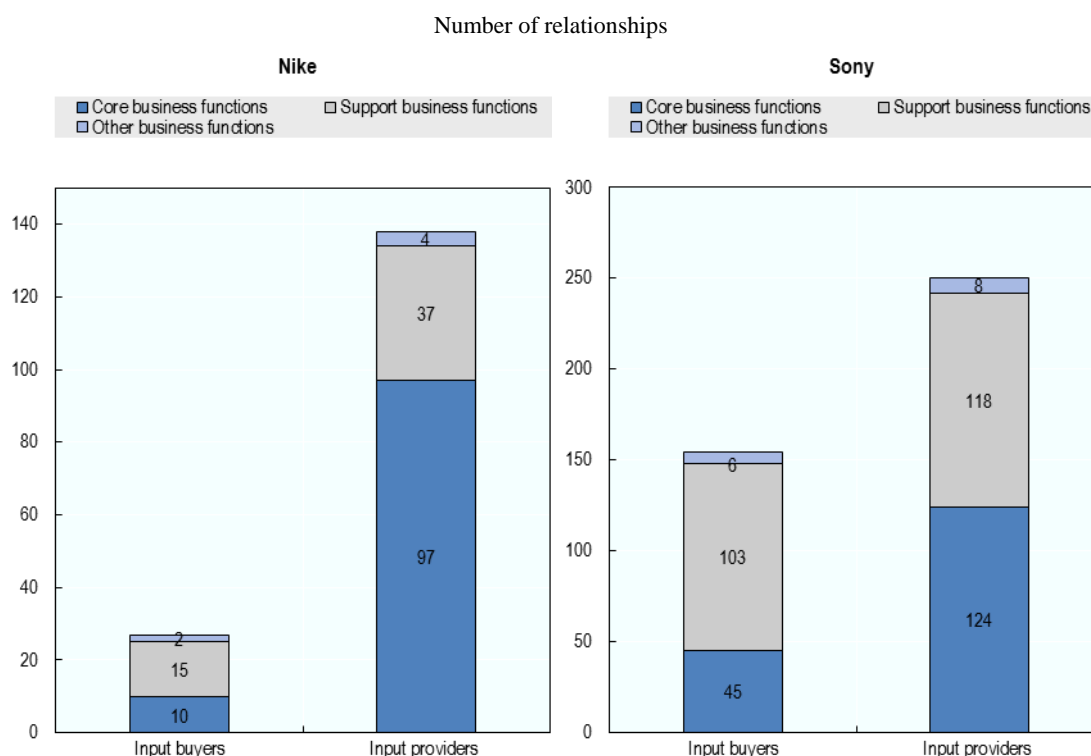
Figure 3.10. Nike and Sony: Core and support business functions



Source: OECD elaborations based on FactSet Supply Chain Relationships.

In this respect, it is also possible to observe that support functions might be both upstream and downstream in the value chain, depending on the position of the parent company and its strategies of integration. In general terms, support functions will be prevalent in the category of input buyers, which are rather downstream in the value chain. Here Transportation, Distribution, Retail and Communication, among other activities, are more likely to take place. Input providers are, on the other hand, rather concentrated in the core activities of parent companies.

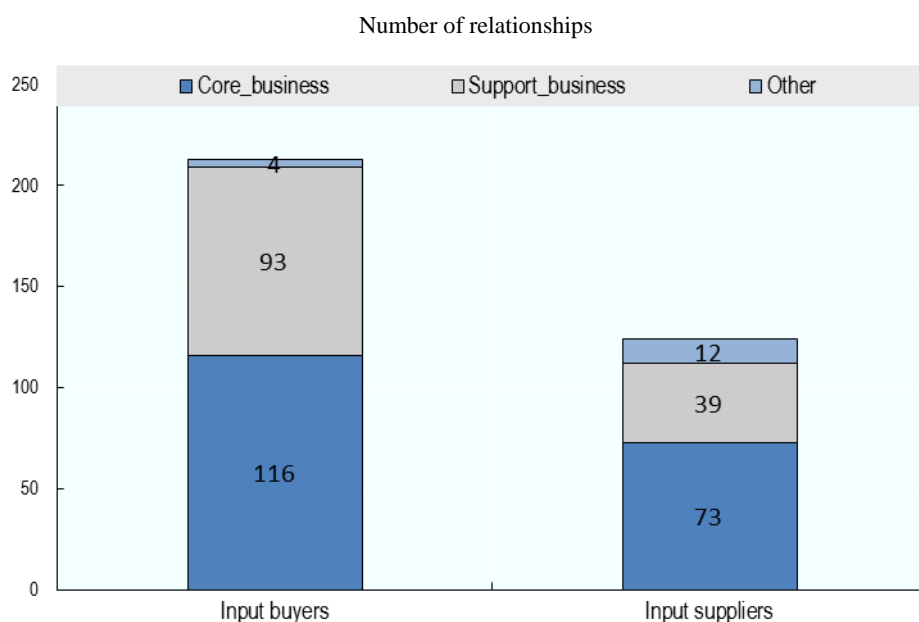
Figure 3.11 for Nike and Sony illustrates this type of distribution of core and support functions. Both companies are rather downstream in the value chain, explaining why the number of companies providing inputs to Nike and Sony is higher than the number of firms buying inputs from them. But we see that in terms of the composition, there are relatively more support business functions across trade, strategic partnerships and investment in downward activities, i.e. in the category of input buyers, in line with our understanding.

Figure 3.11. Nike and Sony: Core and support functions in the value chain

Source: OECD elaboration based on FactSet Supply Chain Relationships.

In addition, this second finding can be extended to comprise most of our economic sectors. By considering data at the sector level, we indeed find that in all our manufacturing sectors except Pharmaceuticals, Food and Non-Alcoholic Beverages⁷, MNEs have more support linkages with the category of input buyers than with the category of input providers. Figure 3.12 illustrates the case for the Agricultural Commodities sector.

⁷ For Pharmaceuticals, this is because MNE's out-licensing activities all occur in their core business functions, while parent companies in Food and Non-Alcoholic beverages have more linkages with customers and affiliates carrying out the core business functions of the parent company.

