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The use of non-equity modalities and host-country impact: Some evidence from the international hotel industry and areas of further research

Simona Gentile-Lüdecke and Sarianna M. Lundan*

This paper provides preliminary evidence on the use of non-equity modalities by transnational corporations in the hotel industry and discusses the conditions that may favour the choice of one of these modalities as a substitute for foreign direct investment. Based on secondary data and interviews with experts of the hospitality industry, the study looks at the expansion of the major international hotel chains and focuses on the issues of control, transferability of resources and institutional framework to explain the choice of a non-equity governance form. Concentrating on three of the main growth markets in the hospitality sector, China, India and the United Arab Emirates, the study highlights some implications of non-equity modalities in terms of host country impact, emphasizing the issues of skill development, knowledge transfer and procurement linkages, and identifies areas for further research.

Keywords: non-equity modalities, host country impact, hotel industry, management contracts, franchising

1. INTRODUCTION

Attracting foreign direct investment (FDI) is a priority of many policymakers, the rationale being that transnational corporations (TNCs) can stimulate economic development, contributing to the increased productivity and competitiveness of domestic industries (Dunning and Lundan, 2008, Markusen and Venables, 1999). In addition to the macro-economic effects of TNC presence in terms of, for instance, capital formation, employment and trade, an additional argument in favour of FDI is that TNCs introduce superior technology that can "spill over" to local firms.[1]

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[1] See, for example, Meyer (2004) for a review.

However, as the process of globalization has deepened, the strategy and structure of TNCs is also changing. TNCs are adopting different modes of organization in their functional and operational activities, becoming differentiated networks that choose location and ownership policies so as to maximize profits (Buckley, 2009, Buckley and Ghauri, 2004). These different forms of operation do not necessarily involve the internalization of intermediate activities. TNCs use parallel modes of entry in a multifaceted international pattern, using both equity and non-equity modalities (Bartels and de Crombrugghe, 2009), as competitive advantage can also be derived from inter-firm co-operation in non-equity arrangements (Contractor and Kundu, 1998b). Indeed, different non-equity modalities (NEMs) including contract manufacturing, franchising, management contracts, contract farming and licensing, have become an important part of the overall value-adding activities of TNCs (UNCTAD, 2011). Overall, these methods of exercising control without ownership are worthy of deeper investigation (Buckley, 2011). While the international business literature has comprehensively examined the determinants of the choice of entry mode, much less is known concerning the host country impact resulting from different forms of cross-border activity.

While none of the NEMs discussed here are new in and of themselves, the balance between the activities that are owned and directly controlled by the TNC, and those that are carried out through different types of contractual relationships within the value chain has been shifting (UNCTAD, 2011). In the hotel industry, franchising and management contracts have been employed as common modalities for a long time (Erramilli, Agarwal and Dev, 2002), but they now account for an increasing share of the operations, with equity ownership often accounting for only a small part (León-Darder, Villar-García and Pla-Barber, 2011).

Despite the considerable scholarly interest in the topic of TNC entry mode choice in general, research on entry modality in services, and in the hotel industry in particular, has attracted relatively limited attention thus far (Gannon and Keith, 1997; Contractor and Kundu, 1998a, 1998b; Erramilli et al., 2002; Brown, Dev and Zhou, 2003; Gannon, Roper and Doherty, 2010). With the exception of Brown et al. (2003), the existing studies do not offer a theoretically driven framework to explain how firms in the hotel industry might choose

between different types of NEMs. Consequently, in this paper, our first, rather modest aim, is to contribute to this discussion by focusing on the choice between different NEMs in the hotel industry, using concepts from three main theories, namely transaction cost economics, the resource-based view and institutional theory.

The second and primary aim of this paper is to approach an underexplored question in the research, which is the extent to which the impact of the different of NEMs on the host country is likely to be different from the impact of FDI. The question on the impact of NEMs has strong policy implications because it introduces new elements to a debate that has almost exclusively concentrated on the potential beneficial effects of FDI for the host countries. The existing literature, both conceptually and empirically, has tended to concentrate on the effects of activities that are owned by TNCs, such as the differences between TNCs and local firms in terms of productivity and wages, or more recently, in terms of the standards that are adopted in the workplace (Dunning and Lundan, 2008; Barba Navaretti and Venables, 2004). While the extant research has investigated the impact on the host country through linkage effects, this has been mainly limited to contractual supplier relationships in manufacturing industries. The broader field of NEMs, and its impact on the host country, has not been investigated either empirically or examined conceptually. Consequently, our aim in this paper is to begin to address this gap with a specific focus on the international hotel industry, by presenting some preliminary evidence, and by identifying areas in need of systematic empirical research.

Although tourism is a labour-intensive industry that has long been considered important in the development of emerging markets due to its potential for job creation and the upgrading of skills, it has not been studied extensively in international business. The hotel industry provides an interesting setting for our study because in this industry inter-firm cooperation is not peripheral, but central to global strategy (Contractor and Kundu, 1998b: 326). The hotel industry has experienced rapid growth since the 1980s, and the increasing world tourist flow has influenced its intensity of growth as well as its spatial and structural expansion (Šušic, 2009) making this industry one of the most global in the service sector (Litteljohn and Altinay, 2007).

The remainder of the paper is organized as follows. The next session defines the main characteristics of the NEMs used in the hotel industry and analyses the evolution of management contracts in terms of their contractual structure. Section 3 presents the conceptual framework and some research propositions that structure the discussion. Section 4 analyses the use of NEMs in the global hotel industry by looking at the major international chains, and highlights some potential sources of impact in selected countries. Section 5 discusses and concludes the paper by pointing to areas in need of further research.

2. THE CHARACTERISTICS OF NEMS IN THE HOTEL INDUSTRY

The two most commonly employed contractual agreements by which hotel companies enter international markets are franchising and management contracts (Erramilli et al, 2002). Although they are both non-equity modes, there are important differences between them. According to Contractor and Kundu (1998a), it may be appropriate to treat franchising as a quasi-market transaction and management contracts as a quasi-internalized transaction.

Franchising is "*the granting of a license for a predetermined financial return by a franchising company (franchisor) to its franchisees, entitling them to make use of a complete business package, including training, support and the corporate name, thus enabling them to operate their own business to exactly the same standards and format as the other units in the franchised chain*" (Altinay, 2006: 108–109).

Distinguished from equity alliances, such as joint ventures, franchising enables a franchisor to enter an international market and achieve large economies of scale with minimal capital investment and relatively low levels of risk (Conti and Micera, 2006), and therefore, is among the most effective and attractive vehicles with which TNCs expand internationally (Contractor and Kundu, 1998b).

In franchising daily management and quality control and control over physical assets reside with the franchisee, and not with the hotel chain. The hotel chain trains and guides the franchisee under a contractual relationship, sharing only some tacit expertise. Codified assets such as brands and reservation systems reside with the hotel chain.

Using the definition adopted by Contractor and Kundu (1998b: 329), a management contract is a "*long term agreement of up to 10 years or even longer, whereby the legal owners of the property and real estate enter into a contract with the hotel firm to run and operate the hotel on a day to day basis, usually under the latter's internationally recognized name*". In management contracts what is being sold is the ability to run a business combined with specific and advanced knowledge of the particular industry or sub-sector in which the owner's enterprise is located (Hegstadt and Newport, 1987: 19).The property owner (property developer, private company, individual, fund/private equity, public institution), using the services of a professional operator and the brand for a fee, is able to generate value and cash flow without having to invest in acquiring expertise in the hotel business. The operator, by agreeing to manage the property on behalf of the property owner, can expand the reach of its brand, earn profits and generate a relevant fee income, without having to invest in the property (deRoos, 2010).

For international hotel chains, management contracts provide strong day-to-day (if not long-term) control without ownership (Contractor and Kundu, 1998b: 331) with no real estate investment risk. Additionally, the operational risk of profit and loss is on the side of the owner. The operator runs the hotel for a fee according to specified terms negotiated with the owner. The operator receives a management fee that is a percentage of gross revenues and, in addition to this base fee, it receives an incentive fee based on a percentage of profits. This may be curtailed, for example, until profitability reaches a certain threshold, or until minimum return requirements to the owner are met (typically related to debt service).The hotel chain controls the management, codified strategic assets and tacit expertise.

Over time, management contracts have evolved in complexity and in the precision of the clauses included in the contractual agreements. One important feature looking at the development of the management contracts is the changing relationship between the owner and operator in terms of bargaining strength (deRoos, 2010). While the provisions of early contracts were rather favourable to the operator, given their lengthy duration and limited rights by the owner to terminate the contract, there has been a fundamental shift worldwide towards providing a better balance of risk and reward in

hotel management agreements. Attempts have been made to align operator and owner's interests through the increased use of sliding incentive fees and performance clauses.

With the increase in the number of hotel operators and expansion of global hotel brands, there is now pressure on operators to offer more competitive terms to owners. At the same time, owners have become more knowledgeable when negotiating management contract terms as the increased sophistication of hotel investors has led to a better understanding of hotel operations.

The combined effect has been that the balance of power has largely shifted more in favour of the owner when contracting with many operators. Owners can now negotiate terms which increase their control, flexibility and leverage in the business and finances of operating decisions, while operators face more performance tests and incentives. Owners are increasingly thinking beyond profit and loss and have become more involved in key decisions, although there is still an obligation to limit this to key matters and not to interfere with the day-to-day running of the business. Looking at the future of hotel management contracts, Eyster and deRoos (2009) point out that management contracts have become the dominant means to separate control and ownership of hotels.

3. THEORETICAL FRAMEWORK AND RESEARCH PROPOSITIONS

3.1 Choice of governance form

This study relies on three different theoretical paradigms to explain the choice of governance form, namely, transaction cost theory, the resource based view and institutional theory. The use of these paradigms is based on the consideration that an international hotel chain's strategy to maximize long-term profits is not only a matter of maximum rent extraction from a particular market in which the hotel is positioned (Conti ad Micera, 2006), but also a matter of building capabilities and knowledge of the company as a whole. The hotel firms' concern is not the possible *dissipation* of transaction-specific assets or knowledge, but the *transfer* of technology and deployment of transaction-specific assets or knowledge, which is essential to maintaining consistency of brand image and operations (Erramilli et al.,

2002). Hence, the modal choice is important to creating long-term value. This choice is driven not only by the firm resources and capabilities, but it is also a reflection of the formal and informal constraints of a particular institutional framework that decision makers confront (North, 1990). Although formal institutions (such as legislation) define the range of entry mode available, the outcome of entry negotiations, particularly in transition and emerging economies, is affected by informal institutions (Karhunen et al., 2008).

a) Transaction cost economics

According to transaction cost theory, the choice of the governance form is that which minimizes transaction costs (Williamson, 1979). This implies that the firm will prefer hierarchy, and therefore ownership, because it affords a higher degree of control, when the market for knowledge transfer "fails". Thus, market failure is the primary reason for the firm's decision to integrate and assume greater control.

From a transaction cost perspective, the most important determinant of market failure is the presence of transaction-specific assets. In the hotel business, the major transaction-specific investment is the hotel brand. The more the value of the brand and the image of the product/service it represents is at risk of opportunism, the greater will be the danger for the firm that potential partners may erode its transaction-specific assets. Thus the firm will choose equity ownership, because it allows a higher degree of control over technology, assets and operations. On the other hand, avoiding contractual organizational forms altogether entails a substantial capital investment, which typically constrains the company's ability to expand rapidly. When two parties sign a contract that requires investments specific to the contract, they enter a relationship of mutual dependence and market forces will no longer be able to discipline the partners for their opportunism. The brand and the global reservation system are the two principal codified strategic assets, over which proprietary control is usually maintained by the hotel firm, regardless of the organizational mode (Dunning and McQueen, 1983). The potential threat of withdrawing permission to use the global company's brand, reservation and support systems moderates the opportunistic behaviour of franchisees or partners in a management agreement. Therefore, as proprietary control is usually

maintained by the international hotel firm, regardless of the type of NEMs, we propose that:

Proposition 1: As franchising allows for the maximum exploitation of the intangible assets of the firm with the minimum commitment to either investment in real estate or the costly transfer of knowledge through expatriate employees, it is generally preferred to management contracts and to FDI as a governance mode.

b) Resource based-view

According the resource based view, a firm's competitive advantage is rooted in its own resources and those that it can acquire (Wernerfelt, 1984; Barney, 1991). One key resource is the firm's knowledge, including codified knowledge that can be easily identified, structured and communicated, and its tacit knowledge that is rooted in the firm culture, routine and processes (Kogut and Zander, 1992). For firms entering foreign markets, the critical aspect is whether they can apply their competitive advantage to those markets. Their success depends heavily on their ability to transfer their know-how to the local market, as well as on the ability of the local partner to absorb this knowledge.

The hotel firms' concern during their expansion is not the risk connected to the dissipation of transaction-specific assets, such as brand and global reservation systems, but the possibility to transfer or replicate resources that are valuable, rare, and costly to imitate and capabilities which constitute the source of competitive advantage (Barney, 1991). Therefore, hotel firms are less concerned about control and more concerned about the effectiveness of their transfer of assets and knowledge. Management of knowledge flows within and across organizational boundaries is therefore key to strategic success.

All hotels, especially the large ones, employ complex logistics, dynamic pricing, marketing and inventory control systems for everything from towels to room occupancy rates (Contractor and Kundu, 1998b: 343). Such management skills and their diffusion in the company's organization constitutes the basis for competitive advantage; thus, the greater the intensity of tacit knowledge in the firm, the higher the costs of transferring that knowledge. Therefore, the more important

irreproducible resources and capabilities are to the hotel firm's competitive advantage, the greater will be the preference to exercise control. Consequently, we propose the following:

Proposition 2: If strategic resources and capabilities are easily transferable, franchising will be preferred to management contracts and to FDI.

c) Institutional theory

Previous studies have shown that the institutional framework in transition and other emerging economies constrains the choice of entry mode in different ways (Meyer and Nguyen, 2005). According to the institutional framework (North, 1990) strategic choices are driven not only by firm-specific resources and capabilities (Barney, 1991) but are also the reflection of the formal and informal constraints of a particular institutional framework that decision makers confront. Hence, the choice of entry mode requires balancing the firm's strategic preferences and the institutional constraints of the host environment. The formal institutions (laws and regulations) define the permissible range of entry modes (Meyer and Nguyen, 2005) while informal institutions (customs, norms and culture) have a major impact on the successful realization of the entry via the selected entry mode.

