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GLOBAL VALUE CHAINS: INVESTMENT AND TRADE FOR DEVELOPMENT



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GLOBAL VALUE CHAINS: INVESTMENT AND TRADE FOR DEVELOPMENT

CHAPTER IV



INTRODUCTION

Global trade and FDI have grown exponentially over the last decade as firms expanded international production networks, trading inputs and outputs between affiliates and partners in GVCs.

About 60 per cent of global trade, which today amounts to more than \$20 trillion, consists of trade in *intermediate* goods and services that are incorporated at various stages in the production process of goods and services for final consumption. The fragmentation of production processes and the international dispersion of tasks and activities within them have led to the emergence of borderless production systems – which may be sequential chains or complex networks and which may be global, regional or span only two countries. These systems are commonly referred to as global value chains (GVCs).

GVCs are typically coordinated by transnational corporations (TNCs), with cross-border trade of production inputs and outputs taking place within their networks of affiliates, contractual partners (in non-equity modes of international production, or NEMs; see *WIR11*) and arm's-length suppliers. The phenomenon of international production driven by TNCs engaging in efficiency-seeking FDI is not entirely new – the theme of *WIR93* was integrated international production – however, since around 2000, global trade and FDI have both grown exponentially, significantly outpacing global GDP growth, reflecting the rapid expansion of international production in TNC-coordinated networks.

GVCs lead to a significant amount of *double counting* in global trade. Raw material extracted in one country may be exported first to an affiliate in a second country for processing, then exported again to a manufacturing plant in a third country, which may then export the manufactured product to a fourth for final consumption. The value of the raw material counts only once as a GDP contribution in the original country but is counted several times in world exports.¹

Recent advances in trade statistics aim to identify the double counting in gross trade figures and show where value is created in global production

chains. Figure IV.1 shows a simplified example of *value added trade*.

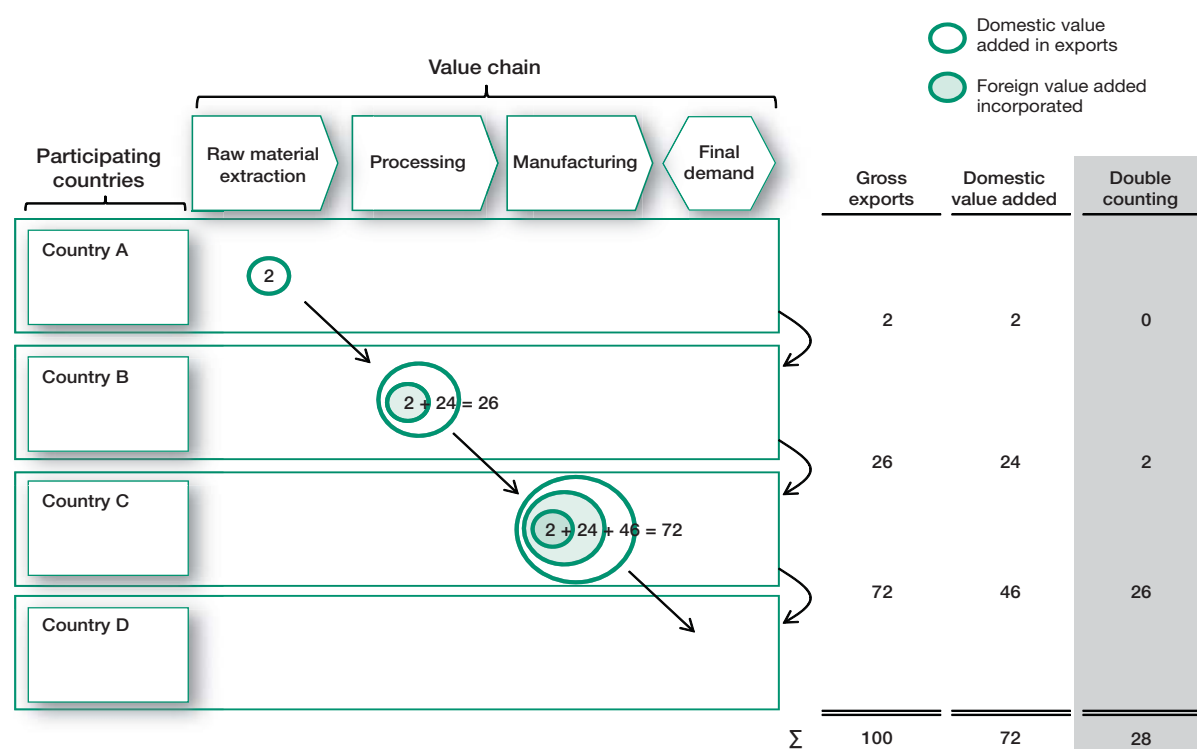
Value added trade statistics can lead to important policy insights on GVCs, trade, investment and development. For *WIR13*, in a collaborative effort with the Eora project,² UNCTAD built a value added trade dataset: the UNCTAD-Eora GVC Database (box IV.1).³ The database will be used in this chapter to assess the patterns, drivers and determinants, development impact and policy implications of value added trade and investment.

GVCs are a concept taken up by different schools of economic theory, development studies and international business disciplines, with each strand of scholars adopting different definitions and boundaries of analysis. Table IV.1 illustrates a number of important contrasts. This chapter will attempt to bring together the various schools of thought, borrowing concepts from different disciplines and adding new cross-disciplinary insights.

UNCTAD's research objectives in this report are to demonstrate how GVCs constitute the nexus between investment and trade, to show the importance of GVCs in today's global economy and especially their weight in developing countries, to provide evidence for the impact of GVC participation in developing countries, and to make concrete recommendations to help policymakers maximize the benefits of GVC participation for economic growth and development while minimizing the associated risks.

To this end, in the remainder of this chapter, Section A describes GVC patterns at the global level and in developing countries specifically, and shows how FDI and TNC activities shape such patterns – based on (and building on) value added trade data. Section B borrows more from other GVC disciplines and international business theory to discuss firm-level drivers of GVC activity and locational determinants, which are important for policymakers in understanding the factors influencing country-level GVC participation. Section C describes the development impacts of GVC participation, including the GDP contribution of GVCs (direct

Figure IV.1. Value added trade: how it works



Source: UNCTAD.

and indirect through business linkages), the employment generation and working conditions in GVCs, the potential for technology dissemination and skill building through GVCs, and the social and environmental impacts of GVCs, as well as the potential contribution of GVCs to upgrading and long-term industrial development. Finally,

Section D discusses policy implications, proposing a “GVC policy framework” focusing on the role of GVCs in development strategy, on the synergies between trade and investment policies, on trade and investment promotion, and on mainstreaming sustainable development and inclusive growth in GVC policies.

A. GVCs and patterns of value added trade and investment

1. Value added trade patterns in the global economy

GVCs cause “double counting” in global gross trade figures. This is a growing phenomenon as most countries increasingly participate in GVCs. Only the domestic value added in exports contributes to countries’ GDP.

At the global level, the average foreign value added in exports is approximately 28 per cent (figure IV.2). That means, roughly, that about \$5 trillion of the \$19 trillion in 2010 world exports of goods and services has been contributed by foreign

countries for further exports and is thus “double counted” in global trade figures.⁴ The remaining \$14 trillion is the actual value added contribution of trade to the global economy (or about one fifth of global GDP).

These figures differ significantly by country and by industry, with important policy implications:

- At the *country* level, foreign value added in exports measures the extent to which the GDP contribution of trade is absorbed by other countries upstream in the value chain, or the extent to which a country’s exports are

Box IV.1. International efforts to map GVCs and the UNCTAD-Eora GVC Database

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 aims to net out the “double-counting” effect of GVCs on global trade, determine value added in trade, and map how value added moves between countries along GVCs before final consumption of end-products. Value added in trade can be estimated on the basis of international input-output (I-O) tables that illustrate the economic interactions between countries. To date, several initiatives have sought to compile intercountry I-O tables using different methodologies. A selection of the main initiatives appears in box table IV.1.1.