Figure 3.12. Core and support business functions for agricultural commodities

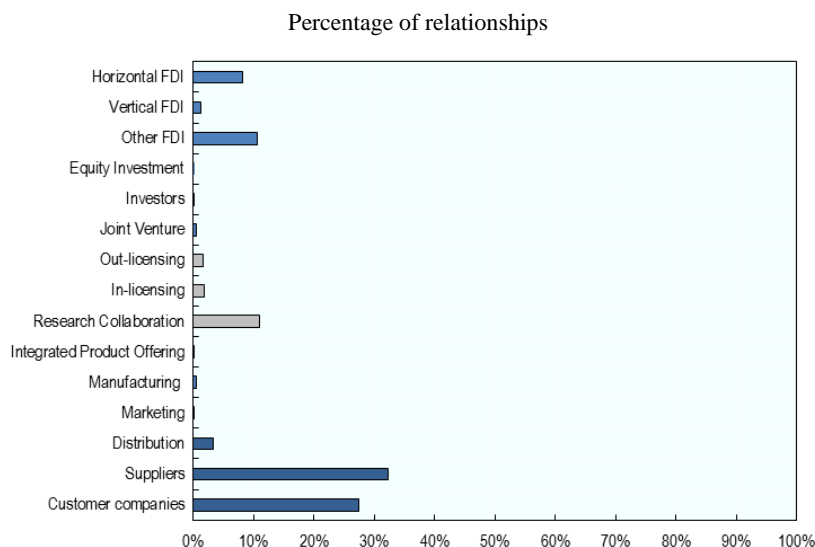
Source: OECD elaboration based on FactSet Supply Chain Relationships.

3.9. Trade matters more in sectors with low-value and low-skill production

Our results show that the relative intensity of trade, FDI and strategic partnerships in firm strategies is to some extent driven by sector-specificities. Intensity is defined by the overall share of cross-border economic relationship in the supply chains, (i.e., the frequency with which a corporate relationship is used). While these sectoral patterns and their explanations need to be further examined, some interesting observations surface from our data.

Based on this sample, trade appears to be more relevant in sectors where low-value low-skill tasks (e.g. assembling activities) dominate the production process. These are low-value added activities that can be easily externalised at low risk, and where the multinational does not need to exert a high degree of control over the production process.

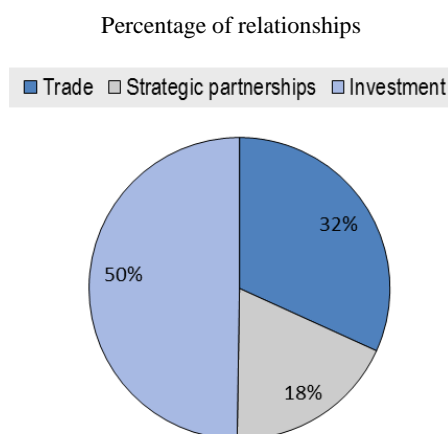
For example, trade is important for motor vehicles, telecommunications equipment (Figure 3.13), and electronic appliances. Elements of the production process that have higher value-added in these sectors seem to be done through research and collaboration partnerships and other forms of strategic partnerships. Hence, different echelons of the production process are undertaken through different cross-border relationships.

Figure 3.13. GVC participation modes of MNEs in Telecommunications Equipment

Source: OECD elaboration based on FactSet Supply Chain Relationships.

3.10. The share of strategic partnerships is higher in high-technology sectors

Our results suggest that knowledge-intensive and high-technology production processes use strategic partnerships relatively frequently in their global supply strategies. This may be explained by the need for flexibility in highly dynamic and innovative sectors, and by the relevance of intangible assets, such as brand recognition and different types of intellectual property (patents, trademarks, copyrights, trade secrets), in such productions.

Figure 3.14. Participation modes in GVCs for MNEs in Pharmaceuticals

Source: OECD elaboration based on FactSet Supply Chain Relationships.

Pharmaceuticals (Figure 3.14), Telecommunications equipment, Chemicals, Information technology services and Internet software/services are, indeed, the sectors with the highest share of strategic partnerships. For example, in the pharmaceutical industry, out-licensing (companies leaving the production and commercialization of new and clinical-trial-assessed drugs to a regional partner) are important. The fact that companies in the sector are

collaborating in production activities rather than being in competition may give rise to these highly collaborative partnerships.

3.11. Investment is used where control over production is important

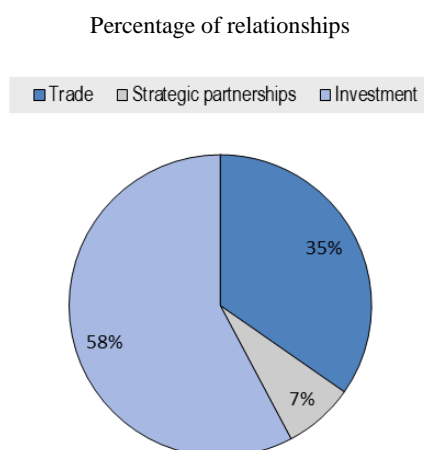
We observe that investment is used where control over production is important or where knowledge of the market is required. For instance, we see that FDI is used intensely in the fragmentation of production of the food industry (agricultural commodities, food and non-alcoholic beverages), arguably to secure sufficiently high levels of quality in production.

We can draw similar conclusion for the pharmaceutical industry and chemicals, which also shows a clear preference for controlled production given the importance of quality, and hence the importance of FDI. Production with full control seems to be the preferred strategy where quality measures are important, whereas distribution and other elements can be left to strategic partnerships with lower degrees of control. In addition, control over firm-specific intangible assets and knowledge might motivate FDI in sectors like Internet software/services and Information technology services.

Another reason for FDI is the acquisition of the knowledge about markets. Banks use joint ventures and FDI relatively intensely (most of which may reflect mergers and acquisitions) in order to take advantage of existing know-how and infrastructure to access clients in the domestic market. These channels of internationalisation allow banks to tap into well-developed network of regional branches or established and maybe technologically advanced production sites.

Similar motives might drive investment decisions of MNEs in Advertising/Marketing services. In this case, greater interaction and involvement of clients might explain the need to keep control over production because of reputation considerations.