Perceived legal and regulatory risks have important effects on firms' entry mode choice. For example, a country's lack of enforcement of intellectual property laws discourages firms from using franchising as an entry mode choice (Dev, Erramilli and Argawal, 2002; Chen and Dimou, 2005). Large cultural distance between the host country and home country implies a higher risk of failure and would incentivise a firm to select a non-equity mode of entry, such as franchising and management contracts (Contractor and Kundu, 1998a, 1998b; Pine, Hanqin and Pingshu, 2000).

Existing research has highlighted the consequences of informal institutions for control over the operations, caused by the strong bargaining power of local government as owners of acquisition targets and joint venture partners. Also, the relative importance of personal networks in emerging economies may shift the control in favour of the local partner possessing such contacts (Wong, 2005).

In China's business environment, for instance, the importance of personal relationships (guanxi) and networks makes it almost impossible for a foreign hotel firm to be successful without the assistance of a well-connected Chinese partner (Pine, 2002), for example, in obtaining building permits and operating licences. Thus alliance-based entry mode such as international joint venture or management contracts could become a strategic choice, rather than entry by franchising as the latter does not allow a high degree of control, and requires a certain level of service and management standards in the host country, which are not present in many emerging markets.

Accordingly, we propose the following:

Proposition 3: The institutional framework moderates the relationship between control over the brand and transferability of resources. In emerging countries, management contracts are preferred to franchising as they allow more control over contractual operations than franchising.

3.2 Implications for host country impact

As hotels primarily internationalize through non-equity modes, particularly in developing countries (Endo, 2006), one important issue that arises is related to the extent to which non-equity modalities could contribute to a development of the host country and on the differences, if any, in terms of implications for impact, between FDI and non-equity modalities. Indeed, foreign investment in the tourism industry and in particular in tourist accommodations is often considered important in stimulating sustainable development in developing countries (UNCTAD, 2007).

Considering TNCs as "generators, transferors, disseminators and upgraders" of resources and capabilities, Dunning and Lundan (2008: 552) separate the impact of TNC activity on host countries in terms of the direct and indirect impacts. Among the direct impacts are the impact on the balance of payments (increased imports and/or exports), competition effects (entry of a new competitor, merger with incumbents), labour market effects (wages and training), technology transfer and institutional transfer. The indirect effects fall into two categories, linkages that occur between the investing TNC and a local firm in some type of equity based or contractual relationships, and

spillover effects experienced by other local firms. This framework of analysis will guide our discussion on host-country impact.

Overall, empirical evidence concerning the consequences of FDI in the hotel industry is both scant and ambiguous (UNCTAD, 2007) reflecting the broader academic debate concerning the social and economic development consequences of FDI for host countries, where there are few conclusive answers. In the case of services like hotels, most of the value generated by the TNC is related to intangible assets, including a brand name, a global reservation system as well as the knowledge and capabilities and the organizational norms and structure required for high quality service provision. Thus, in the case of the hotel industry, the most likely form of direct impact on the host country would depend on the transfer of these knowledge-based assets, necessitating the effective development of local partners, capable of undertaking such contractual activities. This in turn implies the existence of absorptive capacity (Cohen and Levinthal, 1990) of the partner in learning new routines, as well a stable and possibly long-term relationships, as in the case of management contracts.

One critical factor that determines a firm's absorptive capacity is its related knowledge (Cohen and Levinthal, 1990). In a foreign market, the local partner's related knowledge depends upon the local market availability of qualified labour, talented management and reliable suppliers. Furthermore, inter-firm relationships play an important role in accumulating and utilizing knowledge. By collaborating with local partners, a firm entering a foreign market can fill gaps in its knowledge base (Erramilli and Rao, 1990). By collaborating with entrants, local partners can gain access to the entrant's know-how (Brown et al., 2003). This mutual association enables both firms to increase the likelihood of earning greater returns on their resources. In the hotel industry, this is reflected in the evolution of management contracts in terms of a shift in the bargaining strength from operator to owner, and in the increasing complexity of the clauses included in the contract (deRoos, 2010).

Scholars that have analysed the effects of FDI in the hotel sector have also emphasized the potential beneficial effects in terms of employment and development of skills in the local labour market (Fortanier and van Wijk, 2010). As international hotels offer a higher service level (requiring a higher staff to guest ratio), most of the labour

market effects in terms of wages and training are positive for the host country, although demand for high skilled labour may poach some employees away from local firms. In the case of management contracts, it is the foreign operator that has the responsibility to manage the staff, and because hotels operated through management contracts are mostly luxury and upscale hotels, it can be expected that they allow a larger employment base than local firms. As skilled staff is critical to maintaining the reputation of a brand, hotel companies operating through management contracts should rely very actively on being able to recruit significant numbers of staff locally, and contribute to building national capability and capacity in this area.

Previous studies (Kusluvan and Karamustafa, 2001) emphasize also the beneficial effects of institutional transfer, including methods of control and coordination, company-specific norms and values in terms of the inculcation of norms and working practices, as well as accounting and control systems. Additionally, another possible benefit is that with franchising and management contracts, local partners are also exposed to the CSR standards of international hotel chains, which include practices in environmental management in relation to resource efficiency, the use of water, waste management and energy efficiency of the properties. While these benefits should not be exaggerated, they offer a window for learning about the best practices that are available globally.

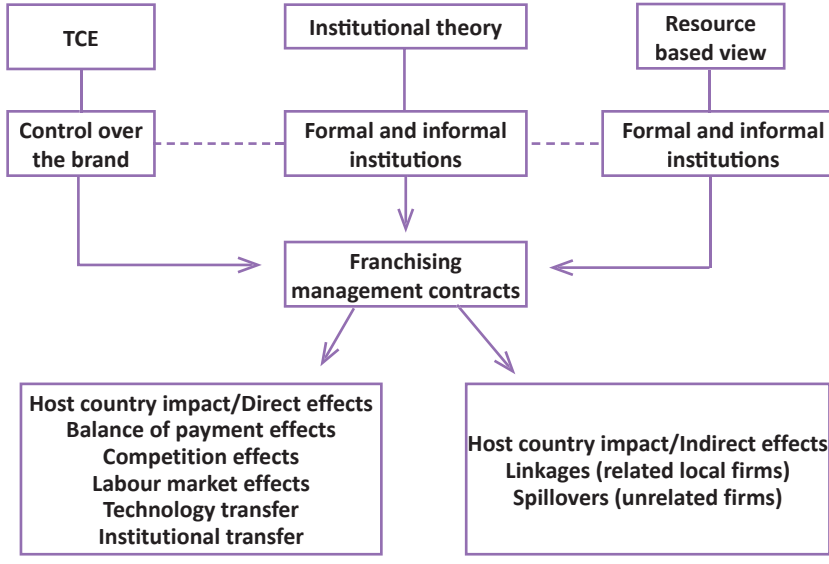
It is sometimes claimed that FDI is associated with higher use of imported goods, materials and foreign expertise, according to the standards and tastes of developed countries, and that this reduces the net foreign exchange earnings. However, foreign ownership or foreign control does not necessarily imply greater use of foreign inputs. While international hotels may have a higher import content than hotels catering for the domestic market, this relates to the nature of tourism demand rather than ownerships of facilities. It needs to be noted that the host country may gain tariff revenues from imported products, partly offsetting the negative impact on the balance of payments.

Indeed, one of the expectations related to international hotel development is that, through supply chain linkages, TNCs in the hotel industry, either operating through FDI or non-equity modalities, could bring economic benefits to other areas of the economy. For the domestic

enterprises supplying inputs to hotels, this can result in employment generation and entrepreneurial growth even in low-value added areas such as food production, particularly in countries with a comparative advantage in agricultural products (UNCTAD, 2007: 81).

Considering the different aspects of a hotel's operations, there are activities that hotel chains carry out directly, and others that have a higher tendency to be outsourced to local service providers (Hemmington and King, 2000; Lamminmaki, 2005). The latter include activities which need more specialized equipment or skills, such as laundry, common areas cleaning, security and surveillance, information systems and provision of leisure activities. Front-line departments where the brand reputation could be damaged if the provision of the services is not respecting the required standards are less often outsourced. In the case of hotels operating through management contracts, these may provide an outsourcing clause which affects the decisions involving the appointment of an external service provider in relation to the hotel's operations. The terms of such contracts are usually no longer than 12 months. However, the owner's consent is rarely required, unless the contract is significant and above a certain hurdle amount or for longer than 12 months.

Figure 1. The determinants of modal choice and the impact of NEMs on a host country



Considering the above mentioned literature on impact we propose that:

Proposition 4: While NEMs will have host country impacts similar to FDI, the development impact of hotels operated through management contracts may be greater than the impact of hotels managed through franchising, particularly in terms of skills development and knowledge transfer.

4. THE DIFFUSION OF NEMS IN THE HOTEL INDUSTRY AND THEIR IMPLICATIONS FOR HOST COUNTRY IMPACT

This study has an exploratory nature and it looks at the entry modes of the major international hotel chains in the world, representing 33,087 hotel properties (October 2010). The information provided has been elaborated exclusively through analysis of secondary data (annual reports, companies' homepages) and 4 interviews with consultants operating in the hospitality sector and located in the countries targeted for this study. These data have been cross-checked with information provided directly by the hotel companies (contacted through e-mail) in order to verify their accuracy.

The discussion on the potential impact of NEMs on the host country is concentrated on three emerging markets: China, India and the United Arab Emirates (see Appendix 1 for a presentation of the main features of the hotel industry in these countries). These countries were chosen because this is where all the major international hotel chains under analysis are carrying out the biggest expansion plans, almost exclusively through management contracts. In all of these countries, the expansion of the tourism industry, the increase in business travel, continuing economic growth and the real estate boom have acted as major drivers for the development of the hotel industry. In these markets, TNCs dominate the high-end sector, while domestic brands account for the majority of economy and budget brands. While the data available do not allow for empirical testing of the research propositions, they provide an indication of the kinds of questions that could be explored and tested empirically in future research.

a. The diffusion of NEMs in the hotel industry

While the majority of properties are independently owned across the industry, the international corporate sector is dominated by several major TNCs which have developed brand names and portfolios of several thousand hotel properties.

The international hotel industry's growth is increasingly achieved via the simultaneous divestment of real estate portfolios and the adoption of low risk, asset light market entry modes. While increasing divestment of their "bricks from their brain" (Gannon, Roper and Doherty, 2010: 640) has freed up capital to acquire competitors and increase shareholder value as well as strengthen their brands' market share (Bender, Partlow and Roth, 2008; Litteljohn and Altinay, 2007)[2], the decision to invest in properties is taken primarily to secure "unique properties" in special locations that can be considered as brand builders (UNCTAD, 2007).

Looking at the forms of operation of the main international chains per country of origin, it is evident that United States chains make use of much more franchising than European chains. After building up a vast franchising experience in their home market and achieving broad brand recognition, United States chains have expanded internationally using franchising as their entry mode, as is the case of the Wyndham Hotel Group, Choice Hotels International and Best Western International. European chains, by contrast, first operated abroad by having an equity stake in their foreign subsidiaries, especially in developed economies (Dunning and McQueen, 1993), and have only later began to use non-equity modalities of cross-border engagement. Table 1 shows the modality of operation chosen by the major international hotel chains.

[2] The advantage of this non-equity modality is clearly stated by Marriot in its Annual Report 2008 (p. 6): "*Since 1980, Marriot's core model has been to manage and franchise hotels rather than own them. With long-term agreements, this strategy has allowed tremendous growth while minimizing leverage and risk in a cyclical industry. It has facilitated a growing market share, rising brand equity, sustainable revenue per available room (RevPar) premiums and decades of strong returns to owners and franchisees. By minimizing our capital investments and recycling those investments we do make, we maximize our financial flexibility and cash flow. This strategy allows us to operate a steady ship when times are though and thrive when the business climate improves*".

Table 1. Major international hotel chains and their modality of operation (number of hotels, 2010)

Hotel chains	Managed	Owned/ leased	Franchised	Other*	Total	% Non equity
Wyndham Hotel Group (United States)	0	0	7.144	0	7.144	100%
Choice Hotels International (United States)	0	0	6.021	0	6.021	100%
IHG InterContinental Hotel Group (United Kingdom)	622	17	3.799	0	4.438	100%
Accor (France)	574	2.262	1.275	0	4.111	45%
Best Western International (United States)	0	0	4.032	0	4.032	100%
Marriot International (United States)	1.003	43	2.279	95	3.420	96%
Carlson Hotels Worldwide (United States)	222	85	752	0	1.059	92%
Groupe de Louvre (France)	282	271	491	0	1.044	74%
Starwood Hotel and Resorts Worldwide (United States)	476	63	440	13	992	92%
Hyatt Hotels Corp. (United States)	98	220	59	51	428	37%
NH Hotels (Spain)	93	305	0	0	398	23%

* Other includes vacation ownership resorts and residential properties as well as timeshares

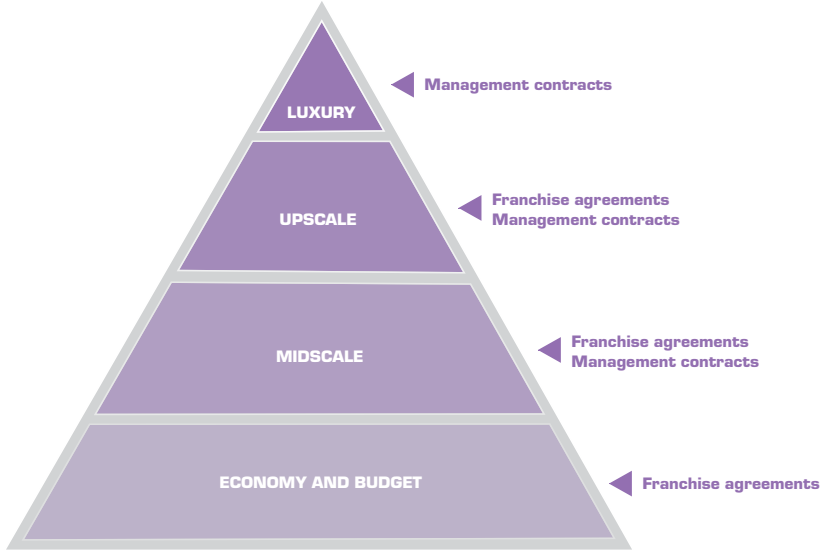
Source: www.hotelsmag.com, Special Report: Hotels' 325 (October 2010) and own elaboration based on information provided by the companies in their Annual Report 2010 (Fiscal year 2009)

We can see that franchising is the main governance form currently used by hotel chains with the world's largest room portfolios, in line with previous research (Martorell Cunill and Mulet Forteza, 2010) and consistent with Proposition 1.