Box table IV.1.1. Selected initiatives mapping value added in trade

Project	Institution	Data sources	Countries	Industries	Years	Comments
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 sources and interpolating missing points to provide broad, 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 I-O tables harmonized 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	United States-Asia tables also bilateral tables, including China-Japan
Global Trade Analysis Project (GTAP)	Purdue University	Contributions from individual researchers and organizations	129	57	2004, 2007	Unofficial dataset; includes data on areas such as energy volumes, land use, carbon dioxide 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 UNCTAD-Eora GVC Database uses I-O tables to estimate the import-content ratio in exportable products and value added trade. Its value added trade data are derived from the Eora global multi-region input-output (MRIO) table. The Eora MRIO brings together a variety of primary data sources including national I-O tables and main aggregates data from national statistical offices; I-O compendia from Eurostat, IDE (Institute of Developing Economies)–JETRO (Japan External Trade Organization) and OECD; national account data (the UN National Accounts Main Aggregates Database; and the UN National Accounts Official Data); and trade data (the UN Comtrade international trade database and the UN ServiceTrade international trade database). Eora combines these primary data sources into a balanced global MRIO, using interpolation and estimation in some places to provide a contiguous, continuous dataset for the period 1990–2010. The Eora MRIO thus builds on some of the other efforts in the international community. Accompanying every data point in the results provided on the Eora website (www.worldmrio.com) is an estimate of that data point’s standard deviation, reflecting the extent to which it was contested, interpolated, or estimated, during the process of assembling the global MRIO from constituent primary data sources. For more details on the Eora database, see the Technical note on the UNCTAD-Eora GVC Database in the database launch report “GVCs and Development”, available at http://unctad.org/en/PublicationsLibrary/diae2013d1_en.pdf (pp. 26–30).

The joint OECD-WTO project (see box table) is recognized as a comprehensive effort to set a common standard for the estimation of value added in trade. Placing significant emphasis on methodology, it necessarily sacrifices some coverage (of countries, industries and time series) for statistical rigor. 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 allow the use of different data sources and types while minimizing accounting discrepancies, enabling the inclusion of data-poor countries.

Source: UNCTAD.

Table IV.1. Perspectives on GVCs

	International Business “Firm perspective”	Economics “Country perspective”
Defining concepts	<ul style="list-style-type: none"> GVCs are defined by <i>fragmented</i> supply chains, with internationally dispersed tasks and activities <i>coordinated</i> by a lead firm (a TNC). 	<ul style="list-style-type: none"> GVCs explain how exports may incorporate imported inputs; i.e. how exports include foreign and domestically produced <i>value added</i>.
Scope	<ul style="list-style-type: none"> GVCs are present predominantly in industries characterized by such supply chains, with typical examples including electronics, automotive and textiles (although the scope is widening to agriculture and food and offshore services, among others). 	<ul style="list-style-type: none"> GVCs and value added trade, by design and by the necessities of statistical calculation, encompass <i>all trade</i>; i.e. all exports and imports are part of a value chain.
Role of investment and trade	<ul style="list-style-type: none"> Investment and trade are complementary but alternative modes of international operation for firms; i.e. a firm can access foreign markets or resources by establishing an affiliate or through trade. 	<ul style="list-style-type: none"> Investment is needed to build export capacity (i.e., it creates the factors of production required to generate value added exports); both investment and value added in exports are GDP contributors.

Source: UNCTAD.

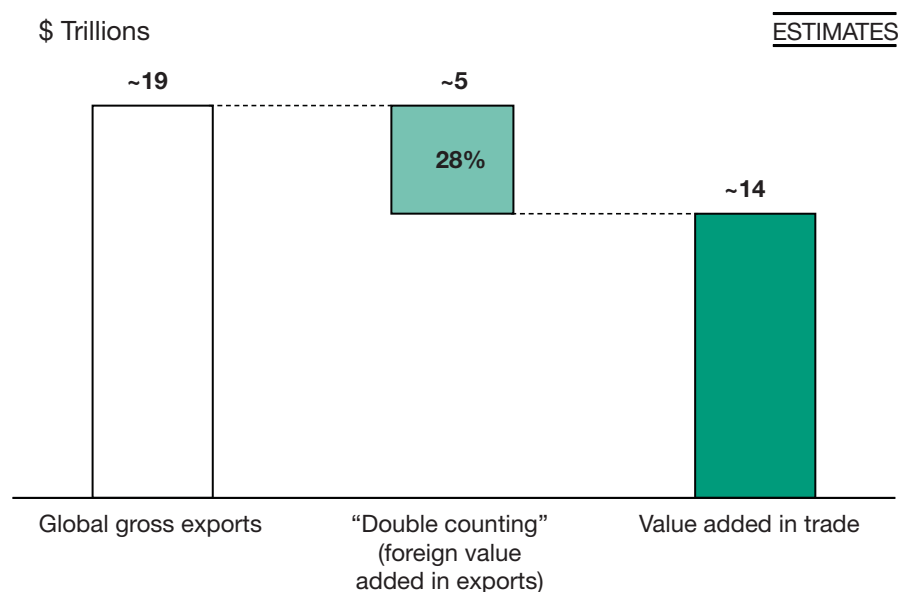
dependent on imported content. It is also an indication of the level of vertical specialization of economies: the extent to which economic activities in a country focus on particular tasks and activities in GVCs.

- At the *industry* level, the average foreign value added is a proxy for the extent to which industry value chains are segmented or “fine-sliced” into distinct tasks and activities that generate trade, compounding the

double-counting effect. This is important for policymakers in designing, for example, industrial development, trade and investment promotion policies.

Developed countries, as a whole, at 31 per cent have a higher share of foreign value added in exports than the global average (figure IV.3); i.e. the import dependence of exports in those countries appears higher. However, this picture is distorted by the weight in global figures of internal trade within

Figure IV.2. Value added in global trade, 2010



Source: UNCTAD-Eora GVC Database, UNCTAD estimates.

Box IV.2. Understanding value added trade data and indicators

A country's exports can be divided into domestically produced value added and imported (foreign) value added that is incorporated into exported goods and services. Furthermore, exports can go to a foreign market either for final consumption or as intermediate inputs to be exported again to third countries (or back to the original country). The analysis of GVCs takes into account both foreign value added in exports (the *upstream* perspective) and exported value added incorporated in third-country exports (the *downstream* perspective). The most common indicators, which will also be used in this report, are as follows:

1. **Foreign value added** (foreign value added as a share of exports) indicates what part of a country's gross exports consists of inputs that have been produced in other countries. It is the share of the country's exports that is not adding to its GDP.^a
2. **Domestic value added** is the part of exports created in-country, i.e. the part of exports that contributes to GDP. The sum of foreign and domestic value added equates to gross exports. Domestic value added can be put in relation to other variables:
 - a. As a share of GDP, it measures the extent to which trade contributes to the GDP of a country.
 - b. As a share of global value added trade (the "slice of the value added trade pie"), it can be compared with a country's share in global gross exports or its share in global GDP.
3. **GVC participation**^b indicates the share of a country's exports that is part of a multi-stage trade process, by adding to the foreign value added *used* in a country's own exports also the value added *supplied* to other countries' exports. Although the degree to which exports are used by other countries for further export generation may appear less relevant for policymakers, because it does not change the domestic value added contribution of trade, the participation rate is nonetheless a useful indicator of the extent to which a country's exports are integrated in international production networks. It is thus helpful in exploring the trade-investment nexus.

The GVC participation rate corrects the limitation of the foreign and domestic value added indicators in which countries at the beginning of the value chain (e.g. exporters of raw materials) have a low foreign value added content of exports by definition. It gives a more complete picture of the involvement of countries in GVCs, both upstream and downstream.

A country's GVC participation, measured as a share of exports, effectively assesses the *reliance* of exports on GVCs. In this sense, it is also an indicator of how much hypothetical "damage" to GVCs (and global GDP) would occur if a country's exports are blocked or, alternatively, it represents the *vulnerability* of the GVC to shocks in the respective country.

GVC indicators can also be used to assess the extent to which *industries* rely on internationally integrated production networks. Data on value added trade by industry can provide useful indications on comparative advantages and competitiveness of countries, and hence form a basis for development strategies and policies. A number of complex methods have been devised in the literature to measure GVC length.^c This report will use a simplification device by looking at the degree of double counting in industries, which, conceptually, can serve as a rough proxy for the length of GVCs.