Figure 3.15. Participation modes in GVCs for MNEs in non-alcoholic beverages

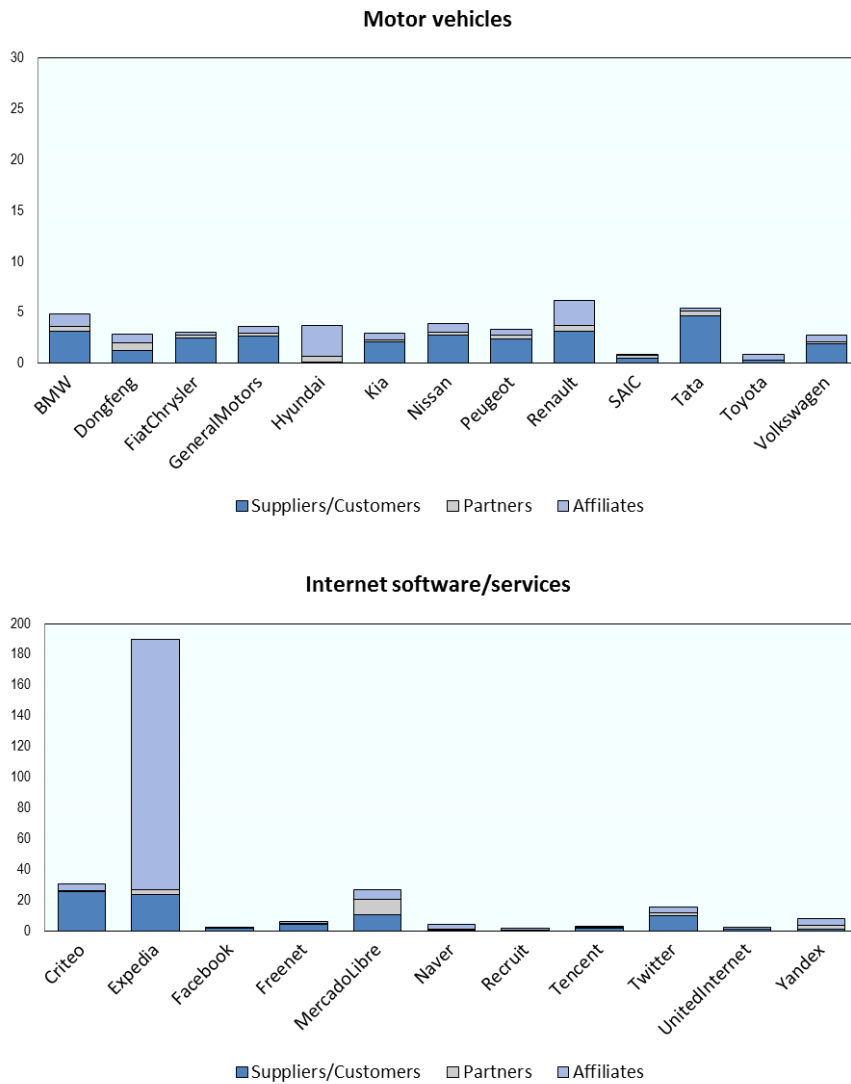


Source: OECD elaboration based on FactSet Supply Chain Relationships.

3.12. Sectors differ in GVCs intensity

Our results show that sectors also differ in terms of GVC intensity, measured by the number of relationships per USD billion unit of sales. For example, MNEs in Internet software/services have on average 26 relationships (10 without Expedia) per one USD billion unit of sales, while MNEs in Motor vehicles have 3 relationships (Figure 3.16).

Figure 3.16. Number of relationships per unit of sale (USD billion)



Source: OECD elaboration based on FactSet Supply Chain Relationships

It is also possible to note that the two sectors equally differ in levels of heterogeneity. While most firms in Motor vehicles display similar levels of GVC intensity, there is much more variation in Internet software/services. Here for example Expedia has as many as 190 relationships per USD billion unit of sales, while Recruit has around 2 relationships per USD billion unit of sales.

More generally, our findings show that companies in Internet Services, Apparel and footwear and Telecommunications Equipment are on average more GVC intensive than

other sectors. However, we find large differences when looking at each company individually.

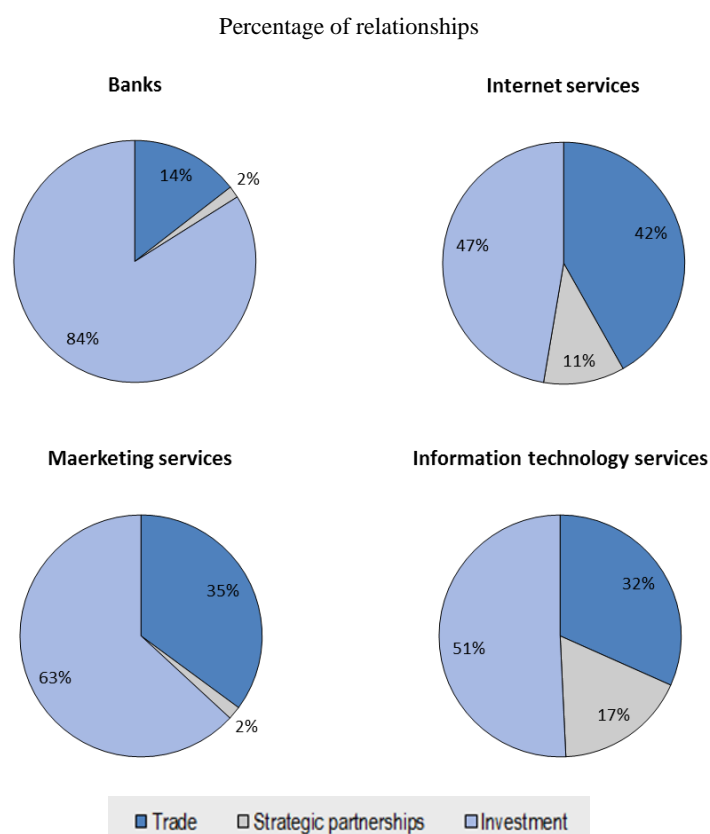
3.13. Investment is the main entry mode for firms in services sectors

Furthermore, important differences might mark services and manufacturing firms apart, especially with regards to entry mode. It could indeed be argued that “extant eclectic models ignore the impact of broad product characteristics (goods versus services)... on entry mode choice” (Ikechi and Sivakumar, 2004^[36]).

In this regard, MNEs in services could be characterized by more integrated entry modes (i.e. investment) in foreign markets. This is because in services resource commitments are less significant, switching costs tend to be lower, as services are people intensive, and benefits of integration are higher, due to the location-specific nature of services (Author, Erramilli and Rao, 1993^[37]).

With regard to our results, we find that investment is the main entry mode for all four services sectors we analysed: Banks, Internet software/services, Information technology services and Advertisement/marketing services. The prevalence of FDI in those sectors is not surprising given that services are generally supplied abroad through a commercial presence.

Figure 3.17. GVC participation modes in services sectors



Source: OECD elaboration based on FactSet Supply Chain Relationships

However, this trend may also reflect other factors. First of all, as services sectors are generally more labour-intensive, companies might favour ownership over trade interactions because the (sunk) costs of establishing an affiliate are low.