Franchising needs to count on reliable managers in the host country, who are capable of maintaining the value of the brand. According to Dev et al. (2002: 93) "*a franchise arrangement means that the entering firm relies heavily on the franchisee's capabilities, while under a management contract the entering firm provides most of the day-to-day managerial and technical support from within its own resources*".

As shown by the information provided by Accor (see figure 2) and by Marriot (figure 3) franchising is mostly used for midscale and economy brands. Holiday Inn properties were among the first hotels built under this form of operation in the United States in the 1950s. While franchising enjoyed a high level of growth in this segment, it has not been so successful in upscale hotels that are more complex to operate and market (Bell, 1993). The preference for management contracts becomes stronger when the hotel operator's competitive advantage is derived from quality competences (strategic knowledge that is not easily transferable), especially as the hotel grows larger, and when the hotel operates in a service sensitive market (Dev et al., 2002). This is in line with Proposition 2.

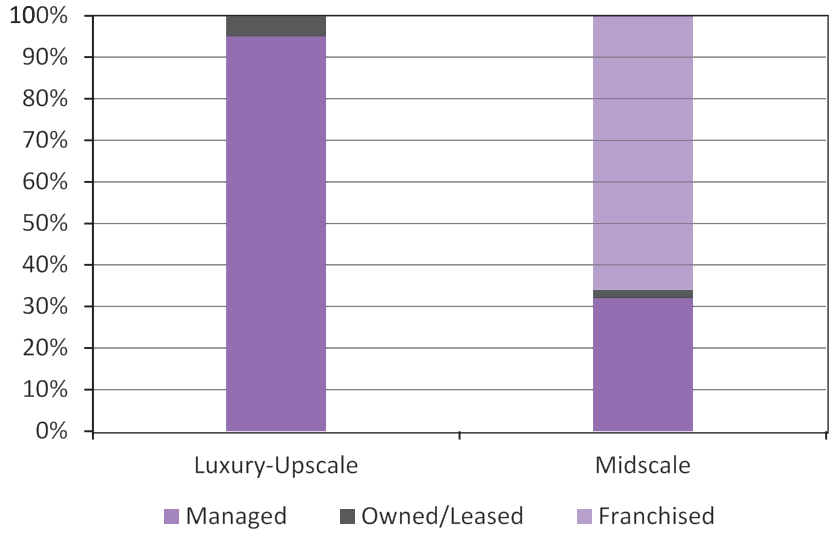
Figure 2. Type of development per market segment using non-equity modalities (Accor)



Results from the data provided by the companies also indicate that the largest market for management contracts is currently in Asia, followed by the Middle East. Franchising is predominant in North America and to a less extent in Europe. The case of Europe is somewhat peculiar. While all the major operators have strong brand recognition

across Europe, there are also a very large number of independent and often family-run hotels. In this respect, brand penetration in Europe has failed to reach the heights of the United States. The principle reason for this is that Europe is a heterogeneous market comprising numerous individual markets. Thus, while a brand may be widely recognized in France, it may not have the same recognition in the United Kingdom or Poland. The European clientele have generally reserved a preference for individuality and local traditions or tastes. Additionally, the complex and varied laws across Europe, particularly in relation to franchising, contribute to the reasons explaining the lower brand penetration (see table 2).

Figure 3. Type of ownership vs. brand segment : the case of Marriot 3 (% of hotels)



Source: Own elaboration on the base of data provided by the company

In the emerging Asian economies where the local partners still lack managerial skills and the institutional framework (formal and informal institutions) is weak, higher transaction costs can

[3] Among Marriot brands only hotels are considered. The data do not include Marriot Vacation Club, Ritz-Carlton Destination Club and Residences, Grand Residences by Marriot, Marriot Executive Apartments

increase the likelihood that the foreign partner will take more control over contractual operations, preferring management contracts to franchising. The results presented in table 2 show that the percentage of hotels under management contract is considerably higher than in other regions of the world, consistent with Proposition 3.

However, it is important to note that table 2 presents the percentage of hotels under each modality, rather than the percentage of total rooms, which is very likely to underestimate the real weight of management contracts. In fact, the percentage of the number of rooms would have a more reliable measure, particularly considering that upscale hotels tend to have a much larger size than economy and budget hotels. However, this information was not available for all the international chains.

Table 2. Forms of operation by geographical distribution (Top 12 chains, % of hotels)

	Managed	Owned/ leased	Franchised	Other*
Europe, Middle East and Africa	15,82%	27,31%	56,76%	0,09%
AMERICAS	6,43%	4,63%	88,34%	0,19%
ASIA-PACIFIC	36,07%	9,04%	54,52%	0,46%

*Other includes vacation ownership resorts and residential properties as well as timeshares

Source: own elaboration on the basis of information provided by the companies

The relatively high share of franchised hotels in Asia is represented largely by the activity of the Wyndham Hotel Group, and particularly by its activity in the budget hotel sector in China (Super 8 chain), operated through a master franchisee in Hong Kong (China). Management contracts dominate in the luxury and upscale sector, where some of the international hotel chains are even launching new brands, exclusively created for the most significant markets. This is the case of HUALUXE (HUA translates to ‚majestic China' and LUXE represents luxury), the first international brand of the IHG (InterContinental Hotel Group), designed especially for the Chinese traveller, launched in 2012. Fifteen management contracts have already been signed in the first nine months after the brand launch.

b. Implications for impact: evidence from India, China and the United Arab Emirates

In this section, we highlight the potential effect of NEMs on the local economy by looking in more detail at the development of the hotel industry in China, India and the Emirate of Dubai in the United Arab Emirates. In all three economies, the local governments have recognized the hotel industry as one of the most important components of the tourism sector. China strives to develop tourism into a strategic pillar industry of its economy over the Twelfth Five-year Plan period from 2011 until 2015. In India, tourism was made a priority for FDI since 1991. In Dubai, tourism was selected as a key element of the development strategy of the emirate.

The economic growth rates of the selected economies make them particularly attractive for international hotel companies. According to the President of Global Development of Starwood, "*When you look at India and China combined, you have 40% of the world population, and between them, they are averaging 8 per cent growth in GDP. By working to further establish relationships with travellers in these critical, high-growth markets today, we are ensuring the success of Starwood tomorrow*".[4]

Much like FDI, the expansion of international hotel chains through NEMs is expected to have a positive impact on these economies, particularly in terms of employment and labour force development. Being a labour-intensive industry, the principal route to transfer capabilities and expertise in the hotel industry is through human resources, mainly hotel managerial resources (Aung, 2000).

All international hotel chains considered in the study have substantial in-house training programmes with emphasis on the systems of accounting, procedures and management. In addition to this training, many hotel chains operating through management contracts are contributing to a number of different initiatives to overcome shortages of skilled personnel and to build capacity in the sector.

In China, for instance, the Intercontinental Group has launched IHG Academy, a public-private partnership that provides hospitality job

[4] www.hotelnewsnow.com (27.01.2010)

training in IHG local communities. Following partnerships with several leading institutions, the company has now 25 Academies in 11 cities across China. Accor has opened its first training centre in China aimed at teaching international service standards at the Group's Chinese hotels. Robert Murray, Executive Vice-President of Accor Hospitality in China, commented: "*Accor is rapidly expanding in China. For the Group, employee training is of paramount importance to increase customer satisfaction and support our development. The opening of the Chengdu Campus is a significant step forward for our overall human resources policy in China*"[5].

In India, Best Western launched the Best Western Center for Hotel Management and Training in collaboration with the local Ranjita Institute of Hotel Management and Catering, one of the first hospitality schools to be opened in India by a major international company.

In Dubai, main international hotel chains are supporting stipend-based training being held at the Emirates Academy of Hospitality Management. Moreover, the government is creating a regional hub for the hospitality industry (International Hospitality Trade and Training Zone), which will host some 16 different international centres for education focused on the hospitality sector, offering a comprehensive array of academic and training programmes. The regional hub will also have an industrial component that will offer integrated services like industrial manufacturing and distribution facilities tailored to the hospitality industry, commercial refrigeration warehouses and other hotel support services like laundry operations, ice manufacturing and industrial baking. These programmes may be regarded as a form of technology transfer, creating spillover benefits to domestic firms wishing to gain access to a more skilled pool of labour within the hotel industry.

As result of the prevalence of non-equity modalities, hotels in general do not significantly contribute to capital formation in the host country. However, the experiences from the country studies in China indicate that international hotel chains are playing a role in the diffusion of mixed development projects. Luxury hotels managed by international brands, through their reputation, are able to enhance the image of a project which can result in higher sales prices and a quicker turnover of

[5] www.accor.com

properties. Additionally, the presence of international branded chains can help mobilize capital from other sources, which can enable local investors to finance and build new hotel accommodation. When a well-known chain is involved, even if only to design and manage the hotel, it is easier for local investors to tap foreign capital.

In India and China, where the hotel industry is now developing to include second and third-tier cities, the presence of international hotel chains gives exposure to the destination, and in the long run, it provides an avenue for future growth. In China, for example, the InterContinental Group opened InterContinental in Dalian in 2008 and afterwards domestic brands Home Inn and Motel 168 followed, starting their expansion in third-tier cities.

Evidence on the indirect effects of non-equity modalities – even anecdotal one – is still limited. Regarding local procurement strategies, there are challenges to sourcing locally in many cases, even if a hotel operator is willing. InterContinental Group comments on its procurement policy as: "*We recognise that we have a significant part to play in local economic development and wherever possible we encourage our hotels to source goods and services locally. In addition to supporting local suppliers, we also need to promote responsible business practices by those same suppliers. For instance, we set procurement criteria for subcontractors to ensure that our hotels only use companies that follow good practice in waste reduction*".[6]

Finally, hotel chains operating through non-equity modalities seem to be generating demonstration effects among local hotel chains, which are adopting the design and management techniques of international hotel chains. In the case of China, for instance, many of the domestic hotel chains operating in the economy segment have learned from international hotel chains to make use of IT systems providing advance bookings, internal hotel management and database functions, and by reducing their dependence on intermediary services providers, which charge about 20 per cent of the room rate for each customer referral (CBRE Research, 2009).

Overall, as stated in Proposition 4, the limited evidence available suggests that NEMs can have a similar host country impact as FDI,

[6] www.ighplc.com

although it was not possible to assess if the impact is likely to be greater when the hotel chains operate through management contracts rather than through franchising. As in the case of FDI, it is also clear that not all the effects of NEMs are likely to be positive. Various kinds of competitive effects, squeezing out of local competitors, labour market shortages facing domestic firms and limited access to top level jobs for local employees can all be consequences of the entry of foreign hotel chain through NEMs.

5. DISCUSSION AND CONCLUSIONS

This paper has focused on the increasing use of non-equity modalities in the hotel industry. We examined under what conditions non-equity modalities are a substitute for FDI, as well as under what conditions management contracts might be preferred to franchising. We presented a conceptual framework that outlines the factors that influence the choice of modality, and we then examined recent developments in the global hotel industry.

Data provided on the mode of entry of the main international hotel chains indicate that non-equity modalities are by far the most important mode of operation, with franchising being the preferred governance form. This modality allows for the maximum exploitation of the intangibles assets of the international chain with the minimum commitment to either investment in real estate or the costly transfer of knowledge through expatriate employees. However, this form of operation is easy to set up only if strategic resources and capabilities for the expansion of a chain are easily transferable, and if there is a degree of absorptive capacity in terms of local entrepreneurship and managerial skills. Additionally, an institutional framework needs to be in place (e.g. franchise law) in order to regulate the transfer of resources.

In the case of luxury and upscale hotels, where competitive advantage is based on tacit resources and capabilities cannot be transferred effectively between firm boundaries, more “controlled” governance structures are needed, and in these cases management contracts act as a substitute for FDI, in developing as well as in developed countries. Management contracts allow a high degree of control, similar to FDI, while minimizing the investment and the risks associated with it.

Moreover, management contracts are preferred to FDI and to franchising when the institutional framework of the host country is weak, informal institutions play an important role for the development of the business, and when a lack of managerial skills impedes the transfer of control to a local partner. This is often the case in emerging Asian countries, where management contracts are the most prevalent form of operation not only in luxury hotels but also in midscale and economy brands.

Indeed, many emerging markets are substantially dependent on tourism, and equity-based investment by large hotel chains has long been seen as a way to build a viable export generating industry. However, a more fine-grained division of labour is also taking place in the hospitality industry, leading to a greater variety of entry modes. Given the expected rates of growth in the hospitality industry in emerging markets, and given the likely mixture of local enterprises, as well as franchised and contract operated hotels by established brand owners, it is of great importance to examine the consequences for the host countries of these different types of investment.

TNCs have traditionally preferred equity ownership in order to protect the ownership advantages they are employing in the host country. Contractual modes of operation make these kinds of assets more vulnerable. Does this make foreign hotel owners more cautious about investing in training and long-term development of the hospitality services in the host country? How do they protect themselves against imitation and reverse engineering by the substantial number of local competitors that have appeared in the market? Are the foreign hotels run by management contracts more productive than the franchised ones? Are both types of foreign hotels more productive than local hotels? What are the differences in the quality and quantity of training provision between the two contractual types? Are there likely to be spillovers to the host country from the operation of NEMs in the hotel industry? And if so, through what channels? Do trained managers leave the TNC and shift over to local competitors, or do they become entrepreneurs in their own right? Do they set up businesses in complementary areas of the hospitality industry, thus benefiting from their connection to the hotel?