Source: UNCTAD.

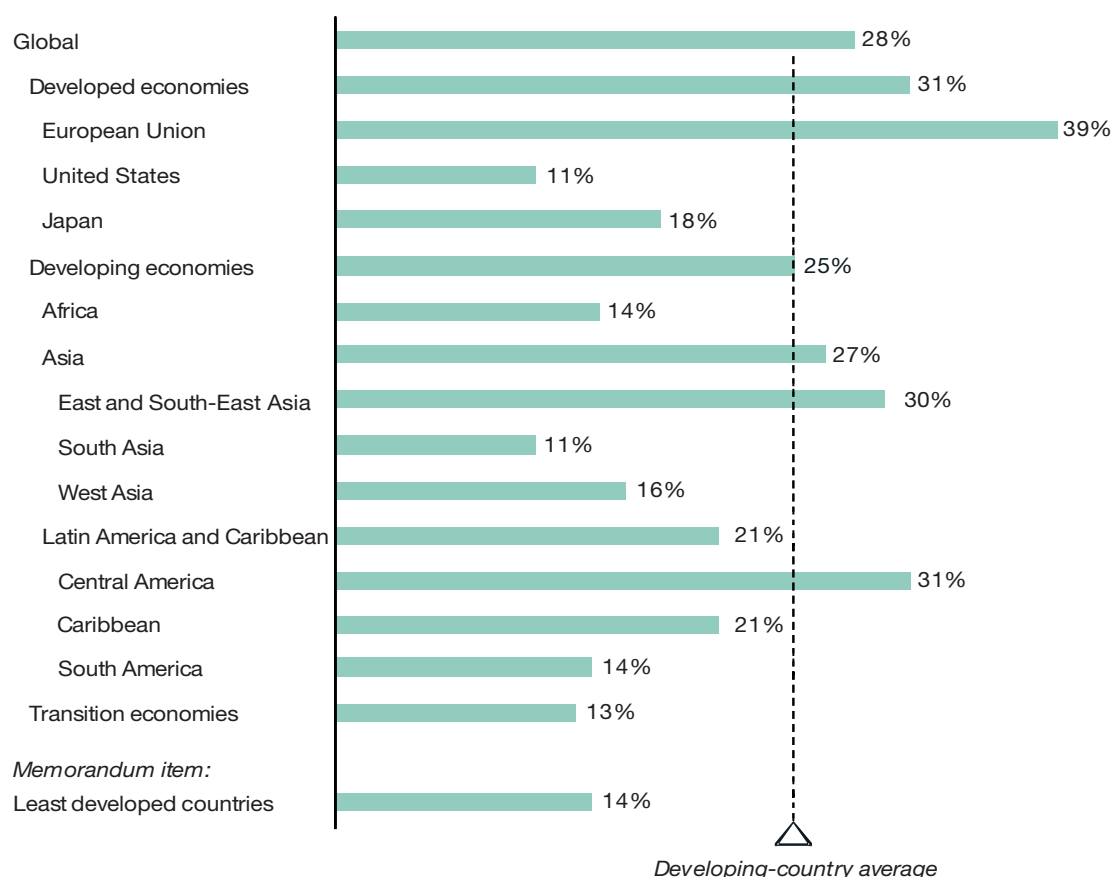
Note: Notes appear at the end of this chapter.

the highly integrated EU economy, which accounts for some 70 per cent of EU-originated exports. Japan and the United States show significantly lower shares of such "double counting".

Thus, while developing countries (25 per cent) have a lower share of foreign value added than the world average (28 per cent), their foreign value added share is significantly higher than in the United States and Japan – or than in the EU, if only external trade is taken into account. Among developing economies, the highest shares of

foreign value added in trade are found in East and South-East Asia and in Central America (including Mexico), where processing industries account for a significant part of exports. Foreign value added in exports is much lower in Africa, West Asia, South America and in the transition economies, where natural resources and commodities exports with little foreign inputs tend to play an important role. The lowest share of foreign value added in exports is found in South Asia, mainly due to the weight of services exports, which also use relatively fewer foreign inputs.

Figure IV.3. Share of foreign value added in exports, by region, 2010



Source: UNCTAD-Eora GVC Database.

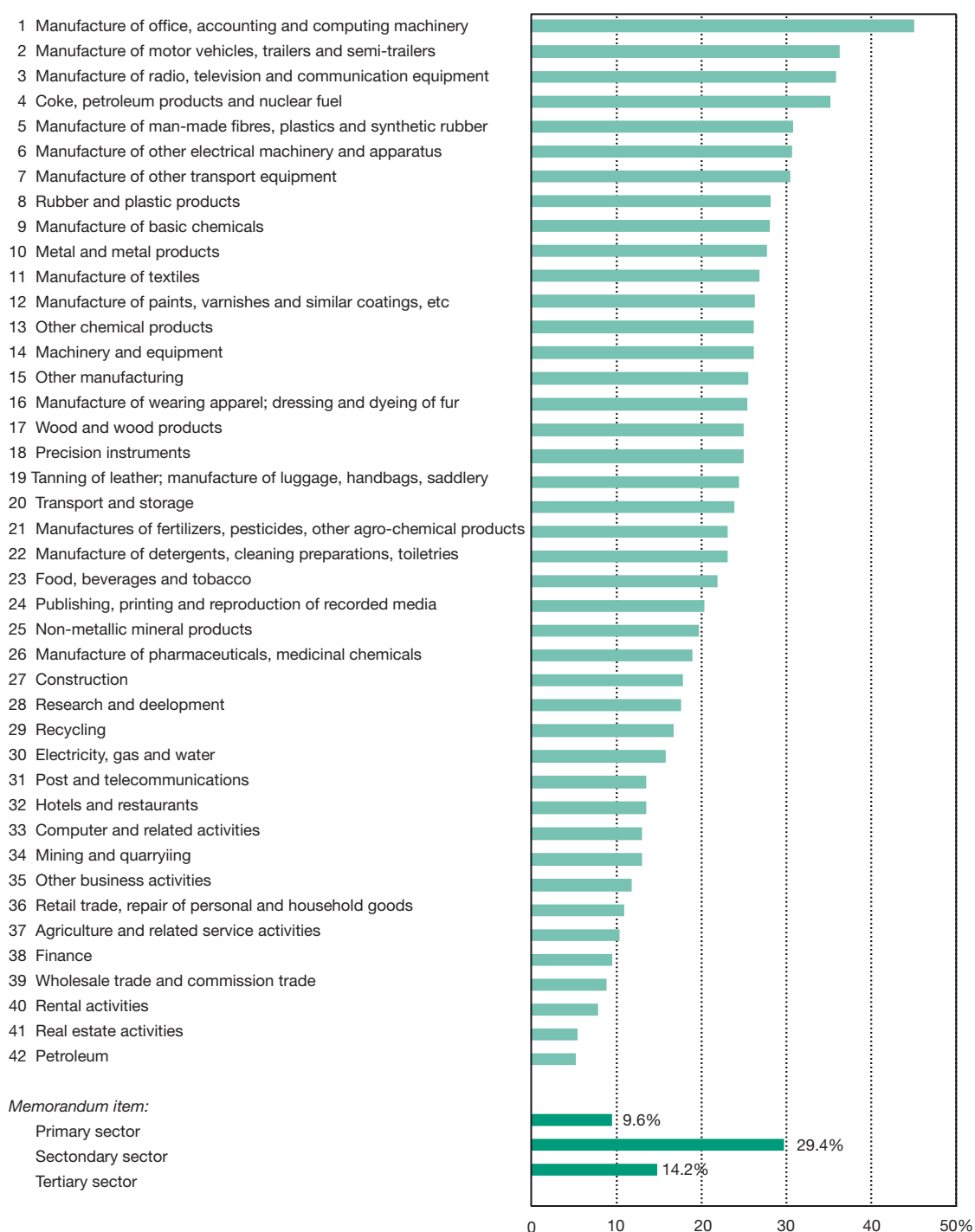
The average foreign value added share of exports and the degree of double counting in global exports of an industry provide a rough indication of the extent to which industries rely on internationally integrated production networks, as it proxies the extent to which intermediate goods and services cross borders until final consumption of the industry's output.