In addition, the need to keep control over production and firm-specific assets (as in the case of companies in Internet software/services and Information technology services) or to acquire knowledge about markets and local demand (as in the case of banking and marketing services) might be important factors explaining the relevance of investment interactions in services sectors.

Results for the manufacturing sectors are more mixed. In general, we observe that the share of investment in total GVCs interactions is lower than 50%. However, Non-alcoholic beverages (58%), Food (60%) and Agricultural Commodities (69%) figure as exceptions.

3.14. Trade occurs mainly in “thicker” market, while we observe the opposite for investment

A further point of analysis in our study comes from the transaction costs literature and regards the concept of market thickness (Grossman and Helpman, 2002^[38]). McLaren (2003^[39]) defines a rise in market thickness as “an increase in the probability that any given agent will be able to find in a given length of time an agent with whom it will be possible to realize gains from trade”. This depends on three variables: the number of market participants, the versatility of market participants, and the improvement of search efficiency to find the right partners.

A central proposition in this regard is that firms would substitute simple trade arrangements with more complicated forms of integration when companies trade firm-specific assets and display a limited degree of versatility (Hubbard, 2001^[40]).

In simple terms, firms would opt for trade when markets are thick, meaning that they can easily substitute partners, while adopting investment or possibly strategic partnerships when markets are thinner.

A large body of empirical literature confirms this prediction in trucking (Hubbard, 2001^[40]), auto parts (Monteverde and Teece, 1982^[41]), aerospace components (Masten, 1984^[42]), natural gas (Masten and Crocker, 1985^[43]), and coal (Joskow, 1985^[44]) (Joskow, n.d.^[45])

It is however worth noting that the concept of market thickness differs from that of competition in the framework of MNEs supply chain strategies. The central concern here is not the impact of market structure (e.g. oligopoly) on prices or entry modes, but rather the ease with which parent companies can find the right partners to complete their production processes. Insights on FDI and market power are presented in Box 3.1.

Box 3.1. FDI and market power

There is arguably an additional dimension to be considered when analysing MNEs integration strategies: investment can also act as means to enhance MNEs' market power and affect competition.

In the original formulation of Hymer (1960^[46]), FDI is indeed considered as strategic to protect and strengthen market power in oligopolistic industries, and this view is very much shared by Caves (1971^[47]) in his understanding of vertical integration aimed at the exploitation of ownership advantages to create market imperfections. This same perspective is reflected in business insights on foreign operations in China, where MNEs sometimes rely on location specific resources to build a comparative advantage and ultimately create barriers to entry in their respective home markets (Chen and Ku, 2002^[48]). Similarly, the literature on foreclosure finds vertical integration between downstream and upstream firms to facilitate collusion (Nocke and White, 2007^[49]).

However, the debate remains open: Hortaçsu and Syverson (2007^[50]) empirically find that vertical integration actually leads to prices falling, quantities increasing and entry rates remaining unchanged when markets integrate. In addition, although international M&A might lead to distribution effects in favour of profits, welfare gains are still likely to materialise in lower prices, as more productive companies acquire less productive firms in host markets (Neary, 2007^[51]).

Therefore, the academic debate is complex and ongoing, and a better understanding of FDI in relation to competition and market power remains of great importance, not least because it determines the optimal policy response to FDI inflows (Head and Ries, 1997^[52]). Also, competition law and enforcement at the national level has improved in the last ten years, particularly in developing countries, with possibly less opportunities for FDI to be driven by market power considerations.

In the context of our report, we can proxy market thickness by looking at the share of exclusive supplier to the number of other suppliers. The former category includes relationships where a company supplies exclusively the MNE in our dataset, while other suppliers serve the MNE as well as other companies. This is illustrated in Figure 3.18 for Motor Vehicles and Pharmaceuticals.

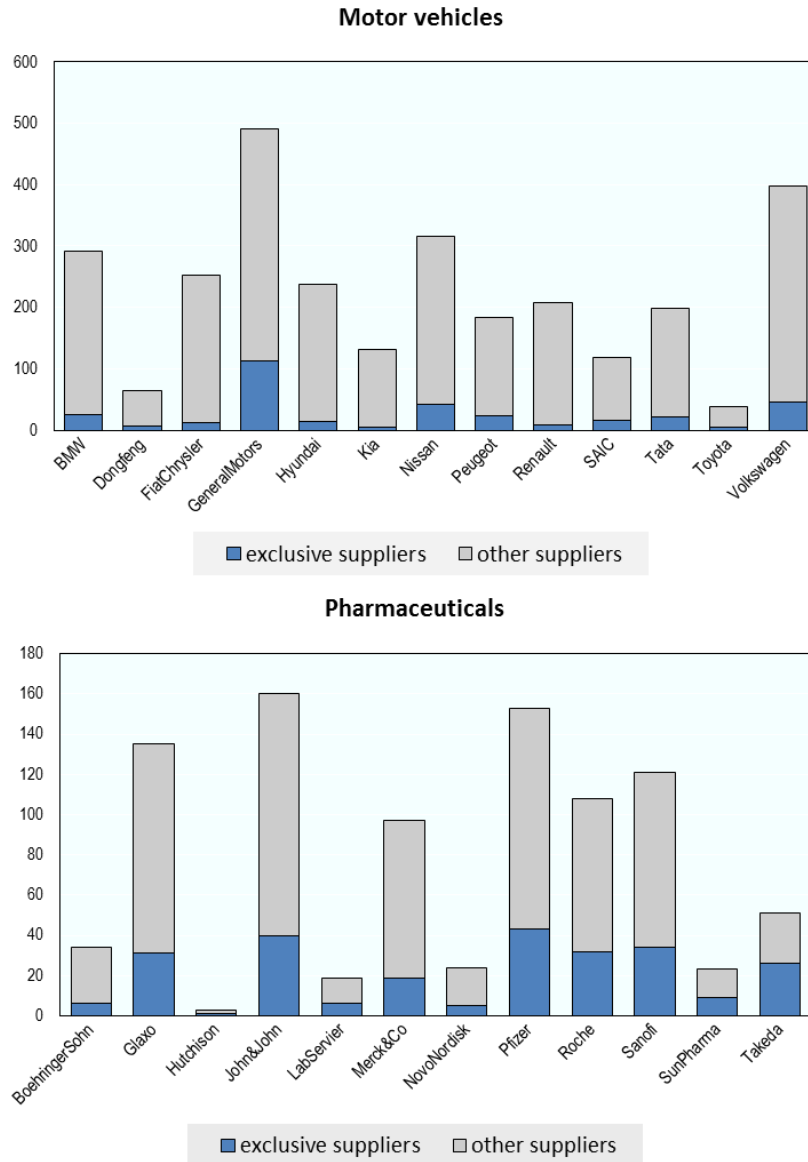
A first insight emerging from this comparison is that the market for Motor Vehicles is generally thicker than the market for Pharmaceuticals.⁸ First, we find in our sample a higher number of suppliers for Motor Vehicles, just under 3000, while total suppliers are less than 1000 in Pharmaceuticals. Second, and most importantly, we find that while around 11% of the companies in our sample supply parent companies exclusively in Motor Vehicles, exclusive suppliers rise to 27% for Pharmaceuticals.