Regardless of the modality of investment, the linkage effects of the hotels are likely to depend on the ability of the local economy to provide sufficient and desirable inputs associated with the hospitality industry. Consequently, policies should be directed to facilitating the upgrading of production and quality standards in local companies so that they are able to offer goods and services at comparable prices, quality and delivery times than imported goods and services. Incentives offered to international chains to use local good and services could also be considered. Selective matchmaking activities directed at property developers and transnational hotel companies could be organised to create contacts between potential owners and operators. Host governments also need to be cognizant of the fact that that the existing laws governing foreign direct investment may be inadequate to regulate contract-based control by TNCs. For example, franchising laws should be updated, and since most contracts call for alternative dispute settlement in the form of mediation or binding arbitration, governments should make sure that these institutions are functioning.

Through decades of research on the affiliates of manufacturing TNCs, we have a good idea of the circumstances under which the TNC might internalize cross-border transactions, and the likely consequences for the host country. There is considerably less understanding of the different kinds of contractual relationships that are being increasingly employed, including contract manufacturing, contract farming, contract R&D, franchising and management contracts, and what implications these have for developing host countries in the medium and long term. We hope that the very preliminary findings presented in this paper concerning developments in the hotel industry will act as a stimulus to encourage more work on the impact of the use of non-equity modalities and their role in the contemporary global economy.

Appendix 1. Hotel industry in China, India and UAE: role of transnational hotel chains

	China	India	UAE (Dubai)
Situation of the hotel market **Growing market, expansion of the tourism industry defined as strategic by the Government**	In 2010 China has replaced Spain as the world's third most visited country, behind France and the United States with 55.98 million international arrivals[1]. In 2010 about 54 million Chinese travelled outbound, spending about 48 billion US$[2]. Forecasts indicate that by 2020 China will be the largest receiving country in the world with 130 million arrivals[3].The fast growing tourism market has boosted the hotel industry which is considered a symbol of "opening and reform" which not only generates most of the tourism revenue, but also contributes to employment and acts as accelerator of economic and social development (Pine, Qiu Zhang, and Qi, 2000)	According to the latest Tourism Satellite Accounting (TSA) research, released by the World Travel and Tourism Council (WTTC), the demand for travel and tourism in India is expected to grow by 8.2% (annually) between 2010 and 2019. This will place India at the third position in the world. India's travel and tourism sector is expected to be the second largest employer in the world. Domestic travelers in India already number around 563 million, compared to inbound arrivals of five million passengers. With 454 projects and 79.915 guestrooms, India has the third largest pipeline globally.	In the early 90s the Government opted for tourism selected as a key element of strategic planning, partly based on the issue that Dubai was more liberal than other Saudi Arabian States and more than half of its residents were expatriates. The hotel room supply in Dubai at the end of 2010 was about 50,200 rooms[4] , reflecting an increase of 18% over 2009. The year 2010 witnessed the addition of 7,646 branded rooms including landmark properties such as the Armani (Burji Khalifa), As per the scenario, Dubai is planning to accommodate a projected 15 million tourists by the year 2015
Positioning of the transnational hotel chains **International hotels chains dominate higher end segment**	According to the latest statistical information available , in 2009 China hosted about 15.000 star rated hotels (up from 13.583 in 2007) and 3.800 budget hotels (up from 1,698 in 2007)[5].While domestic brands form the bulk of the economy and budget hotels, the high-end hotel sector is dominated by internationally branded hotels. Due to the increasing competitive market, the higher property prices and the limited choice of good located properties, as well as higher labour costs, hotel chains have started to expand their presence in second-tier third-tier level cities	A range of leading global hotel chains have planned massive investments in India's midmarket segment in the next four years. Starwood Hotels and Resorts Worldwide, which owns brands like Le Meridien and Sheraton, intends to set up 100 hotels in India by 2015. Among the top hotel chains operating in India, four are domestic. One of the local chains, Oberoi Hotel Group, had initially an agreement with InterContinental Hotel Group. After terminating its partnership with Intercontinental the company had learned the business well enough to launch its own international hotel chain	International hotel chains dominate the luxury market while domestic chains are positioned in the economy segment
Main TNC chains and nr. of hotels (2010)	InterContinental: 137; Accor: 92; Starwood: 68; Marriot: 56	InterContinental: 115; Starwood: 25; Carlsson: 24; Marriot: 18; Accor: 8	InterContinental: 9; Accor: 10; Marriot: 6; Starwood: 13

[1] UNWTO (2011) World Tourism Barometer
[2] China Outbound Tourism Research Institute, Press Release – January 13,2011
[3] UNWTO, Tourism 2020 Vision
[4] Jones Lang LaSalle: Dubai hospitality market, 2010
[5] China National Tourism Administration (CNTA)

Appendix 1. (continued)

	China	India	UAE (Dubai)
Institutional framework **Existence of a specific franchise law only in China**	Government has boosted infrastructures spending in order to attract investments for hotel companies to expand their presence in second-third-tier cities. In China there is a legislation governing franchising agreements. For a franchising agreement, franchisors must comply with the Chinese franchise laws (Regulations on Administration of Commercial Franchise), promulgated by the State Council in February 2007; these regulations outline the obligations and duties placed on franchisors. Thanks to 2007 amendments in China's franchise law, a franchise contract can be signed between a foreign franchisor (which doesn't have a local presence in china) and a master franchisee. This method has opened up opportunities for mid-sized international franchisors that do not have the resources or do not want to set up a legal presence in China. Despite the existing law, there are important informal constraints such as the " interfirm guanxi".	Tourism was made a priority sector for FDI in 1991, making the industry eligible for automatic approvals of hotels in which up to 51% of the equity was provided by a foreign partner. Tourism was granted export status in 1998, making hotel owners eligible for various government incentives. This encouraged the entry of several major international chains into India. There is no specific law dedicated to franchising in India. The relationship between the franchisee and franchisor is subject to principles of contract law under the Indian Contract Act. A number of other pieces of Indian legislation from various sectors are applicable and impact on the overall governance of franchising in India. The vast amount of Indian legislation applicable to franchising means that franchisors must take specialist legal advice to ensure their legal agreements are both compliant with and enforceable pursuant to Indian law.	Among the measure taken by the Government to support tourism growth there are the upgrading of the international airport, the growth of Emirates Airline, the operation of a cruise ship terminal as well as the establishment of a government department to market emirates' tourist assets. Finally, the decision in 2002 that foreign nationals be permitted to buy property on freehold ownership has resulted in a real estate boom which impacted also on the development of the hotel sector. There is no explicit franchise law in the UAE. The concept of franchising falls within the realm of Agency Laws, which do not expressly differentiate between franchise, agency or distributor. Though there is no precise franchising law in the UAE, a series of laws such as Commercial Agencies law, Civil Code, Commercial Code Trademark Regulations and UAE Civil Procedure Code apply depending upon the terms of the contract.
Developmental impact **Creation of external training centres**	Intercontinental IHC has launched the IHG Academy, a public-private partnership that provides hospitality job training in IHC local communities. The company has now 25 locations. The IHG Academy will be able to accommodate up to 5,000 students at any one time. Each year, approximately 2,000 IHG Academy graduates are offered employment opportunities at IHG hotels across China. Accor opened a new training academy in Chengdu, China reflecting the Group's reinforced commitment to develop employee skills. The creation of Accor's first training centre in China is aimed at teaching international service standards at the Group's Chinese hotels.	Best Western India, a division of Best Western International, launched in 2010 The Best Western Centre For Hotel Management and Training at Bhubaneshwar[6], in collaboration with Ranjita Institute of Hotel Management and Catering. The new campus is spread over 10 acres and will train approximately 500 students in the first year, growing to more than 1,000 students annually. The Best Western Centre is one of the first hospitality schools to open in India by a major international hotel company. Part of the campus will also be a 40-key Best Western hotel, providing on-the-job training to the students.	Several transnational hotel companies as Accor, Hilton, Hyatt and Marriot support stipend-based training being held at the EAHM (Emirates Academy of Hospitality Management). Furthermore, the government is collaborating in a joint venture to create a regional hub for the global hospitality industry, that will host around 16 world renowned educational institutions at Ihottz Hospitality Training Campus. The industrial component of Ihottz will offer integrated service like hospitality industrial manufacturing and distribution facilities, commercial refrigeration warehouse and other hotel support services

Source: Own elaboration on the base of the information provided by the companies.

[6] www.hotelsmag.com (20.12.2010)

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Adding value in Global Value Chains

Rashmi Banga*

This paper compares alternative ways of measuring a country's participation in Global Value Chains (GVCs) and estimates the distribution of total value added created under. Using the OECD-WTO database on Trade in Value Added, this paper shows that 67 per cent of total global value added created by trade under GVCs accrue to the OECD countries while the share of emerging economies (the NIEs and BRICS countries) is 25 per cent. Other developing countries account for only 8 per cent. The paper discusses external and internal constraints to adding value in GVCs by developing countries and identifies capacities that need to be developed by developing countries in order to gainfully link into GVCs.

JEL classification: F13, F14, F62, F63

Key words: Global Value Chains (GVCs), value added trade

1. INTRODUCTION

Global value chains (GVCs) have introduced new features to the landscape of international trade. Trade in intermediate goods and services is growing faster than trade in finished products; trade-investment nexus is becoming stronger; services component of manufactured products is being traded more; and almost every exportable finished product contains some imported input. These features have made it more difficult for developing countries to assess their gains from trade. Higher exports can no longer be linked to higher production and production-linked gains. Nevertheless, "linking into GVCs" per se is increasingly considered as the new development challenge by policymakers. Industrial policies are being reshaped in order to adjust to this new dimension of trade, and foreign direct investment (FDI) is being encouraged with the hope of linking into the GVCs.

In this race to link into GVCs, very little attention has been paid to measuring the net domestic value added created through trade. This omission

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is partly explained by the lack of conceptual clarity on what part of trade can be categorized as "trade under GVCs". The available trade data typcially leads to double counting, when intermediate goods are traded across national boundaries. A number of studies have argued that any analyses with respect to gains from trade should be based on net value added by trade (Porter, 1985; Kogut, 1985). Likewise, comparative advantage, which was typically expressed in terms of products/industries according to the earlier trade models, now needs to be assessed based on activities and tasks (Gereffi, 1999).

In measuring net domestic value added created by trade, data generated from input-output analysis provides a useful alternative to trade data.[1] In 2013, the OECD and WTO jointly released a dataset on Trade in value added (TiVA) for 58 countries (including all the OECD countries, the BRICS countries and NIEs) for the years 1995, 2000, 2005, 2008 and 2009 using harmonized input-output tables of these countries. UNCTAD has extended this approach to include virtually all developing countries.[2] While these databases should be able to provide more precise ways of estimating trade in value added, the debate has now focused on the manner in which participation in GVCs and distribution of gains in GVCs can be estimated.

Many studies have argued that linking into GVCs per se may not bring automatic gains. In fact, linking to the GVCs by exporting raw materials can "lock in" countries at the bottom of the technology ladder. These countries may continue exporting low-end and low-value added inputs with lower gains in terms of domestic value added.[3] Middle income countries may find their trade volumes rising with little gain in their domestic value added. They may be unable to graduate to more sophisticated higher-end exports and come out of the "middle-income trap". Other countries, especially lease developed countries (LDCs), may fare worse and find themselves "locked out" of GVCs. Studies have also pointed out the existing "smiley-curve" in GVCs which shows that the value captured by services in GVCs is much higher than

[1] An important advantage of input-output tables is that they classify goods according to their use (as input into another sector's production or as final demand); and include information on inputs of/in services sectors, allowing for the analysis to include services trade.

[2] UNCTAD-EORA-GVC Database.

[3] See Gereffi (1994), Kaplinsky (1998), Schmitz (2006), Kaplinsky and Fitter (2004), Kaplinsky (2005) and Milberg (2009).

that by manufacturing activities.[4]Countries contributing services like R&D, designing, branding, marketing, etc. are able to capture a much higher value in GVCs compared to countries which provide inputs and manufacture the products.

Amidst all these varied experiences, some countries have been able to "gainfully link into GVCs" and achieve rising exports, production, employment and growth. Many external as well as internal factors have led to these gainful linkages, such as access to quotas, preferential trade agreements, specific policies with respect to FDI and trade, formation of clusters, and complementary efforts to improve trade infrastructure and provide an environment conducive to trade and investment.

This paper compares alternative ways of measuring *participation of a country in GVCs* and estimates *distribution of gains in GVCs* across different countries in terms of their share in total value added created by trade under GVCs. It further discusses the constraints that developing countries face in capturing more valued added in GVCs and identifies the range of capacities which needed for successfully linking, climbing and governing the GVCs.

The paper is organized as follows. Section 2 briefly traces the evolution of GVCs and compares estimates of trade and trade in in value added; section 3 measures the distribution of total value- added generated in global value chains between countries and undertakes some sectoral analyses; section 4 discusses the constraints on climbing the value chains faced by developing and least developed countries (LDCs); section 5 identifies the chain of capacities needed for successfully linking, climbing and governing the global value chains; and section 6 concludes.

2. EVOLUTION OF GVCS AND ESTIMATES OF TRADE IN VALUE ADDED

GVCs first emerged as regional supply chains in East Asia, with Japanese investors taking the lead in the region, resulting in the "flying geese" pattern of investment and trade. Japanese transnational corporations (TNCs) set up production bases in a large number of countries in East Asia and later in South-East Asia to access locational

[4] Gereffi and Korzeniewicz's (1990) and Baldwin (2012).

advantages and develop export platforms for the components. The final assembly took place in a third country, from which the finished products were exported either back to the home country or to the global markets. This fragmentation of the production processes improved the cost competitiveness of the final products. Over time, TNCs from other developed countries flocked to the region to improve their cost competitiveness, and soon spread to other regions as well. What emerged from this phenomenon were GVCs with the production process of a product being spread across countries, regions and even continents, taking the cost advantage of each location to become globally competitive.