Traditionally, a select number of manufacturing industries have been at the forefront of value chain segmentation ("fine-slicing" of value chains) and of associated trends such as outsourcing and offshoring. The electronics and automotive industries, where products can be broken down into discrete components that can be separately produced, easily transported and assembled in low-cost locations, have led the way in shaping GVCs and consequently rank highest by share of foreign value added in trade (figure IV.4). A number of industries that incorporate and process outputs from extractive industries and traded commodities

(e.g. petroleum products, plastics, basic chemicals) follow closely behind. The extractive industries themselves naturally rank much lower as they require little imported content of exports apart from some services. Foreign value added in exports is thus not a fully fledged indicator of the GVC complexity of industries; extractive industries are clearly a fundamental "starting point" of many GVCs, not because of their use of foreign value added, but because they constitute value added inputs in many other industries' exports. Similarly, services industries – e.g. business services, finance, utilities – also rank low in terms of imported content of exports as they use fewer intermediate inputs and their involvement in GVCs typically occurs through value added incorporated in exported manufactured goods.

Clearly, GVCs do not equate with industries. A value chain for a given product may incorporate value added produced by many different industries (e.g. manufactured products incorporate value added

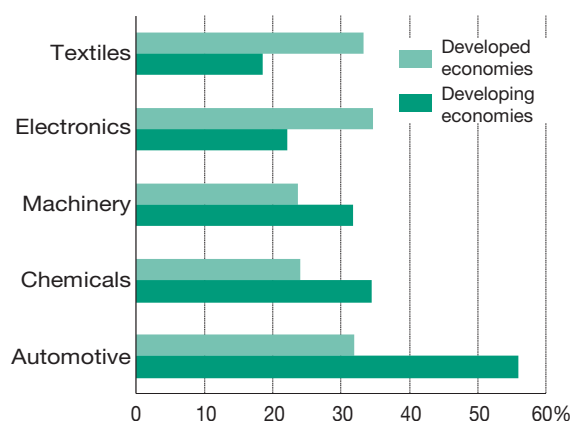
Figure IV.4. Share of foreign value added in exports, selected industries, 2010



Source: UNCTAD-Eora GVC Database.

Note: Illustrative list of industries selected based on significance in GVCs, at various levels of industry classification.

Figure IV.5. Share of foreign value added in exports, developed and developing economies, selected industries, 2010



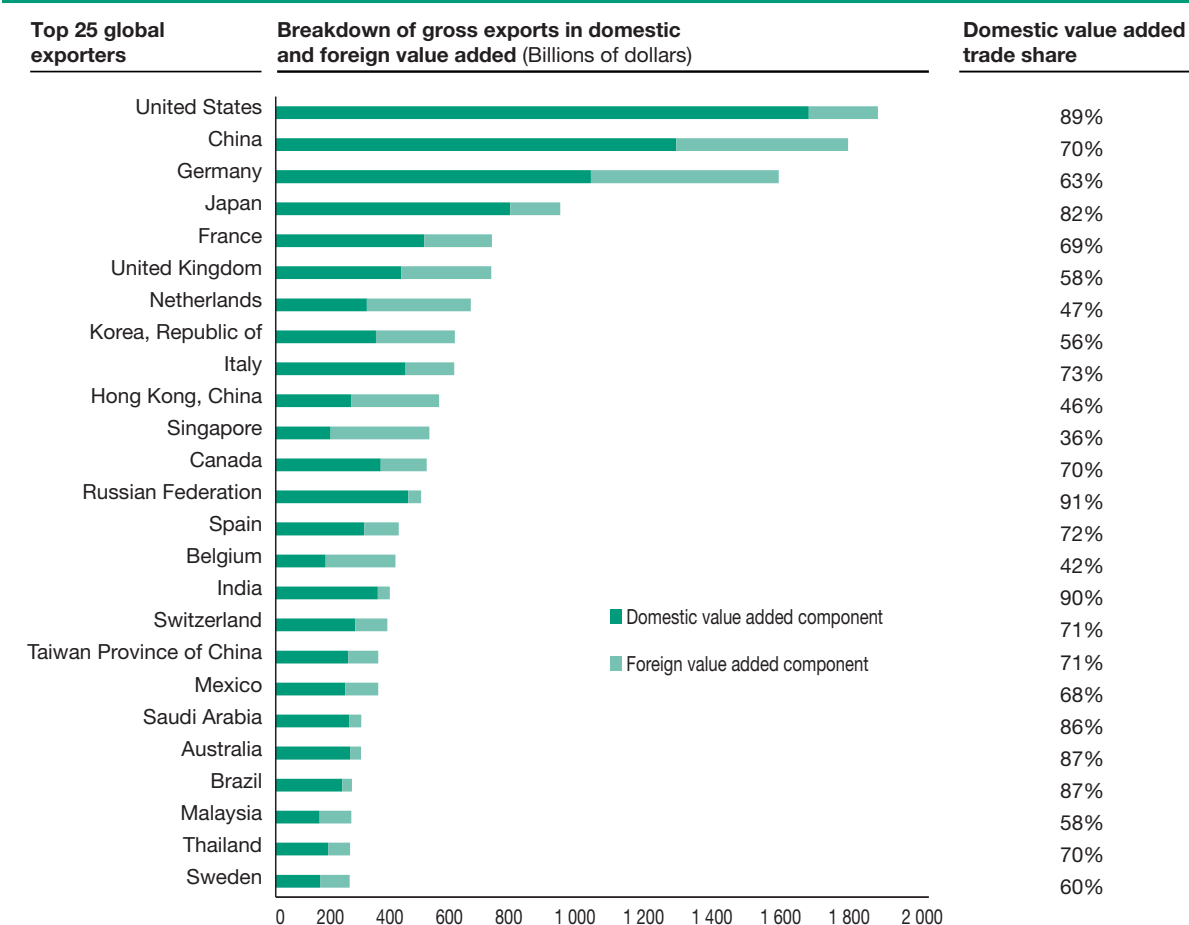
Source: UNCTAD-Eora GVC Database.

from services industries). The global average shares by industry of foreign value added ignore the fact that each industry may be part of and contribute to many different value chains.

Global industry averages also disguise significant differences by country or region (figure IV.5). Foreign value added shares in the textile industry are much higher in developed than in developing countries, confirming that the latter provide much of the semi-finished inputs used by developed-country exporters. Electronics is another industry in which developed countries import a greater share of the value added in their exports. In contrast, in machinery, chemicals and the automotive industry, developing countries tend to use more foreign inputs for the production of their exports.

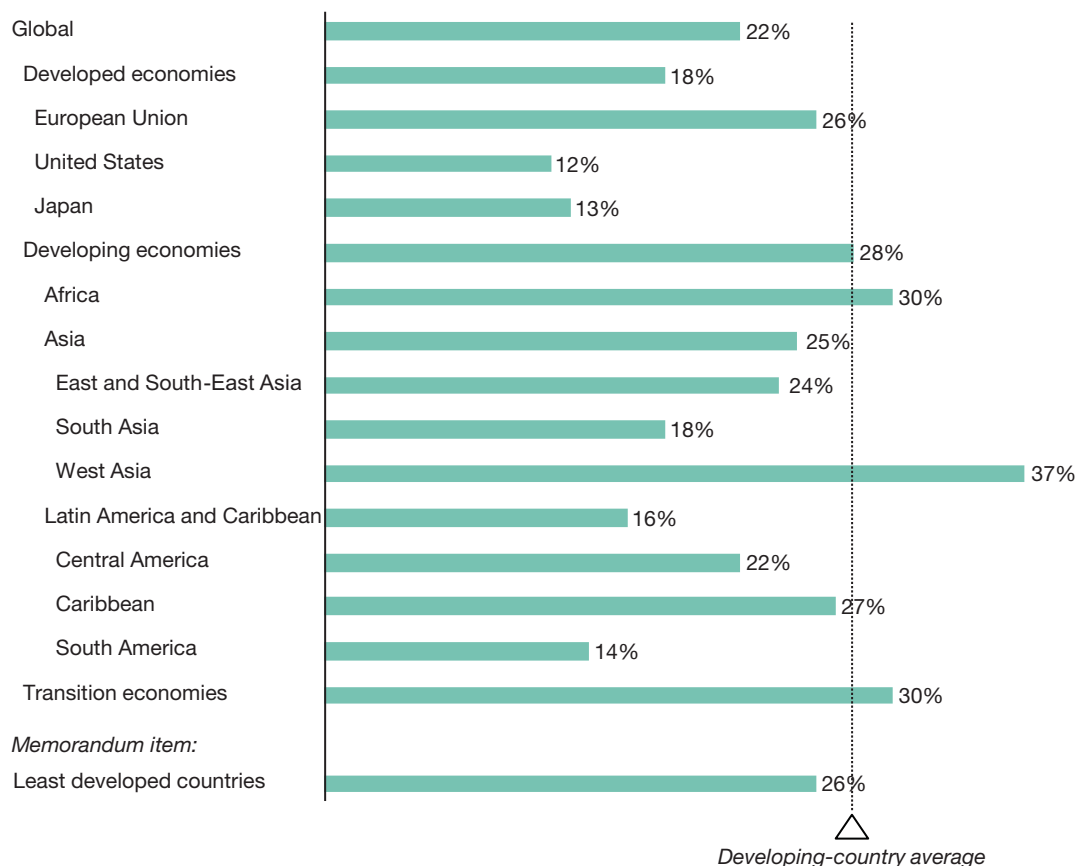
Because exports incorporate foreign produced value added, the share of domestic value added in exports by country can be quite different (figure IV.6).