This degree of exclusivity is likely to be associated with market characteristics such as the degree of firm-specific investment, suppliers' versatility, market maturity and environmental uncertainty, as well as being a cause and a consequence of matching efficiency.

⁸ It is important to note that there is one more company in the sample of Motor Vehicles compared to Pharmaceuticals.

Figure 3.18. Exclusive and other suppliers

Number of companies

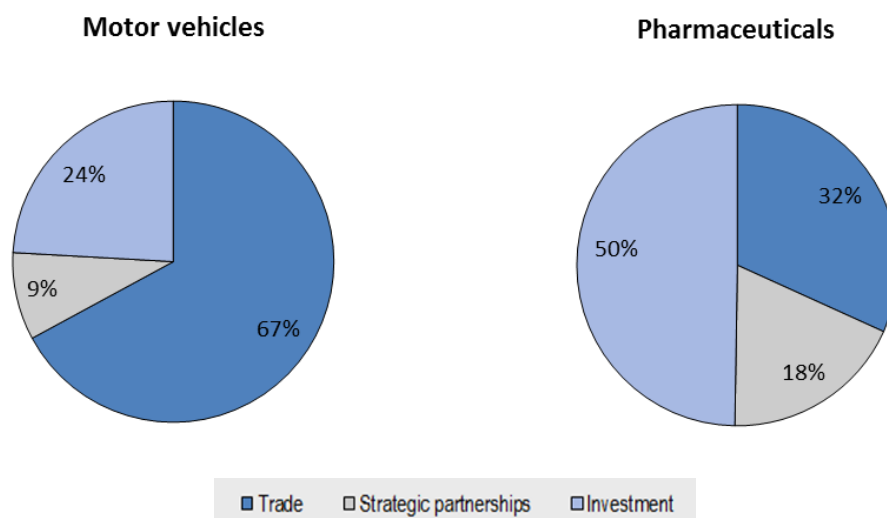


Source: OECD elaboration based on FactSet Supply Chain Relationships

In addition, we also find that thinner markets are associated in our sample with higher reliance on investment as a strategy to integrate GVCs. With regards to the example above, around 50% of the MNEs in Pharmaceuticals integrate the value chain through investment, while in Motor Vehicles only 24% of total linkages are investment linkages, as 67% of the total business relationships occur in trade. This is shown in Figure 3.19 below.

Figure 3.19. Distribution of total linkages

Percentage of relationships



Source: OECD elaboration based on FactSet Supply Chain Relationships

This insight is moreover generalizable to the rest of our sample: where investment is the main strategy used to integrate GVCs, such as in Chemicals, Agricultural commodities and Non-Alcoholic Beverages, we find exclusive suppliers to represent 41%, 32% and 28% of total suppliers respectively.

Where instead trade is generally adopted as the main strategy of integration, as in Electronics and Telecommunications Equipment, we find exclusive suppliers to represent only 18% and 19% of total suppliers.⁹ An interesting exceptions to this rule is Internet Services, where firms rely for as much as 32% on exclusive suppliers although trade represents 51% of total linkages.

3.15. Geographical dispersion of MNE activities

Coming at last to the geographical dispersion of MNE international activities, it is worth mentioning that a number of different variables might be affecting the location choices of parent companies, especially with regards to investment.¹⁰

Focusing again on capabilities, the extent of fungibility of the core capabilities of parent companies is a key determinant of an MNEs geographical diversification (Teece et al., 1994_[53]). Where MNEs own intangible assets which are internationally mobile and which can well complement those of heterogenous partners, then we would expect considerable geographical dispersion of the parent company (Nocke and Yeaple, 2007_[25]).

The spatial dimension of MNEs is also likely to respond to industrial organisation variables such as agglomeration, sectorial and functional concentration, and co-location. The

⁹ For Telecommunication Equipment, the result was obtained by removing Apple from the sample, which is served for almost 50% by exclusive suppliers.

¹⁰ Results in this section should be taken with more caution as the geographical dispersion is influenced by the country coverage of FactSet.

previous location of MNEs is indeed an element affecting locational choice (Head, Ries and Swenson, 1995_[54]). Similarly, MNEs can be thought of as geographically concentrating manufacturing activities within a given sector, while at the same time concentrating and co-locating their business functions abroad to avoid the costs of dispersion (Defever et al., 2006_[55]).

Moreover, economic institutions deserve particular attention when making sense of the geographical dispersion of MNEs. In this regard, it is worth mentioning that, next to the heterogeneity in corporate strategies identified at the beginning of this section, preferences regarding economic institutions are also highly heterogeneous (Ascani, Crescenzi and Iammarino, 2017_[56]).

Nevertheless, a number of empirical studies demonstrate that good economic institutions do attract MNE activities (Bénassy-Quéré, Coupet and Mayer, 2007_[57]). This is for example the case for regulatory quality (Daude and Stein, 2007_[58]), property rights (Besley, 1995_[59]), and contract enforcement (Markusen, 2001_[60]). This is to say that policies do have an impact on MNEs decisions to trade, invest or engage in strategic partnerships with firms abroad.

Moving on to our findings, a first result emerging from our data is that while domestic corporate relationships may lead to higher volumes of activities, in terms of the number of relationships, MNEs have more partners abroad. The majority of suppliers, customer companies and strategic partners are indeed located in foreign countries. In addition, this is generally true for investment.

However, there are also several exceptions in the category of investment. The number of domestic companies is higher in the Banking sector, Motor Vehicles and Internet Software/Services. Notably, for Banks this may be explained by the existence of sector-specific regulations (e.g. financial regulation with macro-prudential intents). For Motor Vehicles the reason may lie in the fact that this sector is considered to be of a strategic importance in many countries and, as a consequence, policies may put some pressure on manufacturers to rely more on domestic partners.