GVCs played an important role in boosting network trade. World network trade increased from $988 billion (about 44 per cent of total manufacturing exports) in 1990–1991 to $4.5 trillion (51 per cent) in 2009–2010, accounting for over 60 per cent of the total increase in global manufacturing exports during this period.[5] Although GVCs have increasingly embraced network trade, they go beyond network trade as all the activities under the production process, beginning from R&D, product designing, sourcing of primary products, production of intermediate products, final assembly, packaging, branding and marketing, etc. are now being split and undertaken in different countries. GVCs therefore include the full range of activities and processes that are needed to bring a product from conception through the intermediary stage of production to delivery to final consumers and final disposal after use.[6] Thus, a GVC can be simply understood as the sequence of all functional activities required in the process of value creation involving more than one country.

Given the above conceptual definition of GVCs, measuring gains from trade from GVCs using product level trade data becomes virtually impossible. Harmonized input-output tables of different countries are used to estimate the domestic value added and foreign value added created in manufacturing as well as services sectors. These tables therefore are used in estimating the "domestic value added" content in gross exports of a country. "Domestic value added exports" will therefore differ from "gross exports" and can be estimated by

[5] Athukorala and Nasir (2012).
[6] Kaplinsky and Morris (2001).

subtracting foreign value added (i.e. value added created in other countries that is imported and enters exports of the country) from gross exports. Correspondingly, global value added exports can be obtained by summing domestic value added exports of all countries. This sum nets out double counting in global trade, which is caused by export and re-exports of intermediate products in network trade.

In 2009, world gross exports amounted to $13.4 trillion. However, world value added exports amounted to $10.3 trillion (around 23 per cent lower than gross exports), emphasizing the extent of double counting in total trade due to network trade. While, world gross exports as a proportion of GDP increased from 24 per cent in 2005 to 27 per cent in 2008 and declined to 23 per cent in 2009, world value added exports were much lower and reached 20 per cent in 2008 and declined to 18 per cent in 2009. Following the economic crisis, while world gross exports as a proportion of GDP declined by 4 percentage points in 2009, the actual decline in terms of value added exports was only 2 percentage points (table 1).

Table 1. World and gross exports value added exports

	2005	2008	2009
World Gross Exports (millions of dollars)	11 087 513	16 771 072	13 470 927
World Value Added Exports (millions of dollars)	8 311 208	12 488 836	10 319 465
World Gross Exports are overstated by	25%	25.5%	23.3%
World GDP (billions of dollars)	45 711 693	61 238 974	57 933 353
World Gross Exports as a proportion of GDP	24.3%	27.4%	23.3%
World Value Added Exports as a proportion of Global GDP	18%	20.4%	18%

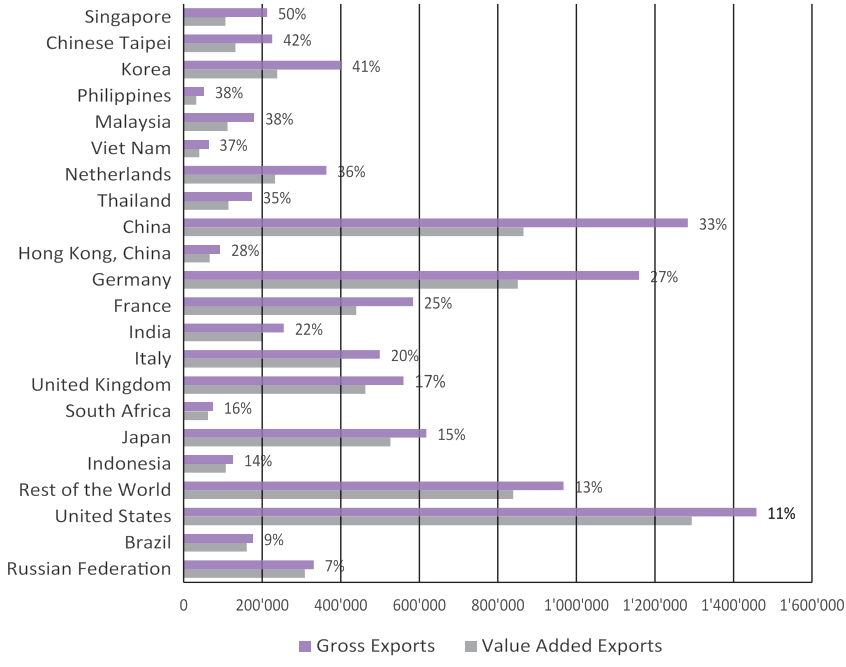
Source: COMTRADE, World Development Indicators and OECD-WTO Trade in Value Added (TIVA).

The extent of difference between gross exports and value added exports varies across countries, depending on country's engagement in network trade. The difference in gross exports and value added exports is most prominent for the first tier NIEs (NIEs1), such as Singapore (50 per cent), Taiwan Province of China (42 per cent) and the Republic of Korea (41 per cent), followed by the second tier NIEs (NIEs2) – Malaysia (38 per cent), the Philippines (38 per cent), Thailand (35 per cent), China

(33 per cent), Hong Kong, China (28 per cent). For most developed countries, foreign value added in gross exports is less than 30 per cent – 17 per cent for the United Kingdom, 11 per cent for the United States and 27 per cent for Germany. For the BRICS countries, especially Brazil and the Russian Federation, the difference is smaller as their exports include a high proportion of commodities.

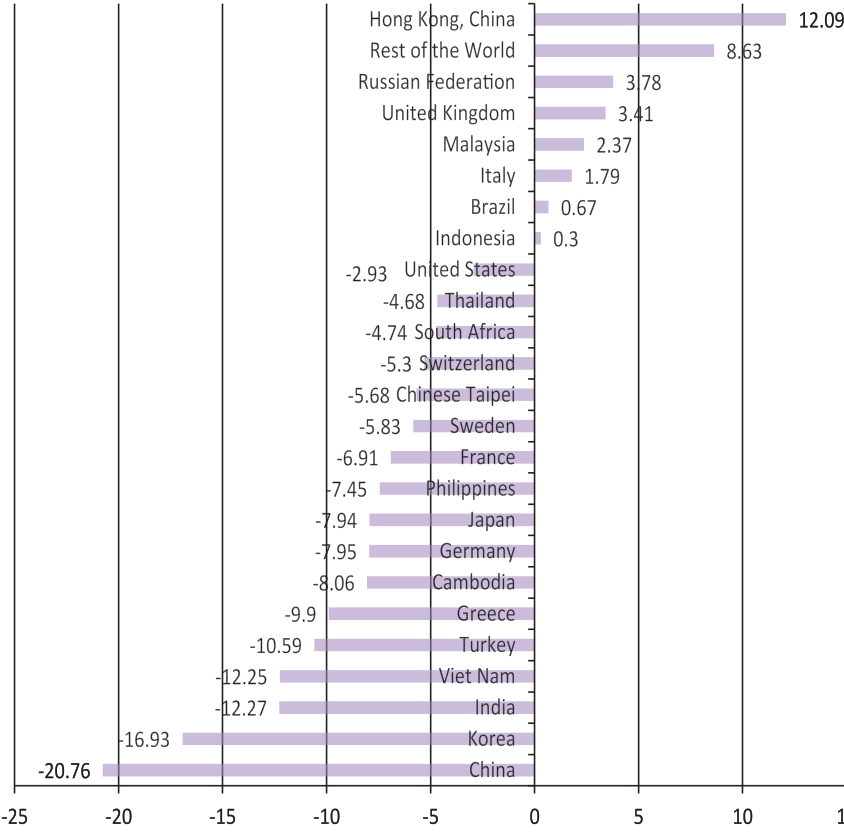
Trends in the share of domestic value added in gross exports for the period 1995–2009 reveal interesting insights (figure 2). Domestic value added in gross exports has declined substantially for many developing countries indicating rise of foreign value added in their gross exports. However, for some countries domestic value added has increased in this period, including the Hong Kong (China), the Russian Federation, the United Kingdom and Malaysia. The decline was marginal for United States (3 percentage points) but was much larger for some countries such as China (21 percentage points), the Republic of Korea (17 percentage points) and India (12 percentage points).

Figure 1. Gross exports and value added exports (per cent): 2009



Source: Author's estimates from the OECD-WTO Trade in Value Added (TIVA).

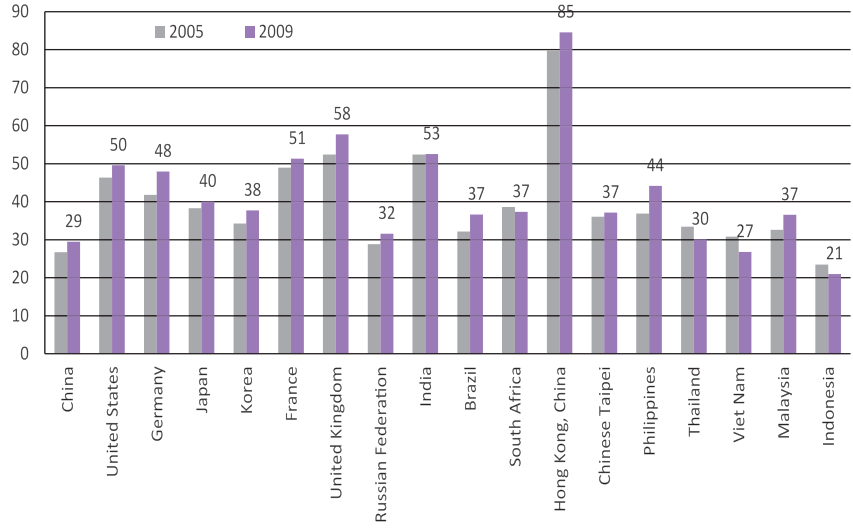
Figure 2. Percentage change in domestic value added in gross exports: 2009 over 1995



Source: Author's estimates from OECD-WTO Trade in Value Added (TIVA).

The share of services in global value added exports has increased at a faster rate than the share of manufactures. It rose from 46 per cent in 2005 to 66 per cent in 2009. The largest increases were seen in Germany and the United Kingdom (figure 3). In 2009, the share of services in total value added exports was around 50 per cent for most of the developed countries in the OECD-WTO database, while it was 40 per cent or less for most of the developing countries, except for India where it reached 53 per cent.

Figure 3. Share of Services in Value added Exports: 2005–2009



Source: Author's estimates from OECD-WTO Trade in Value Added (TIVA).

3. PARTICIPATION IN GVCS AND DISTRIBUTION OF GAINS

GVCs cut across industries and countries. Advances in information and communications technology have made it possible to provide previously non-tradable services from a distance. One of the challenges facing developing countries in this context is to estimate the extent of their participation in GVCs and the domestic value added from this participation.

Distribution of gains across countries under GVCs is another important issue. Many studies have pointed out that gains are unevenly distributed across the value chains and the balance of power often favours nodes with greater technological capabilities. Firms which control technology through mechanisms like patents or licences are in a powerful position and are likely to extract maximum rents in GVCs. Higher rents may also accrue to nodes with better organizational skills or with better marketing capabilities with the use of brand names. Thus, the issue of governance becomes an important ingredient in the value chain. Governance ensures that activities, actors, roles and functions in the value chain are organized in a manner so as to maximize rents.

The elaboration of the commodity chain concept by Gereffi and Korzeniewicz (1990) illustrates that in low-wage, labour-intensive production (e.g. footwear), the principal profits are not realized in manufacturing itself, but rather in the corporate coordination and control of the entire global assembly line, especially design, marketing and retailing – activities that are typically controlled by TNCs based in developed countries at the "core". In this complicated chain of events and functions, peripheral countries often remain primarily "export platforms" for simple low-technology, labour-intensive goods made by low-wage unskilled workers. This adds to the challenge of overcoming "technological dependence" for peripheral countries – even for East Asian NIEs that are relatively technologically advanced. This explains why Indonesian factories that are subcontracted to produce large quantities of sports footwear, for example, retain only a tiny proportion of the profits from the sale of such footwear (Ballenger, 1992).

Case studies for manufacturing of Apple iPod in China have shown that only $4 out of the total value of $150 can be attributed to producers located in China while most of the value accrues to firms in the United States, Japan and the Republic of Korea (Dedrick, Kraemer and Linden, 2009). Although these case studies point out the uneven distribution of gains in GVCs, very few studies estimate the extent of countries' participation in GVCs and the distribution of the total value added gains under GVCs across countries. It is important to focus on relative gains to a country along with its participation in GVCs as participation in itself may not necessarily bring gains in terms of higher net domestic value added created by trade.

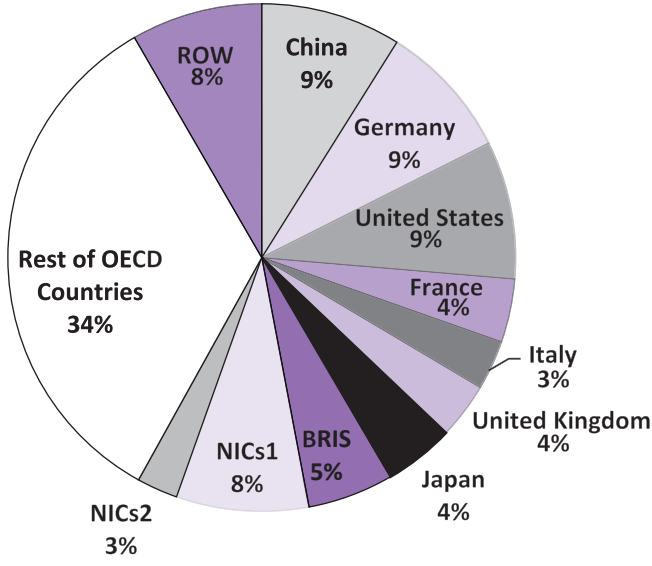
3.1 Measuring Participation in GVCs

Linking into GVCs could either be through forward linkages (where the country provides inputs for exports of other countries) or through backward linkages (where the country imports inputs for its exports). Thus participation in GVCs can be defined as the sum of foreign value added in its gross exports and its domestic value added which goes into other countries' gross exports. The *World Investment Report 2013* uses this measure expressed as a share of a country's exports to assess the extent to which exports of a country depend on GVCs.

However, instead of estimating participation of GVCs as a share of country's exports, this study measures the share of a country in the total value added created under GVCs. This share provides a measure of the distribution of value added created under GVCs across countries and also a country's relative gains in GVCs. Using the OECD-WTO TiVA dataset, this share is obtained for the 58 countries in the database, which include the 34 OECD countries, the five BRICS countries; the eight NIEs. The remaining economies are grouped as the "rest of the world".