Figure IV.6. Domestic value added trade shares of the top 25 exporting economies, 2010



Source: UNCTAD-Eora GVC Database.

Figure IV.7. Domestic value added in trade as a share of GDP, by region, 2010



Source: UNCTAD-Eora GVC Database.

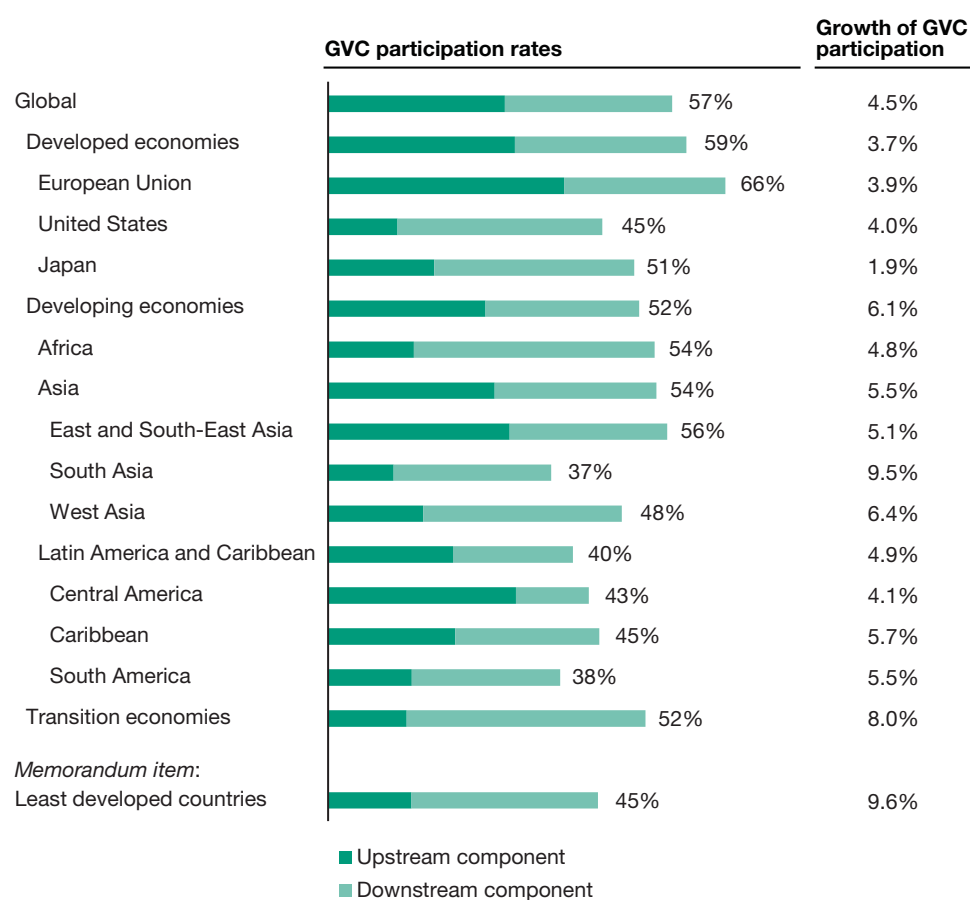
Factors that influence the share of domestic value added in exports include:

- *Size of the economy.* Large economies, such as the United States or Japan, tend to have significant internal value chains and to rely less on foreign inputs. There are important exceptions, including China, Germany and the United Kingdom.
- *Composition of exports and position in GVCs.* Countries that have significant shares of natural resources, oil or other commodities in their exports, such as the Russian Federation and Saudi Arabia, tend to have higher shares of domestic value added trade, as such exports are at the “beginning” of GVCs and require few foreign inputs. Countries that have significant services exports such as India also tend to capture relatively more value (although India’s exports of natural resources are important as well). In contrast, countries that have significant

shares of exports in highly segmented industries (see figure IV.4) may need to import more to generate exports.

- *Economic structure and export model.* Countries with significant shares of entrepôt trade, such as Hong Kong (China), Singapore or the Netherlands, will have higher shares of foreign value added. The same applies for countries with important processing trade sectors.

The combination of these three factors explains most countries’ domestic value added shares (net of policy factors which will be explored later). For example, China, on the one hand, is a large economy with an increasingly important internal supply chain. On the other hand, it has a significant share of processing trade and is an important exporter of electronics, the industry with the most complex GVC linkages. As a result, its domestic

Figure IV.8. GVC participation, 2010, and GVC participation growth rates, 2005–2010

Source: UNCTAD-Eora GVC Database.

Note: GVC participation indicates the share of a country's exports that is part of a multi-stage trade process; it is the foreign value added used in a country's exports (upstream perspective) plus the value added supplied to other countries' exports (downstream perspective), divided by total exports. GVC participation growth here is the annual growth of the sum of the upstream and downstream component values (CAGR).

value added share balances at about the global average of 72 per cent.

Domestic value added created from trade – the actual contribution of trade to GDP after discounting imported value added – can be significant relative to the size of local economies. While the contribution of trade to global GDP is about one fifth, this share is higher in developing and transition economies (figure IV.7). It is particularly high in Africa, West Asia and the transition economies owing to the relative importance of exports of natural resources there and, in part, to the relatively small size of the local “non-tradables” economy. The contribution of trade to GDP is high also in East and South-East Asia; on this measure, that region rivals the highly integrated European market. This high share not only reflects the export competitiveness of these Asian

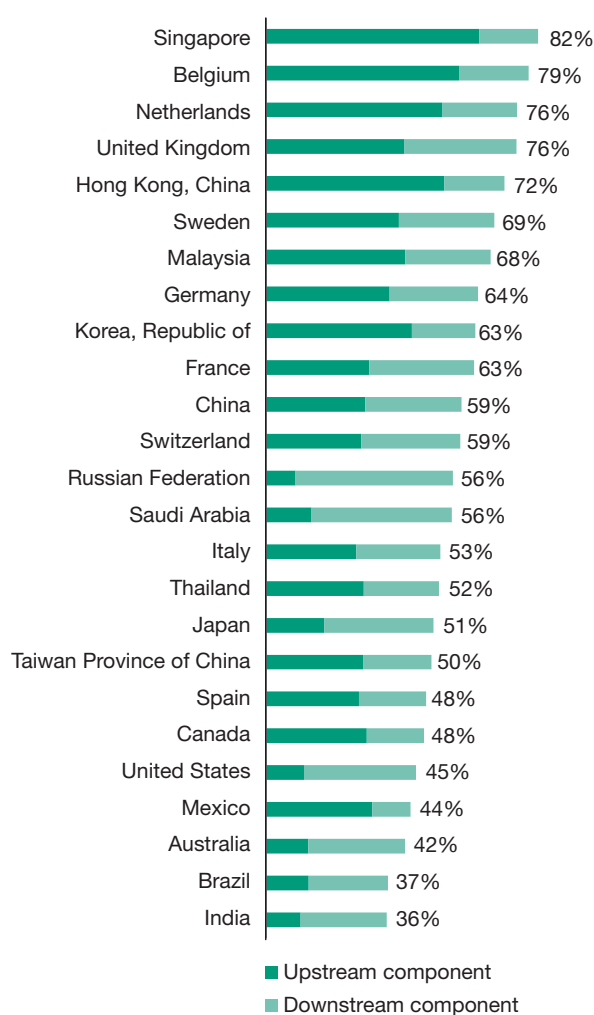
economies but also their higher share of domestic value added in trade compared with Europe.