For Internet, this finding is less intuitive, nevertheless it may be explained by the “knowledge-capturing” properties of internet software/services which, differently from other services, make it tradable across borders without the need of establishing a commercial presence abroad. The share of domestic and foreign companies of Internet Software/Services is shown in Figure 3.20.

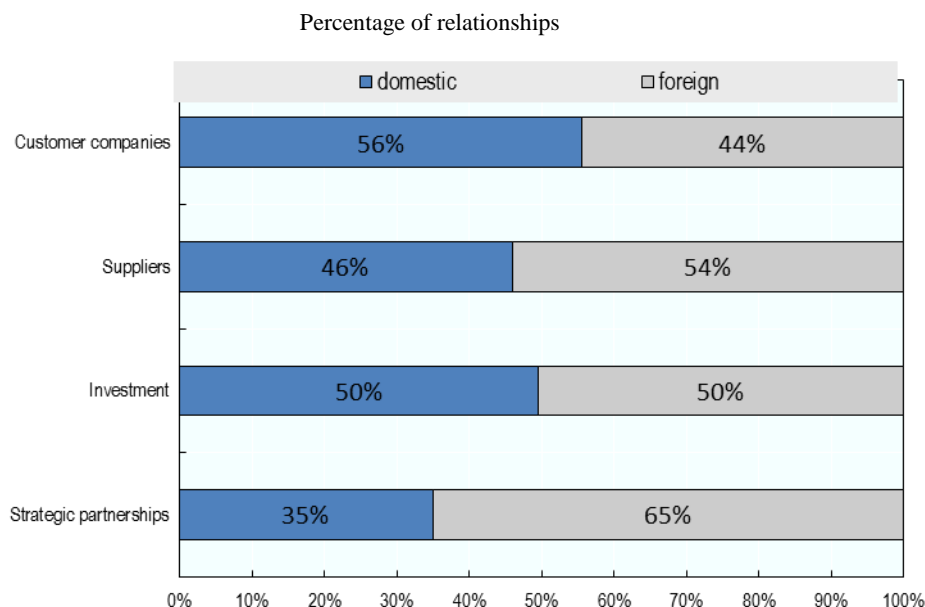
Lastly, we find that GVCs activities take place mainly in OECD countries. This result holds true across all sectors and for most of the MNEs headquartered in non-OECD countries (See for example ZTE Corporation headquartered in China in Figure 3.21). In addition, we observe a higher share of companies in OECD countries for strategic partnerships compared to other entry modes.

The fact that strategic partnerships are mostly utilised in OECD countries could point at the importance of economic institutions in driving MNEs interactions. Better property right protection, regulatory quality or contract enforcement mechanisms, for example, should contribute towards a more favourable environment for the use of contractual relationships which underpin strategic partnerships.

In parallel to this understanding, concentration in OECD countries for investment and strategic partnerships could equally be explained by thinking of “competence-seeking” motives (Cantwell and Mudambi, 2005_[61]). In this case MNEs would open affiliates abroad

to acquire and develop their core competences. At last, industrial dynamics could equally stand behind this result, as firms would prefer to group activities together by sector or business function.

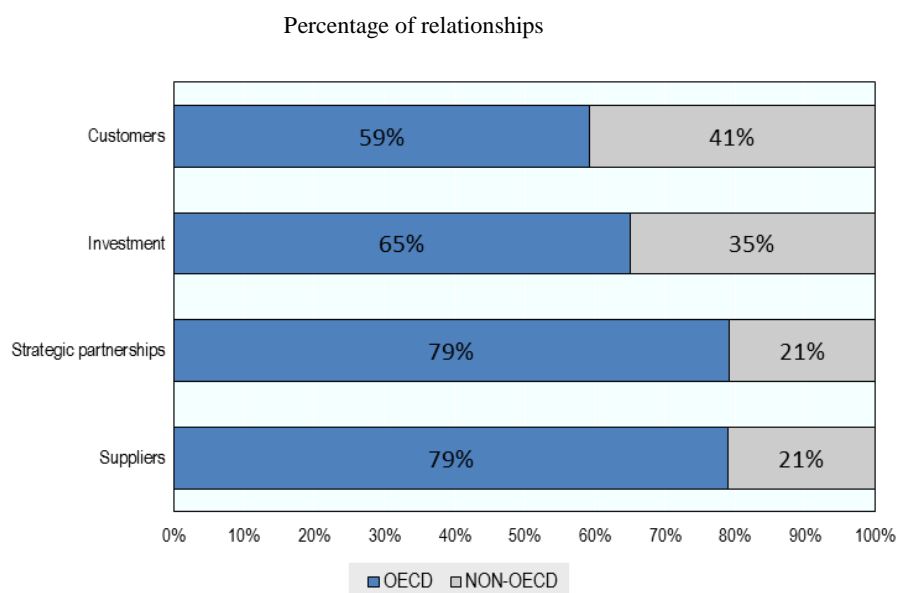
Figure 3.20. Share of domestic and foreign companies by entry mode, Internet software/services



Note: Suppliers include Manufacturing, Distribution, and Marketing.

Source: OECD elaborations based on FactSet Supply Chain Relationships

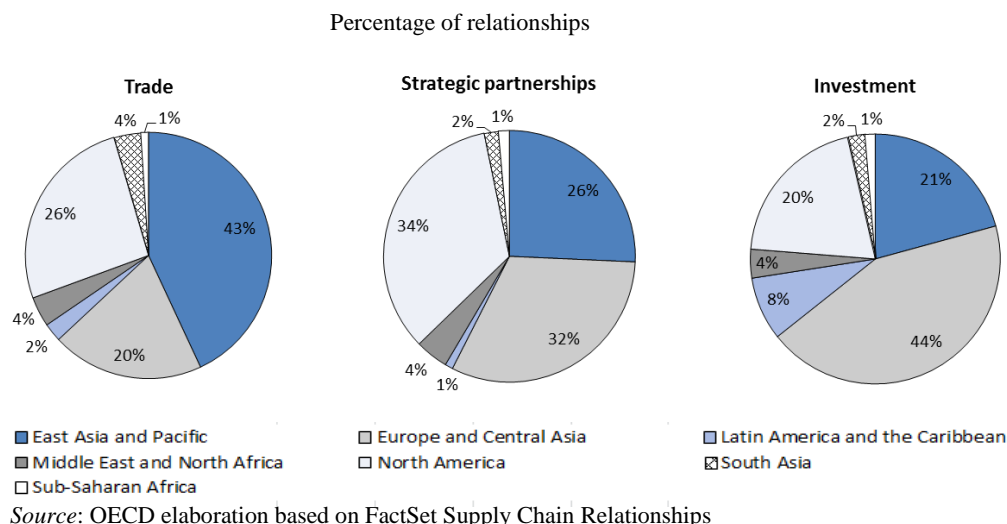
Figure 3.21. Share of companies located in OECD and non-OECD countries by entry mode, ZTE Corporation (Headquarter: China)