Figure 4 shows the distribution of global value added created under GVCs in 2009. The share of OECD countries is 67 per cent, share of the first tier NIEs is around 8 per cent and the second tier NIEs around 3 per cent. The BRICS countries together take up 14 per cent, of which China accounts for 9 per cent. The rest of the world accounts for 8 per cent. The top six OECD countries alone – the United States (9 per cent), Germany (9 per cent), the United Kingdom (4 per cent), Japan (4 per cent), the Republic of Korea (5 per cent) and France (4 per cent) – take up around 35 per cent.

Figure 4. Shares in global value added exports in GVCs



Source: Author's estimates from OECD Stat and OECD-WTO TiVA.
Note: "BRIS" refers to the BRICS countries excluding China

The share of China among developing countries is as high as 30 per cent. The share of China in backward linkages of OECD countries with developing countries (i.e. foreign value added by China in OECD countries gross exports as a proportion of foreign value added by all developing countries) is 33 per cent while share of China in forward linkages of OECD countries with developing countries (i.e. domestic value added of OECD countries in exports of developing countries) is 34 per cent. Value added by OECD countries in China's gross exports amounts to 78 per cent of its total foreign value added in gross exports while it contributes around 65 per cent of its value added exports enter gross exports of OECD countries. This would imply that gross exports of China create much more value added in developed countries as compared to developing countries.

3.2 Measuring Distribution of Gains in GVCs

A higher participation rate in GVCs may not ensure higher gains. A comparison of forward linkages and backward linkages in GVCs provides some insight into the gains that go to a country from its participation in GVCs. If the forward linkages were greater compared with backward linkages, it would imply that by its participation in GVCs, a country is creating and exporting more domestic value added than the foreign value added which it is importing. The ratio of forward to backward linkage therefore can provide a measure of relative gains to a country from participating in GVCs (table 3).

The extent of domestic value added that enter exports of other countries is highest for the United States at 12.6 per cent of the total, followed by Germany, at 8 per cent. The share of foreign value added in exports is highest for China at 12.6 per cent, followed by Germany at 9.3 per cent. The United States, Japan, the United Kingdom and Italy have a high share of global value added in GVCs (greater than 3 per cent) as well as a high ratio of forward linkage to backward linkage (higher than 1). If a country is exporter of commodities or primary inputs, its forward linkages will be much higher than its backward linkages as in case of the Russian Federation, Brazil, South Africa and Indonesia.

The ratio is 0.5 for China indicating that China's domestic value added that enters other countries' exports is much lower than what it imports from other countries. This substantiates the results arrived at by the case studies on China.

Table 3. Participation in GVCs by forward and backward linkages

	Participation in GVCs in terms of share in total value added created by GVCs (per cent)	Share in Forward Linkage (per cent)	Share in Backward (per cent)	Ratio of Forward Linkages to Backward Linkages
China	8.9	5.2	12.6	0.41
United States	8.8	12.6	5.0	2.53
Germany	8.7	8.0	9.3	0.86
Japan	4.5	6.1	2.8	2.23
France	4.0	3.7	4.4	0.85
Korea, Republic of	3.9	3.0	4.9	0.60
United Kingdom	3.6	4.2	2.9	1.45
Italy	3.1	3.3	3.0	1.08
Taiwan Province of China	2.4	2.0	2.8	0.71
Russian Federation	2.3	4.5	0.7	6.51
Viet Nam	2.1	0.3	0.7	0.40
Mexico	1.5	0.8	2.1	0.38
Australia	1.3	1.8	0.7	2.50
Norway	1.2	1.8	0.7	2.54
Hong Kong, China	1.2	0.8	0.8	0.95
South Africa	1.1	0.4	0.4	1.05
Brazil	1.0	1.4	0.5	3.01
Singapore	0.8	1.3	3.2	0.42
Thailand	0.8	1.0	1.8	0.53
Malaysia	0.8	1.5	2.1	0.73
Indonesia	0.6	1.1	0.5	2.03
Philippines	0.4	0.4	0.6	0.74
India	1.1	1.6	1.7	0.93
NIEs1	10.5	11.2	11.7	0.96
NIEs2	2.6	4.0	5.0	0.80
BRICS	14.4	13.1	15.9	0.82

Source: Author's estimates from OECD Stat and OECD-WTO TIVA.

Note: Forward linkage refers to domestic Value added exports which enter other countries' exports as a proportion of global value added exports in GVCs (per cent). Backward Linkage refers to foreign value added content in value added exports of a country as a proportion of global value added exports in GVCs (per cent).

4. CONSTRAINTS TO LINKING AND ADDING VALUE TO GVCS

The low share of developing countries in global value added created by trade under GVCs can be explained from both external as well as internal constraints faced by these countries. External constraints come from the way the GVCs are designed by majority of lead firms originating from developed countries. This leaves limited scope for developing countries to contribute. Even in low-tech industries where developing countries have comparative advantage, the structure of GVCs from developed countries does not provide enough space for contribution by developing countries.

4.1 Limited scope for value addition in GVCs by developing countries

The structure of gross exports in terms of value added in the sector, *Textiles, textile products, Leather and Footwear*, in the top six countries is reported in the OECD-WTO TiVA database. In gross exports of Italy in this sector, for example, domestic manufacturing contributes 50 per cent of the total value added, while domestic services contribute 35 per cent (figure 5). However, foreign services contribute only 7 per cent and foreign manufacturing contribute only 8 per cent. In case of the United States, foreign manufacturing contributes only 13 per cent. Similarly, the share is 13 per cent for Turkey and 12 per cent for China. Value added by the foreign manufacturing sectors contributes no more than 13 per cent of total value added for the top exporters in this low-tech industry. This illustrates a limited scope available to manufacturers in developing countries want in linking into the GVCs formed by the Italian or United States manufacturers in this industry.

4.2 Internal constraints to adding value to GVCs

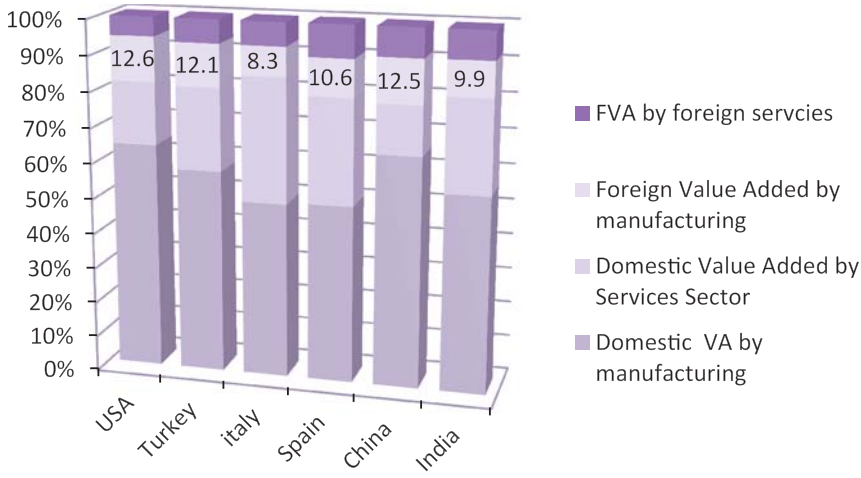
The major internal constraints faced by producers in most developing countries can be categorized into three groups:

I. Production related constraints

II. Market-access related constraints

III. Policy-related constraints

Figure 5. Distribution of value in the GVCs of the Textile, Textile Products, Leather and Footwear industry



Source: Author's estimates from OECD Stat and OECD-WTO TIVA.

Production related constraints stem from limited technological capacity of domestic firms, leading to low productivity and low quality output, which presents difficulties in terms of competitiveness and international standard compliance.

Market-access related constraints stem from a lack of information and awareness of markets and consumer preferences. Market access also critically depends on technological capabilities of producers and available infrastructure. The more heterogeneous the end markets, the more market-oriented activities are expected to take place, and higher competitiveness of producers is needed to climb the value chains. Both production-related and market-access related constraints are closely linked to financial constraints which include not just access to resources but also limited capacity to maximize productive use of resources.

Policy-related constraints stem from lack of capacities, willingness and capabilities of policymakers to link and add value to GVCs. Initiating value chains, encouraging innovations, improving knowledge and awareness of producers, creating facilitating environment, providing necessary infrastructure and networks and accessing markets through negotiating agreements are all important roles to be played by policymakers for establishing successful value chains. Coordination

among different players in value chains also necessitates pro-active role of the governments.

5. DEVELOPING CAPACITIES FOR ADDING VALUE TO GVCS

To overcome the constraints mentioned in the last section, all players in the value chains need to enhance their capabilities, as any one weak link can diminish the power of forming and gaining in value chains. Based on the successful experiences of many countries, six basic capabilities can be identified, which are:

1. Informed producers
2. Technical innovations and R&D
3. Skill development
4. Adequate infrastructure and finance
5. Appropriate institutions and domestic regulations
6. Market orientation and market intelligence

These capabilities are linked together and need to be formed simultaneously for an economy to be gainfully linked into GVCs. Presence of informed producers is an important capacity to develop in an economy. Informed producers can undertake and demand technical innovations, which necessitate and lead to skill developments. But to appropriate true value from skills, adequate infrastructure and finance are required. But if appropriate institutions and domestic regulations are not in place, the gains will be appropriated by foreign investors and other players in the chain with very little trickling down to the producers. These institutions and regulations improve the market-orientation of the producers and the gained market intelligence leads to informed producers.

5.1 Informed producers

The products which have the potential in a country to reach to global consumers need to be identified and the producers must have the information as well as willingness to improve the competitiveness of their products and reach out to the consumers outside their country.

Entrepreneurial skills have been found to spur value chains in different parts of the world. The successful experience of Sri Lanka in linking into GVCs in the textiles and clothing industry highlights the importance of informed producers. The producers in textiles and clothing took initiatives in developing their capacities, especially when they realized that after the expiration of the Multi-Fibre Arrangement (MFA), they would lose their preferential access to markets in developed countries. Although they lacked the backward linkages and essential inputs needed in their products, they developed the forward linkages by building their capacities to provide associated services like designing, packaging, branding etc. Entering niche markets and developing complex products helped them in securing access to developed countries' markets even post-MFA. The role played by the Joint Apparel Association Forum in Sri Lanka is a good example of industry's collaborative effort in upgrading.

In GVCs for Fresh Fruits and Vegetables (FFV), the Chilean Fresh Fruit Association (ASOEX) played a proactive role in upgrading farmers' capacities to adopt good agricultural practices so as to meet the quality standards. This has greatly helped the farmers to access the markets and increase their competitiveness. In both cases, the industry associations played key role in informing the producers.

Governments need to work closely with the farmers and producers to make them better informed about the international standards. The case of China is exemplary for the way the Government built demonstration zones to educate farmers on good practices and meeting the quality standards and lowering the use of chemicals and pesticides. Collecting and disseminating timely market information (e.g. on prices) can help small producers in FFV chains to make strategic decisions concerning production and sales.

5.2 Technical innovations and R&D

The role of technical innovations and R&D to link producers into value chains and help them in upgrading cannot be emphasized more. The case of innovations related to cold storage in Chile and developing of high premium Fuji apples in China prove that technical innovations can increase the gains from value chains many folds.[7] However, it may

[7] See Banga (2013).

not be realistic to expect technical innovations and R&D from micro and small sized enterprises. If a country is able to develop a critical mass of informed producers, the next step would be to provide technological support in the form of R&D and technical innovations. Two important sources of this are the public sector and FDI.

Experiences of other countries show that big farmers and producers can also be important sources of technological change. Melon production in Mossoró in the state of Rio Grande do Norte in Brazil is a concrete example of this, where two innovative entrepreneurs were responsible for increasing SMEs' participation in national and foreign-led value chains from 9 per cent in 1990 to 27 per cent in 1997. The public sector did not play any direct role in this but provided subsidized loans through development banks to the two large producers who proved that the region had a favourable environment for producing melons, identified suitable varieties, established domestic and export marketing channels, and trained hundreds of field workers and agronomists who then spread their know-how. A cluster of local producers, engaged in national and foreign-led value chains, emerged as a result.

In order to develop a successful value chain, technical innovations and R&D may not be sufficient. What is required is close collaboration among public sector research and extension agencies; producers and manufacturers; and buyers and input suppliers. Technical innovation is needed across the entire value chains that link producers and input suppliers. Pooling of resources and capabilities at the regional level can also be a win-win situation for countries that want to form regional value chains to improve their global competitiveness.

The public sector can provide direct and indirect incentives to promote innovations, including subsidized credits, tax exemptions and access to research and innovations to all producers irrespective of size and scale. Technological spillovers may occur from foreign firms operating in the industry, provided necessary efforts are made by the government in terms of devising their FDI policies to induce technological spillovers. One such policy is encouraging joint ventures between local and foreign firms so as to develop indigenous competitiveness through technological spillovers. Bangladesh encouraged FDI in the textiles industry with a view to developing capabilities required for forming backward linkages with the garment industry.

5.3 Skill development

Skill development is an integral part of the package for developing value chains. Informed producers need to develop their skills to take forward R&D and technical innovations into the next stage and fructifying higher gains from their linkage. Infusing the technical innovation in production also requires training and skill development on the part of the producers. Setting up of training institutes, design studios, demonstration farms and other such institutions can help in upgrading skills and capabilities of the producers and workforce. Regional collaboration in skill development to build high-value regional supply chains can be an important step in maximizing gains as well as in upgrading in GVCs. Foreign firms can play a critical role in skill development and training the workforce in their value chains. In Sri Lanka, complex products were developed by garment manufacturers through learning from foreign firms who trained them in order to cater for the niche market. Although external sources of knowledge are essential, the creation and improvement of technological capabilities essentially require firm-level efforts.

5.4 Adequate infrastructure and finance

Importance of adequate infrastructure and adequate finance in gainfully linking and forming value chains is widely recognized. However, for many developing countries, in particular LDCs, this may not be easy given the limited resources available. It is therefore important to identify critical areas where investing in related infrastructure and providing finance can bring maximum socio-economic gains. Careful assessment of potential and competitiveness is essential. In some cases foreign and regional investors can be leveraged to provide the necessary investments.