The value and share of developing-country exports that depend on GVCs, because of either upstream links (foreign value added in exports) or downstream links (exports that are incorporated in other products and re-exported) is quite significant (figure IV.8). East and South-East Asia remains the region with the highest level of GVC participation, reflecting its primacy as the most important region for export-oriented manufacturing and processing activities. Central America (including Mexico) also has a high participation rate, but whereas it ranked equal with South-East Asia in terms of foreign value added in exports, it has a lower downstream participation rate, reflecting the fact that it exports relatively more

to the United States domestic market rather than for onward exports.

Commodity-exporting regions have a significantly higher GVC participation rate than their foreign value added share would suggest, indicating that much of their exports are processed and their value added incorporated in third-country exports – i.e. they operate at the starting point of GVCs. South Asia remains the lowest ranked region in terms of GVC participation, partly because of exports of natural resources, and because much of the services exports from the region satisfy final demand in importing countries and are not used to produce further exports.

Figure IV.9. GVC participation rate of the top 25 exporting economies, 2010



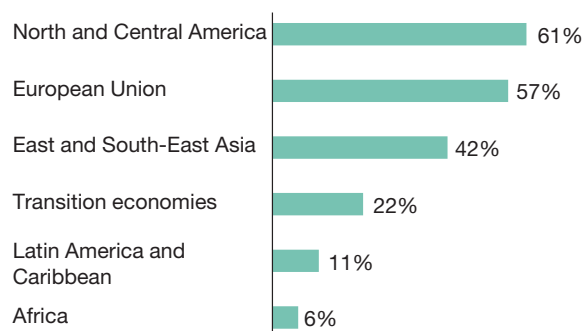
Source: UNCTAD-Eora GVC Database.

However, South Asia is the region with the highest GVC participation growth rate, albeit from a low base. Transition economies also show faster than average growth. Nearly all developing regions outpace the developed world in GVC growth. It should be noted that much of the growth in GVC participation in developing countries, on this measure, must be attributed to downstream use in GVCs of natural resources and raw materials. Although downstream use is the more positive component of participation, in the sense that it contributes to GDP, the lack of parallel growth of the upstream component confirms that many poorer developing countries are still behind in accessing more fragmented GVCs.

As noted above, GVC participation – or the role that individual countries play in international production networks – is driven by many different factors, from size of the economy to industrial structure and level of industrialization, composition of exports and positioning in value chains, policy elements, and others. As a result, countries with very different characteristics may be very similar in the ranking of GVC participation (figure IV.9).

The GVC participation of many countries relates substantially to GVC interactions within their respective regions. Instead of a global reach, most value chains have a distinctive regional character, as shown in figure IV.10. North and Central American value chain links are especially strong, as are intra-European Union ones. The largest extraregional bilateral GVC flows are between Germany and the United States, China and Germany, and Japan and the United States, in that order.

Figure IV.10. Share of intra-regional GVC flows in total GVC participation, selected regions, 2010



Source: UNCTAD-Eora GVC Database.

2. Value added trade patterns in the developing world

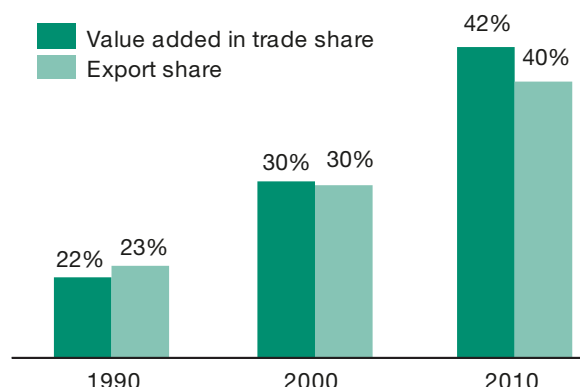
Developing countries, including the poorest, are increasingly participating in GVCs and gaining domestic value added, although many are starting from a very low base.

The share of global value added trade captured by developing economies is increasing rapidly. It grew from about 20 per cent in 1990, to 30 per cent in 2000, to over 40 per cent in 2010.

As a group, developing and transition economies are capturing an increasing share of the global value added trade pie (figure IV.11). As global trade grows, developed economies appear to rely increasingly on imported content for their exports, allowing developing countries to add disproportionately to their domestic value added in exports.

Looking at the domestic value added trade shares for the top 25 developing-economy exporters,

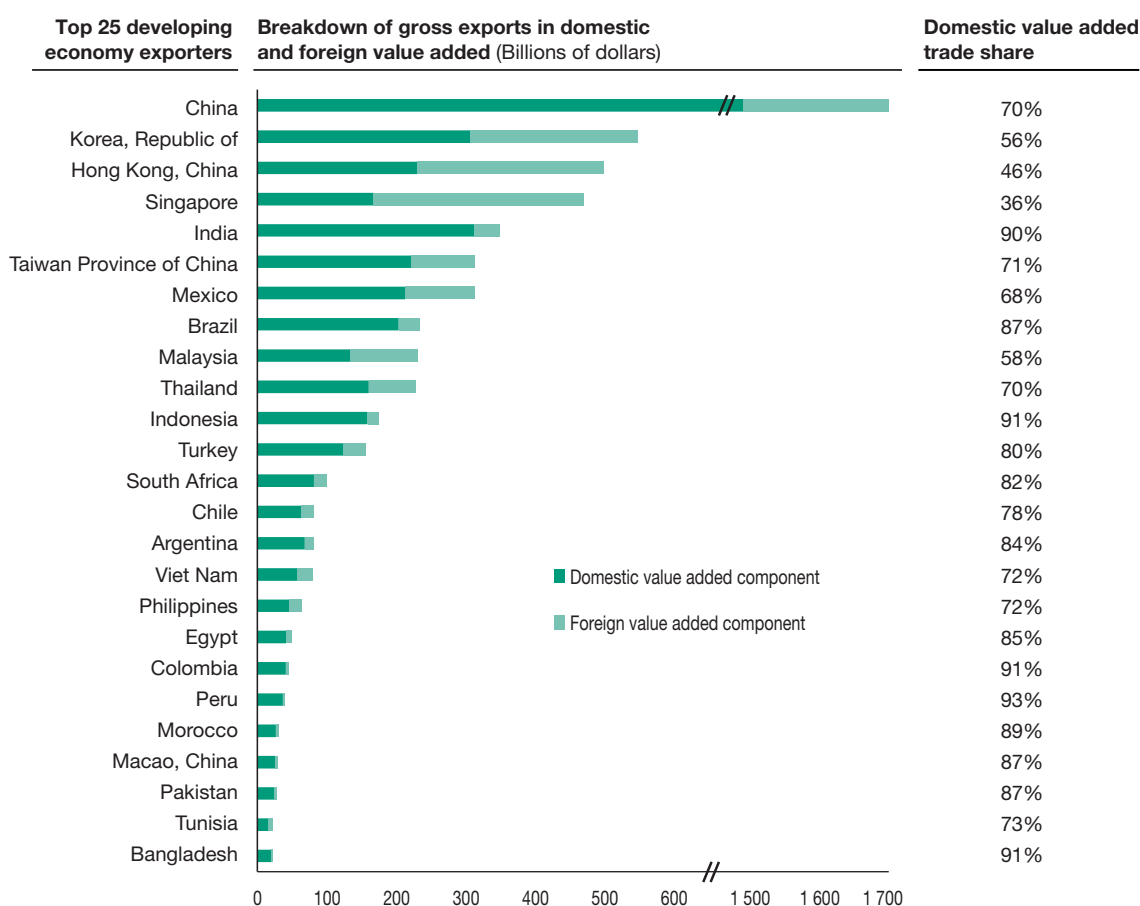
Figure IV.11. Share of developing countries in global value added trade and in gross exports, 1990–2010



Source: UNCTAD-Eora GVC Database.

excluding predominantly oil-exporting countries (figure IV.12), shows that exporters of natural resources and raw materials that use little foreign value added in exports (such as Chile or Indonesia) obtain a relatively large share of domestic value

Figure IV.12. Domestic value added trade shares of the top 25 developing economy exporters, 2010



Source: UNCTAD-Eora GVC Database.