Source: OECD elaboration based on FactSet Supply Chain Relationships

Furthermore, additional business insights can be acquired by looking at the distribution of MNE activities by region. In this regard, it is always three regions which dominate the distribution of trade, investment, and strategic partnership linkages, namely East Asia and the Pacific, Europe and Central Asia and North America. In addition, despite the constraints imposed by firm-level heterogeneity, it is possible to identify two regional “stories” which can describe our data for most sectors.

Figure 3.22. Geographical distribution of trade, strategic partnerships and investment, Telecommunications Equipment



The first “story” can serve to interpret the data for Telecommunication Equipment. In this regard, Figure 3.22 shows the regional distribution of trade, strategic partnerships and investment linkages for Telecommunications equipment.

Observing the distribution of trade linkages in Telecommunication equipment we note that a majority of trade partners is found in East Asia and the Pacific (43%); this could occur both because of arm’s length trade of intermediate parts and components and because of the provision of final goods.

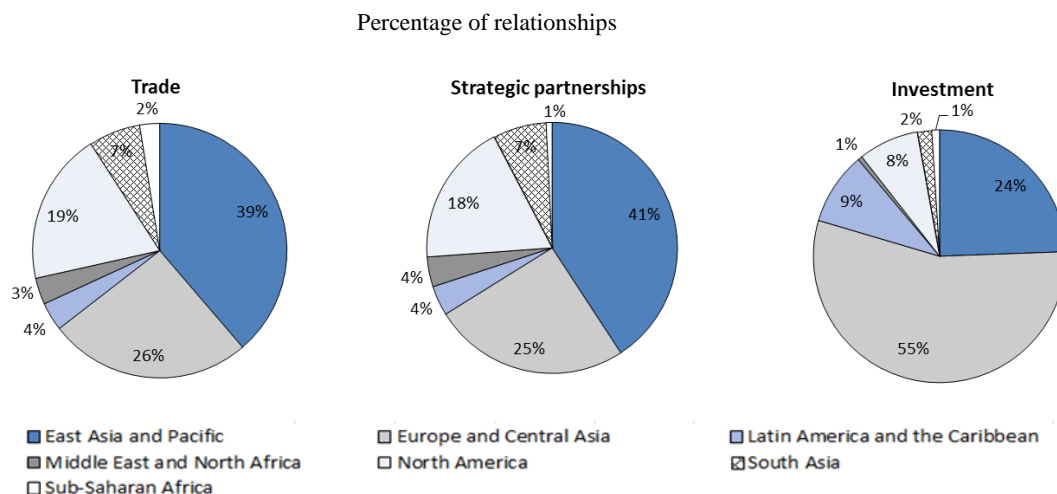
By contrast, the relative majority of strategic partners is found in North America (34%); this could be explained by thinking of strategic partnerships as “competence-seeking” tools used by MNEs to develop capabilities. The knowledge-intensive nature of the American Telecommunications Equipment sector would then attract MNE activities.

At last, institutional factors would explain the relative majority of investment in Europe and Central Asia. The European Single Market could for example have an impact both on horizontal investment and vertical investment, as goods and services can circulate rather freely in the European Union. In addition, economic institutions are well developed to welcome investors.

This same story could apply to Electronic appliances with the caveat that a significant number of customers are more spread out in Latin America and the Caribbean, and in the Middle East and North Africa (MENA), despite East Asia and the Pacific remaining dominant in the category of suppliers. This means that the total share of trade occurring between parent companies and East Asia and the Pacific equals 35% of total trade linkages, while trade with companies in North America equals 37% of total trade linkages.

A different story however describes the regional distribution of linkages for Apparel and Footwear, as illustrated in Figure 3.23.

Figure 3.23. Geographical distribution of trade, strategic partnerships and investment, Apparel and Footwear



Source: OECD elaboration based on FactSet Supply Chain Relationships

For Apparel and Footwear we observe that trade and strategic partnerships display similar regional distributions. This further validates the understanding proposed in Section 3.5 on the association between trade and strategic partnerships. We indeed observe for some sectors that the two coexist at the regional level when the main form of strategic partnership is licensing (Apparel and Footwear and Pharmaceutical¹¹), research collaborations (Motor Vehicles) and joint ventures (Chemicals).

What is more is that for sectors where the trade-strategic partnership overlap is mainly explained by research collaborations, as for Telecommunications Equipment, the regional association between trade and strategic partnerships is much weaker. This is likely to be because parent companies are less constrained to adopt licensing with their trade partners, and would then look elsewhere to establish strategic partnerships.

Motor Vehicles is in this regard a sector standing between the two stories, as its strategic partnerships are divided between research collaborations (38%), joint ventures (35%) and in-licensing (25%). The regional distribution of trade and strategic partnerships resemble each other, although Europe and Central Asia has a much higher share of linkages in strategic partnerships (37% of total strategic partnerships) compared to trade linkages (27% of total trade linkages).

In addition, concentration of investment linkages in Europe and Central Asia remains a prominent feature in all our economic sectors. It is indeed the case that the relative majority of investment activities always takes place in Europe and Central Asia, with the exception of Internet Services and Electronic Appliances, where Investment is almost equally split between Europe and Central Asia and East Asia and the Pacific.

¹¹ It is, however, worth noting exceptions for Pharmaceuticals, where linkages with North America constitute 30% of total trade linkages but 41% of total strategic partnerships.

Economic institutions are likely to be the main variable influencing this result. If search for capabilities were to account for investment in Europe and Central Asia, we would expect the regional distribution of strategic partnership to resemble that of investment, which does not seem to be the case. In terms of industrial organisation, Europe and Central Asia does not arguably represent the main industrial hub for all our economic sectors, meaning that industrial organisation can hardly be the main explanatory variable for all our sectors.