Lowering transit time is also important for making countries and regions more attractive for supply chains. Djankov et al. (2010) found that an extra day of transit time reduced trade volumes by one per cent. The category of trade facilitation that will produce the greatest gains is service-sector infrastructure, followed by efficiency in air and maritime ports. Encouraging FDI in infrastructure, especially in telecommunications can play a catalytic role. Cheap and reliable communication networks are a necessary part of ensuring that the

correct goods are shipped at the correct time between production nodes in a supply chain. Therefore, reducing the transaction costs of trade also means improving the means of communication within and across national borders. This is also an area where the presence of large externalities can be achieved through regional cooperation.

5.5 Appropriate institutions and domestic regulations

Appropriate infrastructure and finance along with informed producers with skill development may be able to help to some extent linking into GVCs, but to appropriate gains from this linkage, it is important to have proper institutions and domestic regulations in place. Complying with the growing number of stringent product and process standards has become the new challenge for producers in developing countries. In fact, such standards could work to increase opportunities for greater market access for those countries/farmers that can comply with them. Setting up institutions and laboratories to test the quality and standard compliance has become an important element of trading. Accreditation of these institutions and laboratories is the next step in gaining higher probability of standard compliance.

The most constraining obstacle in meeting private standards is often the upfront costs necessary to upgrade the farm itself to be able to comply with them. This can include buildings for storage of chemicals, changing-rooms, upgrading of packing and washing facilities, etc. It is necessary to prepare domestic producers so that they are able to meet international standards. Different standards exist in different countries, especially in the United States and Europe. To meet such double or triple certification problems, Chile developed its own GAP standards which made it easy for the exporters to meet different standards in different countries. Domestic regulations and standards can therefore be used to prepare the exporters capabilities to meet international demand for standards.

FDI policies and domestic regulation may be tailored appropriately to improve the bargaining power of domestic producers in GVCs. Regulations and policies can play an important role in improving the governance and power relations within GVCs in favour of domestic producers. For example, Bangladesh did not encourage FDI in the clothing industry but linked FDI presence with backward linkages with

textiles sector and benefited from development of backward linkages to strengthen the value chains. Other policies that can be linked to FDI are domestic content requirement, encouraging joint ventures and encouraging technology sharing agreements.

5.6 Market orientation and market intelligence

Market intelligence can help not just in linking and adding value to GVCs but also in forming and governing value chains. One of the perceived advantages of GVCs is higher returns from exports. However, this may not be true all the time. Returns may be higher in regional value chains, especially as it may not entail high fixed costs in order to meet the quality parameters laid by the lead firms in GVCs. Current export structures, outside those of large companies, do not provide small producers with enough bargaining power, storing facilities and price management techniques to enable them to receive fair prices. Moreover lack of awareness of markets and other barriers may increase their costs.

Market intelligence and orientation can also have important bearing on trade and FDI policies. Bilateral/regional trade and investment agreements need to be pursued which may encourage forming of trade-investment nexus and forge value chains. Many country experiences show how domestic producers benefited from such agreements in developing successful value chains. ASEAN is a prime example.

The above discussed six interlinked capabilities are necessary for linking, upgrading and governing the value chains. Success stories of developing countries show that these capacities were required and built over time for countries to participate in GVCs. To a large extent, building these capacities, be it developing market intelligence, skills or infrastructure, requires initial financing in the short to medium term, but these capacities by improving competitiveness can, to a large extent, meet financial requirement of the economies in the long run through higher returns from trade and foreign investments.

6. SUMMARY AND CONCLUSIONS

Linking into GVCs is increasingly considered as the new development challenge by many policymakers, especially in developing countries. GVCs are expected to bring gains to the linked countries in terms of improved competitiveness, better access to global markets and expansion of production and jobs in these countries. However, it is not clear whether countries linked to GVCs are realizing these gains or not, mainly because the tools to measure a country's extent of participation in GVCs and distribution of incomes generated in GVCs across countries are limited. The rising share of intermediate products in total trade has challenged the use of traditional tools like export shares in assessing countries' competitiveness. Higher export shares may not necessarily imply higher competitiveness if exports contain a large proportion of imported intermediate products. In similar fashion, higher exports may not guarantee more domestic production and more jobs if domestic value added content of exports does not rise.

To address these issues and provide some measure of the extent of countries' participation and distribution of gains in GVCs, this paper uses value added analysis based on harmonized world input-output tables by WTO-OECD. Using this data set, value added exports of each country are estimated. Value added exports of a country differ from its gross exports as it nets out the foreign value added content in its exports and provides a measure of the extent of domestic value added created by exports.

Global value chains include the whole range of the organization, production and delivery of products from inception to use and recycling. Mostly these chains are controlled by TNCs, and they may begin in developing countries (where primary inputs are sourced) but end in developed/developing countries (where the branded final products are sold). In the process of fragmenting production processes, they boost network trade. However, they go much beyond network trade; therefore measures of a country's network trade may not be suitable indicator of its participation in GVCs. Foreign value added in GVCs measure only backward linkages of a country. But country's forward linkages, which measure the extent of domestic value added which enters exports of other countries, are equally important.

This article estimates backward linkages (foreign value added in exports) and forward linkages (domestic value added which enters other countries' exports) of each country and estimates countries' extent of participation in GVCs in terms of its share in total value added created by GVCs. The results show that share of OECD countries is around 61 per cent of total value added in GVCs; the share of the five BRICS countries is 14 per cent; and the NIEs 11 per cent. The shares of China and the United States are the highest (9 per cent) followed by Germany (8.7 per cent), Japan (4.5 per cent) and France, the United Kingdom and the Republic of Korea (4 per cent). However, forward linkages (domestic value added in other countries exports) are much stronger than backward linkages in case of the United States, Japan and the United Kingdom. China and the Republic of Korea, on the other hand, have stronger backward linkages, compared to forward linkages. The relative "value added gains" is therefore negative for China and the Republic of Korea. Other developing countries, like India, Viet Nam, Thailand, Malaysia and the Philippines also have less than one ratio of forward to backward linkage indicating negative net gains in terms of value added from GVCs. Exporters of primary products or commodities have naturally higher forward linkages compared to backward linkages as their exports are used as inputs in other countries' exports. However, these countries have low participation rates.

If creating more domestic value added, output, incomes and jobs from exports are the development objectives of industrial and trade policies, country experiences show that just linking into GVCs does not necessarily achieve these objectives. This paper identifies six interlinked capacities which need to be developed for successful integration into GVCs. These are informed producers; technical innovations; skill development; adequate infrastructure and finance; appropriate institutions and domestic regulations; and market orientation and market intelligence.

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UNCTAD-EORA Global Value Chain Database: methodology and further research agenda*

The objective of this note is to explain the methodology for compiling the UNCTAD-EORA Global Value Chain (GVC) database. The data are generated from the multi-region input-output table assembled by the EORA project. The computation for measuring trade in value added data follows the widely accepted procedure, as described in Koopman et al. (2010). The differences between the UNCTAD-EORA database and other attempts to measure trade in value added arise from the coverage, the method for compiling the input-output table and the treatment of "reflected domestic value added". This note concludes by highlighting challenges in interpreting the resulting, especially the issues arising from the prevalence of trade in capital goods (fixed assets) and cross-border flows of financial capital.

Key words: trade in value added; input-output analysis

1. Construction of the EORA multi-region input-output table

The UNCTAD-EORA GVC Database attempts to map the distribution of value added in global trade. It provide data on the distribution of value added in traded goods and services, income and employment generated by trade, and the link between global investment and the patterns of value-added trade. The database covers 187 countries and a broad range of industries.

The UNCTAD-EORA GVC Database is generated from the Eora multi-region input-output (MRIO) table.[1] The MRIO table is designed to trace the origin of imported goods and services. For both intermediate and final use, the MRIO table identifies the country and industry where the imported goods and services are produced. This structure of the MRIO table makes it possible

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[1] The Eora Project, originally funded by the Australian Research Council, is based at the University of Sydney. It has developed a world multi-region input-output database, which provides a time series of high resolution input-output tables with matching environmental and social satellite accounts for 187 countries. For further details, see http://www.worldmrio.com/

to model the relationship among all producers and consumers in the regions covered.

The following data sources are used to construct the EORA MRIO table:

i) Input-output tables and main aggregates data from national statistical offices
ii) Input-output compendia from Eurostat, IDE-JETRO and OECD
iii) United Nations National Accounts Main Aggregates Database
iv) United Nations National Accounts Official Country Data
v) United Nations Comtrade
vi) United Nations Service Trade Statistics Database

The starting points in compiling the MRIO table are the national supply and use tables. National supply and use tables are more useful than input-output tables as they provide information on both products and industries. The supply table provides information on the product categories produced by each domestic industry while the use table shows how goods or services in each category are used by an industry or final user. However, these tables are only available for a limited number of countries. Hence for the remaining countries, the EORA MRIO table makes use of traditional input-output tables, in which the product is identified with the industry.

National supply and use tables and input-output tables are linked through international trade statistics using import tables to obtain a MRIO table for the world. Industrial activities in each of the 187 economies are disaggregated into 25–500 industries, totalling over 15,000 industries for the world.

The initial table created by assembling input-output tables from different sources is invariably not balanced (i.e. the values of inputs and the output do not match) due to incomplete information.[2] Moreover, assembling data from different sources means that the table would have multiple estimates for the same flow, giving rise to conflicting data points.

[2] In the context of the input-output table, a table is said to be balanced when the sum of the values of inputs of an industry is equal to the value of its output. More generally, a social accounting matrix, in which an input-output table typically forms a part, is balanced if all receipts equal all expenditures for all the sectors (i.e. industries, households, government, etc.).

The EORA obtains a balanced and reconciled table as a solution to the constrained optimization problem. The MRIO table constructed from the best available input-output table for each country forms the initial estimate. The requirements that the table needs to be balanced and that certain values cannot be negative provide constraints to the range of values that the elements in the table can take. Furthermore, additional data provided by other sources also become "constraints" if they are not consistent with the initial table. Following an approach originally developed by Quandt (1958) and van der Ploeg (1982, 1984) a constrained optimization is set up so that the solution should be some compromise table that respects the initial estimates and also satisfy these constraints with as little deviation as possible. For the optimization exercise, a standard error is estimated for each data point based on the reliability of the data. These standard errors estimate heuristics were based on a study of the United Kingdom Supply Use table in which the published table was cross-checked against other available data to determine the reliability, and sources of error, in that table (Lenzen, Wood and Thomas Wiedmann, 2010). In general, larger values are taken to be more reliable than smaller values. Data from national statistical agencies are assumed to be more reliable than other sources. The ordering of data sources listed above largely corresponds with the data reliability assumed in assigning standard errors.[3] The standard deviations are set so as to "loosen" these constraints only as much as necessary to achieve a reconciled, globally balanced MRIO. The constrained optimization problem is solved using an algorithm that makes use of Quadratic Programming and a KRAS variant of the RAS method.[4]

The time series is constructed iteratively, starting with an initial year estimate (year 2000), balancing it with all the starting year constraints, and taking the solution as the initial estimate for the following year. In each year, all available data for that year (GDP totals, trade data, new I/O tables, interpolated I/O table estimates, and so on) are overlaid onto the initial estimate of that year, and the table is re-balanced by running a constrained optimization exercise.

[3] A large number of reliability and confidence reports are made available on the EORA website.

[4] See Lenzen et al. (2012), Geschke et al. (In review) and Lenzen et al. (2013) for details.

2. Deriving value added trade from the input-output table

In order to illustrate how data on trade in value added are generated, the discussion below focuses on the case of input-output tables.[5] As noted earlier, the EORA MRIO makes use of supply and use tables whenever they are available and industry-by-industry or commodity-by-commodity tables when supply and use tables are not available. The method for using supply and use tables in input-output analysis are explained in Lenzen and Rueda-Cantuche (2012).

An input-output table depicts the links between different industries through the use of intermediate inputs. It also shows the final uses of the output, and the distributions of the revenues to various factors of production. An input-output table for a single economy with *n* industries takes the form shown in figure 1.

The revenues of a given industry can be attributed to i) returns to capital; ii) returns to labour; and iii) costs of intermediate inputs. Returns to capital are, in the language of financial analysis, EBITDA. It is the portion of the revenues that are "returned" to those who have provided capital to the firm (i.e. shareholders, banks, etc.). In national accounts, they are referred to as "gross operating surplus". Returns to labour refer to the compensation for employees, i.e. salaries and wages. Intermediate inputs refer to goods and services produced by other firms that are subsequently used as inputs to the production process of the firm. Such distributions of revenues (or values) of the industries are represented in the first *n* columns in figure 1.

Figure 1. Structure of a single input-output table

	Intermediate use				Final demand	Gross output
	Ind. 1	Ind. 2	...	Ind. n		
Industry 1 Industry 2 : Industry n		***T***			***Y***	***X***
Imports		***M***				
Value added		***W***				
Gross input		***Z***				

[5] For an authoritative treatment of input-output analysis, see Miller and Blair (2010).

T is an n x n matrix representing the use of intermediate inputs:

$$T = \begin{pmatrix} t_{11} & \cdots & t_{1n} \\ \vdots & \ddots & \vdots \\ t_{n1} & \cdots & t_{nn} \end{pmatrix}$$

Each element represents the intermediate use of goods produced in industry *i* (*i*th row) by industry *j* (*j*th column). *Y* is an n x 1 vector $Y = (y_1, y_2, \ldots y_n)^T$ showing final demand. Element represents the final demand for the output of industry *i*. Final demand may be disaggregate into various components such as private consumption, government consumption, capital formation, exports, inventory accumulation, etc. *X* is an n x 1 vector, $X = (x_1, x_2, \ldots x_n)^T$ with the *j*th element representing the output of industry *i*. The value added (i.e. the sum of returns to labour and capital) is represented by the 1 × n vector, $W = (w_1, w_2, \ldots w_n)$. Imported intermediate inputs are represented by the 1 X n vector, $M = (m_1, m_2, \ldots m_n)$. *Z* is a 1 x n vector representing the gross input. The gross input of industry *j* is the sum of the elements in the *j*th column of T, M and W. The value of inputs must be equal to the value of its output, implying that $X = Z^T$.

In an input-output table, each industry produces a single output. Therefore, goods and services produced are identified with the industry. Therefore the output of industry *j* will sometimes be referred to as "good j" in the discussion below.