Note: Top 25 excludes predominantly oil-exporting countries.

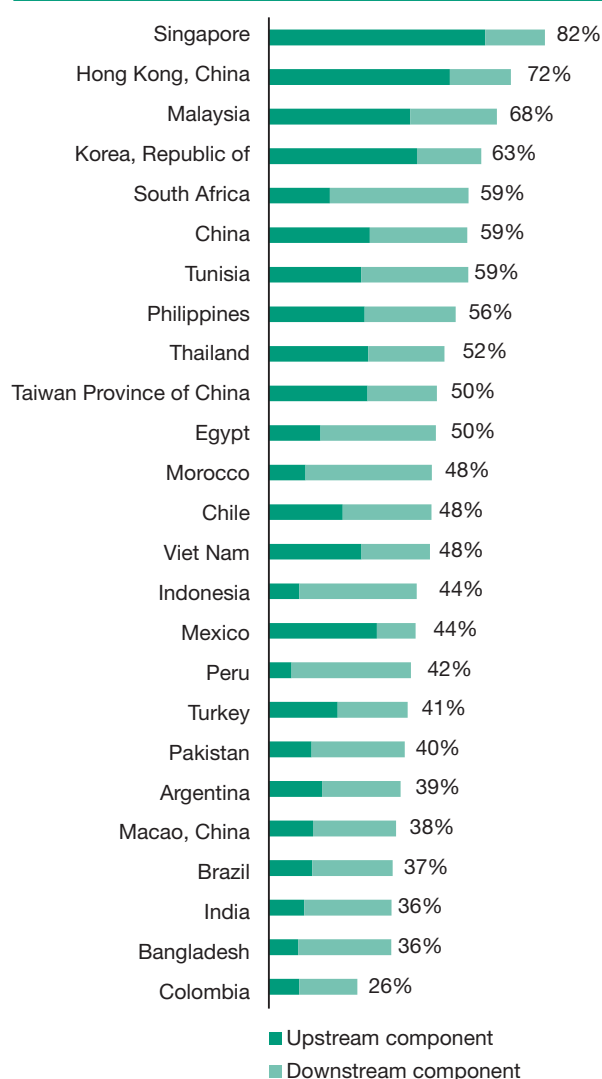
added, as do services exporters such as India. Relatively open developing economies with strong export performances and very high GVC participation (such as the Republic of Korea; Hong Kong, China; Singapore; Malaysia) get a lower value added contribution from trade than their export shares would suggest, although the absolute contribution of value added trade to GDP in these countries is high.

Among the top 25 exporting developing economies there are significant differences in the degree to which their exports are integrated in – or depend on – GVC participation (figure IV.13). The main East and

South-East Asian exporters rank highest in GVC participation because they both import a substantial part of their exports (foreign value added) and a significant part of their exports are intermediate goods that are used in third countries' exports. These countries' exports are thus integrated in GVCs both upstream and downstream; in other words, they operate in "the middle" of GVCs. The commodity-exporting group of countries also rates relatively high in GVC participation, but largely because of outsized downstream usage of their export products in third countries' exports.

Some of the larger emerging markets, such as India, Brazil, Argentina and Turkey, have relatively low GVC participation rates. These countries may have lower upstream participation levels, both because of the nature of their exports (natural resources and services exports tend to have less need for imported content or foreign value added) and because larger economies display a greater degree of self-sufficiency in production for exports. They may also have lower downstream participation levels because of a focus on exports of so-called final-demand goods and services, i.e. those not used as intermediates in exports to third countries.

Figure IV.13. GVC participation rate of the top 25 developing economy exporters, 2010



Source: UNCTAD-Eora GVC Database.

Note: Top 25 excludes predominantly oil-exporting countries.

3. FDI and the role of TNCs in shaping GVCs

Investment and trade are inextricably intertwined. Much of trade in natural resources is driven by large cross-border investments in extractive industries by globally operating TNCs.

TNCs are involved in 80 per cent of global trade. They shape value added trade patterns through intra-firm, NEM and arm's-length transactions.

Market-seeking foreign direct investment (FDI) by TNCs also generates trade, often shifting arm's-length trade to intra-firm trade. Efficiency-seeking FDI, through which firms seek to locate discrete parts of their production processes in low-cost locations, is particularly associated with GVCs; it increases the amount of trade taking place within the international production networks of TNCs and contributes to the "double counting" in global trade flows discussed in this report.

FDI generally precedes increases in exports. FDI is thus an increasingly important driver of trade flows worldwide. This is confirmed by evidence at the firm level. Only a very small fraction of the universe of

firms in most economies engages in international trade, and trading activity tends to be highly concentrated. In the EU, the top 10 per cent of exporting firms typically accounts for 70 to 80 per cent of export volumes, while this figure rises to 96 per cent of total exports for the United States, where about 2,200 firms (the top 1 per cent of exporters, most of which are TNC parent companies or foreign affiliates) account for more than 80 per cent of total trade. The international production networks shaped by TNC parent companies and affiliates account for a large share of most countries' trade.⁵

On the basis of these macro-indicators of international production and firm-level evidence, UNCTAD estimates that about 80 per cent of global trade (in terms of gross exports) is linked to the international production networks of TNCs, either as intra-firm trade, through NEMs (which include, among others, contract manufacturing, licensing, and franchising), or through arm's-length transactions involving at least one TNC (figure IV.14 and box IV.3).

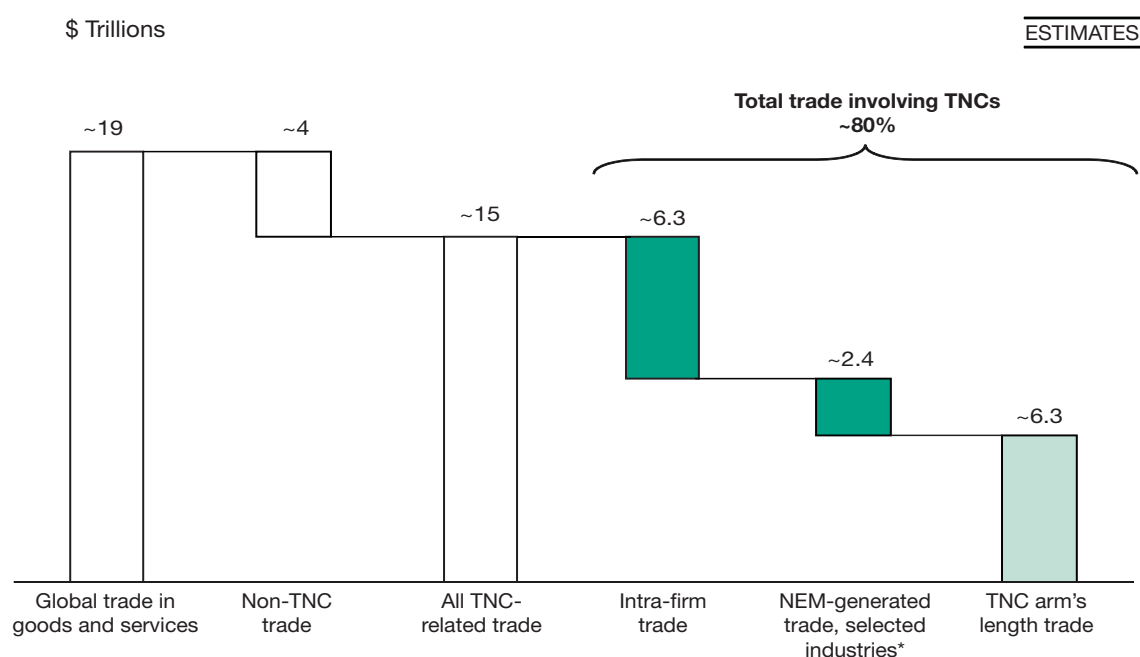
The international production networks of TNCs, within which most trade takes place, are heavily geared towards providing those value added inputs

required to generate trade. For example, GVCs make extensive use of services: while the share of services in gross exports worldwide is only about 20 per cent, almost half (46 per cent) of value added in exports is contributed by service-sector activities, as most manufacturing exports require services for their production. This provides a parallel with global FDI stock, two thirds of which is allocated to services activities (figure IV.15).⁶ This picture is essentially the same for developed and developing countries.