Economic institutions like regulatory quality, property rights protection and contract enforcement could then explain the lion's share of investment activities in Europe and Central Asia. As previously mentioned, the European Single Market could be playing a role in this regard, attracting horizontal, vertical and export-platform FDI, as well as equity investment.

It should, however, be kept in mind that where our analysis examines shares of trade, strategic partnerships and investment, as well as their intra-sector resemblance, the absolute number of linkages across these categories is rather different. For the two examples presented above, in Telecommunication Equipment there are a total of 2062 trade linkages, 494 strategic partnerships and 670 investment relationships. For Apparel and footwear, there are 744 trade linkages, 130 strategic partnerships and 700 investment linkages.

At last, it is worth mentioning that all our services sectors, namely Banking, IT, Internet and Marketing services, are not characterized by the general dynamics identified above. As previously explained in Section 3.13, this is likely to be due to the low switching cost and high-people intensive nature of services, which is likely to make service firms less prone to bundling their activities to one specific location. Food, Agricultural Commodities and Non-Alcoholic beverages in turn display regional structures of their own.

4. Concluding remarks

The growth of GVCs in the past decades has dramatically challenged existing economic insights and policy implications related to globalisation. The role of MNEs, in particular, has attracted increasing attention from policy makers because of the numerous and large activities of these firms in several countries. But despite their acclaimed importance in today's global economy, empirical evidence on MNEs' strategies of integration in GVCs is not widely available and remains largely incomplete.

Similarly, our understanding of MNEs remains anchored to traditional theories of trade and investment, which no longer capture the complexity of firms' cross-border interactions. While the Ownership-Location-Internalisation framework put forward by scholars remains useful to interpret MNEs international activities, firms have adopted over time increasingly novel strategies of integration, which relate to the search for capabilities and firm-specific assets.

Relying on the FactSet Supply Chain Relationships database, this paper has provided new insights on how MNEs use trade, investment and/or strategic partnerships to build their value chain. This micro-level analysis has led to a number of results that can be summarised through the five following 'stylised facts':

1. MNE activities are a combination of trade, investment and strategic partnerships

The evidence in the report confirms that trade, investment and strategic partnerships occur in parallel. There is not a single type of corporate relationship repeated with different partners but rather a mix depending on the nature of the relationship. Sometimes the same partner can be involved in trade, investment and strategic partnerships. As a consequence, policy-making cannot deal with these different types of corporate relationships in silos. Regulations can be different based on different policy objectives but some co-ordination is needed and policy impacts should be assessed jointly.

In addition, the analysis has highlighted the importance of strategic partnerships, a more heterogeneous category of alliances between companies that is not always well defined in law making and in trade and investment agreements. Some forms of strategic partnerships, such as specific types of licensing and franchising, are better defined and can be covered as investment in trade and investment treaties. But looser forms of co-operation between firms are more difficult to measure and to regulate.

2. Firm strategies differ at all levels: across sectors, within sectors and within a specific type of activity (trade, investment or strategic partnership)

Another clear conclusion from the analysis is that firm heterogeneity –as assumed in the recent economic literature- is real. We find different firm strategies across sectors but also within sectors. Two companies of equal size operating in the same industry and even in the same country can have a very different strategy when it comes to sourcing inputs or serving foreign markets. When further looking into the type of FDI or type of strategic partnership pursued by firms within the same industry, additional heterogeneity is found, confirming that heterogeneity exists at all levels.

It implies that policies cannot be tailored to match firm strategies. Even if it was possible to accurately assess the use of trade, investment and strategic partnerships in each industry, it would still be difficult for governments to adjust policies in real time to the ever changing strategies of firms.

3. *Investment performs various functions in GVCs*

The analysis in the report is useful to shed more light on the role of investment in GVCs. On the one hand, the evidence confirms that trade and investment can be either substitutes (horizontal FDI) or complements (vertical FDI) in GVCs. But on the other hand, investment is often used by firms for different purposes, such as building capabilities, acquiring technologies, diversifying production or providing financial income. For such purposes, trade and investment would be better described as parallel activities and are no longer in the traditional substitute/complementary relationship. At the end, one can still describe this relationship as ‘complementary’, since the purpose is to reinforce the competitiveness and increase the income of the firm. But it goes beyond the traditional complementary relationship identified in vertical FDI where investment is about supplying inputs.

From the data analysed, the trend would be for MNEs to rely less on vertical FDI and more on strategic partnerships and arm’s length trade to source inputs. But it should not be interpreted as investment and investment policy being less relevant for activities of MNEs. On the contrary, investment in capabilities, complementary assets and with diversification purposes (conglomerate FDI) are also important factors in successful MNE strategies. The main policy implication is that investment policy should address the diversity of objectives in FDI.

4. *Support business functions are key building blocks of GVCs*

The evidence confirms that an important share of corporate relationships in GVCs are not about the core manufacturing function (or production of the service for the customer in the case of services MNEs), but rather support business functions related to design, research & development, IT, marketing, sales, after-sale services, etc. It is well known in the GVC literature but needs to be stressed in terms of the policy implications. All these support business functions are services and whether it is for trade or investment, barriers faced by services producers are generally higher, implying that any GVC (including all manufacturing GVCs) is impacted by these barriers.

Moreover, it implies that these support business functions are generally in a different industry from the one corresponding to their core activity. Any selective approach in terms of the liberalisation of trade and investment is therefore likely to prevent firms from accessing the support business functions that can make them more competitive. Here, the concept of ‘market thickness’ is important, as access to a wider set of partners is what benefits MNEs in their operations even when they chose a local partner.

5. *GVCs display geographical organisation, possibly in relation to policies*

Finally, the analysis suggests that the location of activities of MNEs follows specific geographical patterns. These patterns are to some extent explained by the distance between countries and differences among countries in terms of costs and access to resources. But policies are also likely to play a role, in particular differences in terms of the regulatory regime and openness to trade and investment. For example, the fact that most of corporate relationships are observed within OECD countries suggests that economic institutions (e.g. better property right protection, regulatory quality, etc.) are relevant determinants.

It also means that some of the patterns observed may be the result of differences in barriers to trade, investment or strategic partnerships, creating distortions that have pushed companies to choose a type of corporate relationship which is not optimal. The data in this report cannot provide evidence on this. But some MNEs may have favoured strategic

partnerships instead of FDI to circumvent barriers to investment. Similar distortions can appear across countries based on differences in the trade and investment regimes. There is an economic cost associated with such distortions both for companies (they cannot work with the best partner) and for governments (their country miss the opportunity to be part of the value chain or their insertion in GVCs is not through the best type of relationship).

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