It is worth emphasizing that capital goods – sometimes referred to as investment goods – are not considered as intermediate inputs. Today, for instance, there are hardly any industries that do not make use of a PC. But input-output tables do not trace the link (or value chain) between the electronics industry that manufacture PCs with all the industries that use them. The same issue arises for any fixed assets (e.g. Infrastructure, plant, machinery, equipment, etc.). [6]

[6] The distinction between intermediate use and capital formation, which counts as final use, can be subtle. For instance, most countries consider expenditures on software (costing more than a certain threshold) as capital formation. On the other hand, the payment of license fees is not usually considered as capital formation. Thus, if a firm purchased software products with one-off payment, it would be considered fixed capital formation. But if the firm paid a rental fee for the use of a software product for a certain period, it would be considered as intermediate input of service. As the EORA MRIO makes use of national input-output tables provided by national data sources, this distinction depends to the criteria adopted by the data providers.

Leaving aside the issue of capital goods, the difficulty in assessing the domestic valued added in the output of a given industry arises from the use of intermediate inputs. It is not enough to consider how much imported intermediate inputs are used in each industry, but it is also necessary to take into account imported intermediate inputs used by domestic industries supplying intermediate goods. By imposing certain assumptions, it is possible to manipulate the input-output to derive domestic value added in each industry's output and, by extension, in its exports. For illustration, the procedure is illustrated with the single economy case first.

The following assumptions are made in deriving domestic valued added in exports from an input-output table. First, the underlying technology takes the form of a Leontief function, which means that inputs are employed in fixed proportions. This assumption also implies constant returns to scale, i.e. doubling of inputs requires doubling of inputs. Second, the output of a given industry is homogenous, irrespective of the target market. Moreover, required inputs are the same be they for intermediate goods or final goods. These assumptions are quite restrictive. The first assumption is implausible for knowledge intensive industries, which are characterized by increasing returns to scale. As for the second assumption, agricultural producers in developing countries, for example, would have different produce (and associated cost structure) depending on the target market. Produce targeted at export markets are likely to differ from those for the domestic market. Although these assumptions are necessary to make the analysis possible, the nature of these assumptions needs to be borne in mind when interpreting the results.

The method for working out domestic value added is as follows. First, work out how much output from industry *i* is required as intermediate input to produce one unit of good j. Once we know how much intermediate inputs are required, then the share of value added in gross input for each industry *i* can be used to compute the total domestic value added in good j.

Aggregate demand for industry *i*'s output is intermediate demand plus final demand. Using the notations above, the relationship can be written as:

$$x_i = t_{i1} + t_{i2} + \dots t_{in} + y_i \dots \quad (1)$$

Input-output analysis assumes the Leontief production function for all the industries, which implies that the demand for intermediate inputs is a linear function of the output. Thus the equation in (1) can be re-written as:

$$x_i = a_{i1} x_1 + a_{i2} x_2 + \dots a_{in} x_n + y_i \dots \quad (2)$$

Where is a coefficient that represents how much output of industry *i* is used as intermediate input for producing one unit of good *j*. The relationship in (2) for can denoted using the matrix notation as:

A simple matrix manipulation yields:

$X = AX + Y$,

where $L = (I - A)^{-1}$. This equation links the final demand (which includes exports) with the output of the industries. The element of the matrix L, l_{ij}, shows how much output of industry *i* is required to meet one unit of final demand for good j. This matrix is useful because it can be used to link exports to domestic value added. Multiplying the matrix *L* with a diagonal matrix of exports,

$$E = \begin{pmatrix} e_1 & \cdots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \cdots & e_n \end{pmatrix} \dots ,$$

where is export of industry j gives

$$LE = \begin{pmatrix} l_{11} e_1 & \cdots & l_{1n} e_n \\ \vdots & \ddots & \vdots \\ l_{n1} e_1 & \cdots & l_{nn} e_n \end{pmatrix}.$$

The element of this matrix, $l_{ij}\, e_j$, shows how much demand for the output of industry *i* is generated by export of good *j*.

Let the 1 x n vector = $(v_1, v_2, \cdots v_n$, where $v_j =$. Element v_j is the domestic value added share, which shows how much returns are earned by labour and capital in that industry for producing one unit of good *j*. Then the domestic value added, denoted by DVA is given by the row vector *V* with the product of matrices *LE*:

DVA = *VLE*.

DVA is a 1 x n vector, with the *j*th $\frac{w_j}{z_j}$ element representing the domestic value added in the export of good *j*. The *j*th element of DVA takes the form: $\sum_i v_i l_{ij} e_j$. Given the gross value of export of good *j*, e_j, the term $l_{ij}e_j$ gives how much output of industry *i* is required as intermediate input. Given the value of the intermediate input purchased from industry *i*, the term, $v_i l_{ij} e_j$, gives the domestic value added contributed by industry *i* for the production of e_j. Summing them over all industries gives the domestic valued added in the export of good *j*.

In the single economy input-output table above, all imports and exports are bundled together irrespective of the source/destination economy. In the EORA MRIO table, all the destinations of exports and sources of imports are explicitly identified. The MRIO table can be illustrated with the case of two economies in figure 2.

Figure 2. Structure of a MRIO table: a two-economy example

		Intermediate use						Final demand		Gross output
		Country 1			Country 2			Country 1	Country 2	
		Ind. 1	Ind. 2	... Ind. n	Ind. 1	Ind. 2	... Ind. n			
Country 1	Industry 1 Industry 2 : Industry n	T_{11}			T_{12}			Y_{11}	Y_{12}	X_1
Country 2	Industry 1 Industry 2 : Industry n	T_{21}			T_{22}			Y_{21}	Y_{22}	X_2
Value added		W_1			W_2					
Gross input		Z_1			Z_2					

As Koopman et al. (2012) show, the manipulation of the matrices to derive domestic value added in exports is much like the single economy case illustrated above. The matrix of the intermediate inputs T is now 2n x 2n matrix of the form:

$$T = \begin{pmatrix} T_{11} & T_{12} \\ T_{21} & T_{22} \end{pmatrix},$$

T_{21} represents exports from country 1 used in country 2 as intermediate inputs. Likewise, T_{21} shows exports from country 2 used in country 1 as intermediate inputs. Matrices and represent the use of intermediate inputs supplied by domestic industries. The value added in industries of country r is represented by the 1 × n vector V_S (s = 1, 2).

A 2n x 2n matrix of coefficients corresponding to matrix T can be written as

$$A = \begin{pmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{pmatrix}.$$

The column vector of final demand Y is given by adding the final demand in the two economies:

$$Y = \begin{pmatrix} Y_{11} + Y_{12} \\ Y_{21} + Y_{22} \end{pmatrix},$$

and the gross output, X is

$$X = \begin{pmatrix} X_1 \\ X_2 \end{pmatrix},$$

From those vectors and matrices, the Leontief inverse L can be computed as before, which can be written as

$$L = \begin{pmatrix} L_{11} & L_{12} \\ L_{21} & L_{22} \end{pmatrix}.$$

Koopman et al. (2012) derive value-added shares of source countries in trade flows as

$$VAT \equiv VL\hat{E} = \begin{pmatrix} V_1 L_{11} \hat{E}_1 & V_1 L_{12} \hat{E}_2 \\ V_2 L_{21} \hat{E}_1 & V_2 L_{22} \hat{E}_2 \end{pmatrix},$$

where V_S is the domestic valued added share obtained by taking the ratio of the elements of the vectors W_S and Z_S. $\hat{E}$ is a 2n x 2n diagonal matrix where the element is the total export of industry *i* for country 1 and the element $e_{n+i\ n+i}$ is the total export of industry *i* from country 2.

The first column of this matrix shows how industries in countries 1 and 2 contributed to the export of industry 1 in country 1. The sum of the first *n* elements of this column is the domestic value added. The sum of the bottom *n* elements of the column represents, in this two-economy example, foreign value added. The rows of this matrix represent how much each industry's value added is contained in the exports of other industries at home and abroad.

Koompan et al. (2012) note the difference between the two concepts, "domestic/foreign content of exports" and "value added exports". The difference arises from the fact that some exports of a country are used as intermediate goods abroad and may return to the original country. This is referred to as "reflected domestic value added" in Koopman et al. (2010).Value added trade, in principle, should consider only valued added exported and "absorbed" abroad. However, given the complexity of the model and calculations involved, the UNCTAD Eora GVC data do not make adjustments for such "reflected domestic value added". Therefore the measure is in fact that of "domestic/ foreign content of exports".

3. What are the differences between the UNCTAD-EORA GVC Database and the data used in other studies?

The growing importance of GVCs has led to the realization that the way international trade has traditionally been accounted for may no longer be sufficient. A growing body of work exists aimed at netting out the "double-counting" effect of GVCs on global trade, determining value added in trade, and mapping how value added moves between countries along GVCs before final consumption of end-products. Several initiatives have compiled international input output tables. Key initiatives are listed in table 1.

Table 1. Efforts to map GVCs

UNCTAD-EORA GVC Database	UNCTAD/ EORA	National Supply-Use and I-O tables, and I-O tables from Eurostat, IDE-JETRO and OECD	**187**	**25-500** depending on the country	**1990-2010**	"Meta" database drawing together many data sources and interpolating missing points to provide broad and consistent coverage, even of data-poor countries
Inter-Country-Input-Output model (ICIO)	OECD/WTO	National I-O tables	40	18	2005, 2008, 2009	Based on national input-output tables harmonised by the OECD
Asian International I-O tables	Institute of Developing Economies (IDE-JETRO)	National accounts and firm surveys	10	76	1975,1980, 1985,1990, 1995,2000, 2005	US-Asian tables. Also bilateral tables, including China-Japan.
Global Trade Analysis Project (GTAP)	Purdue University	Contribu-tions from individual researchers and ogani-sations.	129	57	2004, 2007	Non-official dataset. Includes data on areas such as energy volumes, land use, CO2 emissions and international migration.
World Input-Output Database (WIOD)	Consortium of 11 institutions. EU funded.	National Supply-Use tables	40	35	1995-2009	Based on official National Accounts statistics. Uses end-use classification to allocate flows across partner countries

The joint OECD-WTO project is recognized as a comprehensive effort to set a common standard for the estimation of value added in trade. In pursuing methodological soundness, it sacrifices coverage in terms of countries, industries and time period. In contrast, the primary objective of the UNCTAD-EORA GVC Database is extended coverage to provide a *developing country perspective*. This explains the choice of the MRIO approach, the key innovation of which is the use of algorithms that put together unrelated data and minimize accounting

discrepancies irrespective of the statistical robustness of underlying data, allowing the inclusion of data-poor countries.

Apart from GTAP, all the approaches listed use the input-output analysis as described in this paper. Nevertheless, estimates for the same measure could differ, sometimes significantly. One reason is the treatment of "reflected domestic value added". OECD/WTO study takes the value of re-imports into account when estimating valued added trade, but the much wider coverage of the UNCTAD-EORA model makes it infeasible. More importantly, the balancing of the input-output table yields different results depending on the method or algorithm adopted.

4. Interpretation of the data and further work

Given the methodology involved, it is evident that the estimates for value added trade generated by various studies are all very rough approximations. They provide additional insights to complement analyses based on traditional gross trade data, but it must be borne in mind that the generation of such data involves a number of very strong simplifying assumptions, vis-a-vis the technology governing the relationship between inputs and outputs.

Perhaps a more significant issue is the nature of the interconnected world that makes the interpretation of the data complicated, especially from a development perspective. Valued added can be gauged in the sense of gross domestic product or in the sense of gross national income. The UNCTAD-EORA GVC Database (and all other initiatives) measures valued added in the sense of gross domestic product, implying that all the profits of foreign affiliates are considered as "domestic" valued added.

Moreover, the role of capital goods in today's industry and international trade create further complications. The mining and manufacturing industries today are increasingly capital intensive, requiring large expenditures on industrial machinery. Firms in developing countries, be they foreign or domestically owned, import industrial machinery from relatively few – mostly industrialized – countries.

Such imported capital goods give rise to an awkward situation when we assess trade in value added. If a manufacturer imports components, assemble them and then export, the value of these imported components would show up as foreign valued added in our analysis. On the other hand, if the manufacturer imports industrial machineries to assemble these components, the value of these machineries does not count as foreign valued added. In fact, it would be part of "domestic value added". In effect, the cost of these machineries is covered by the returns to capital, i.e. domestic value added. After all, the "D" in EBITDA refers to "depreciation" which covers the cost of the consumption of fixed assets.

In fact, the problem is not confined to imported capital goods. If imported materials and components are used to produce capital goods, which are subsequently used in domestic production, the analysis of trade in value added would not be able to trace the value chain of such imported intermediate inputs. For instance, suppose that a foreign produced electronic component is imported to produce a PC. If this PC is exported, the analysis of trade in value added would reveal that the value of the exported PC is partly accounted for by the foreign produced component. However, if this PC is used as equipment in production of another exported good, then the analysis is no longer able to trace the valued accounted for by the imported component. To take another example, a mining operation often requires transport infrastructure to ship extracted minerals. It is plausible that imported materials and components are used to construct such infrastructure. But the analysis of the valued added of exported minerals would not take into account the contributions of imported materials for building the necessary infrastructure.

Therefore, a mining or manufacturing industry in a developing country might exhibit a large amount of "domestic value added" but part of it may leave the economy as payment for imported capital goods. If the firm is foreign owned or taking loans from abroad, the amount of "domestic valued added" that is not earned by domestic residents would be even larger. Thus, if the objective is to analyse how much domestic workers and shareholders are benefitting and capturing the value from international trade, then valued added data need to be looked at in conjunction with other measures such as flows

of financial capital and trade in capital goods. From a development perspective, domestic labour content of exports might be a simpler and clearer measure of the way developing countries are benefitting from international trade.

For developed countries where more sophisticated data are available, more research would be needed to trace the use of capital inputs in production processes. An example of such effort is the EU KLEMS project. Such data combine with an appropriate methodology would provide us with a more elaborate depiction of global value chains.

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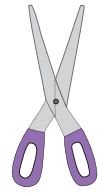

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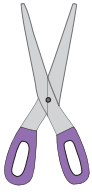

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