The involvement of TNCs in generating value added trade is strongly implied by the statistical relationship between FDI stock in countries and their GVC participation rates (figure IV.16). The correlation is strongly positive and increasingly so over time, especially in the poorest countries, indicating that FDI may be an important avenue for developing countries to gain access to GVCs and increase their participation.

Ranking countries by the ratio of FDI stock over GDP and grouping them in quartiles (figure IV.17) shows that the group of countries with the most FDI relative to the size of their economies tend to have three characteristics:

Figure IV.14. Global gross trade (exports of goods and services), by type of TNC involvement, 2010



Source: UNCTAD estimates (see box IV.3).

Note: * Including contract manufacturing in electronics, automotive components, pharmaceuticals, garments, footwear, toys; and IT services and business process outsourcing (see *WIR11*). TNC arm's length trade may include other NEM trade.

Box IV.3. Estimating trade within the international production networks of TNCs

The estimates for trade taking place with the international production networks of TNCs shown in figure IV.14 are based on evidence about investment-trade links of individual countries and regions:^a

- In the United States, in 2010, affiliates of foreign TNCs accounted for 20 per cent of exports and 28 per cent of imports of goods, while TNCs based in the United States accounted for 45 per cent of exports and 39 per cent of imports. Thus some two thirds of both exports and imports of goods can be considered to be within the international production networks of TNCs.
- In Europe, also in 2010, French TNCs accounted for some 31 per cent of goods exports and 24 per cent of imports, while foreign affiliates in France accounted for 34 per cent and 38 per cent, respectively. Thus some 64 per cent of total French exports and 62 per cent of total French imports of goods in 2009 can be considered to be within the international production networks of TNCs. Similar scattered evidence exists for other EU countries.
- In Japan, TNCs based there accounted for 85 per cent of exports of goods and services, while foreign affiliates contributed a further 8 per cent. Thus 93 per cent of total Japanese exports of goods and services are linked to TNCs.
- In China, foreign affiliates accounted for some 50 per cent of exports and 48 per cent of imports in 2012. Adding the trade activities of Chinese TNCs – although they are perhaps not as large as the share of their French or United States counterparts given the lower (but growing) share of Chinese outward FDI – would lead to estimates of trade within international production networks in excess of the United States share.
- In developing countries as a group, it is likely that the share of trade within the production networks of TNCs is higher, for two reasons: (i) the productivity curve of firms is steeper than in developed countries, meaning that trade is likely to be even more concentrated in a small number of large exporters and importers with above-average productivity, i.e. predominantly TNCs and their affiliates; (ii) the share of extractive industries in their exports (at about 25 per cent) is significantly higher than the world average (about 17 per cent) and the extraction and trade of natural resources generally involves TNCs.

A significant share of this trade is intra-firm trade, the international flows of goods and services between parent companies and their affiliates or among these affiliates, as opposed to arm's-length trade between unrelated parties (inter-firm trade). For example, the share of exports by United States affiliates abroad directed to other affiliated firms, including parent firms, remained high at about 60 per cent over the past decade. Similarly, nearly half of the exports of goods by foreign affiliates located in the United States are shipped to the foreign parent group and as much as 70 per cent of their imports arrive from the foreign parent group. Japanese TNCs export 40 per cent of their goods and services to their own affiliates abroad. Although further evidence on intra-firm trade is patchy, the general consensus is that intra-firm trade accounts on average for about 30 per cent of a country's exports, with large variations across countries.

These explanations focus for the most part on merchandise trade. There is evidence that TNC involvement in services trade, with a growing share of intra-firm trade in services (e.g. corporate functions, financial services), is even higher. Where it does not occur in the form of intra-firm trade, services trade often takes place in NEM relationships (information technology and business process outsourcing, call centres, etc.). NEMs as a whole (including contract manufacturing activities) are estimated to be worth over \$2 trillion (see *WIR11*).

Arm's-length trade by TNCs (exports to and imports from unrelated parties in data from the OECD's Activity of Multinational Enterprises database) is estimated to be worth about \$6 trillion, the residual. Non-TNC-related trade includes all transactions between firms that have only domestic operations, anonymous transactions on commodity exchanges, etc.

Source: UNCTAD.

Note: Notes appear at the end of this chapter.

- Higher foreign value added in their exports (foreign affiliates of TNCs producing for exports tend to use value added produced by other parts of the TNC production network);
- Higher GVC participation (foreign affiliates of TNCs not only use foreign inputs in their production, but also supply to other parts of the TNC network for further exports); and

- A higher relative share in global value trade compared with their share in global exports.

While the link between FDI and TNC activities, on the one hand, and value added trade patterns, on the other, can thus be established *at the macro level*, determining how TNCs and their networks of affiliates and contractual partners shape value added trade patterns through *firm-level evidence* remains challenging. Information on TNC ownership structures and financial figures is fragmented, and transactions between co-affiliates within the same group are typically not reported. For a given country-industry combination, by matching TNC network structures with industry value added inputs and outputs, it is possible to derive intra-firm sourcing and supply propensities (see box IV.4 for methodological details and data sources).

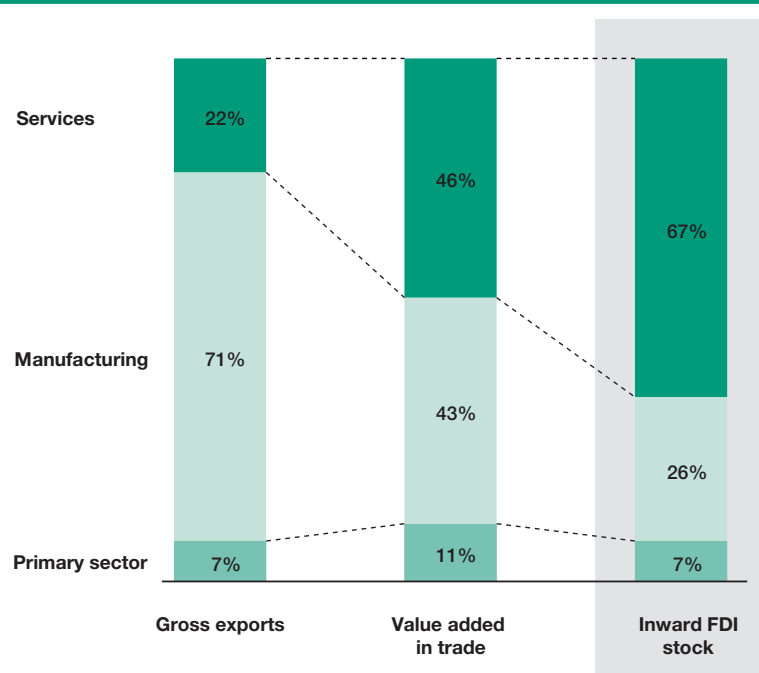
The Thai automotive industry provides a clear example of the pivotal role of TNCs in shaping patterns of value added trade and domestic value creation (table IV.2). It is one of the fastest growing industries in Thailand, accounting for about \$34 billion in gross output. Some 80 per cent of production is exported. The domestic value added share is about 25 per cent of the export value. Of that 25 per cent of domestic value added, only 60

per cent is produced by firms in the automotive industry, and 40 per cent is contributed by firms in supplier industries, including services (further detail on such local linkages in section C).

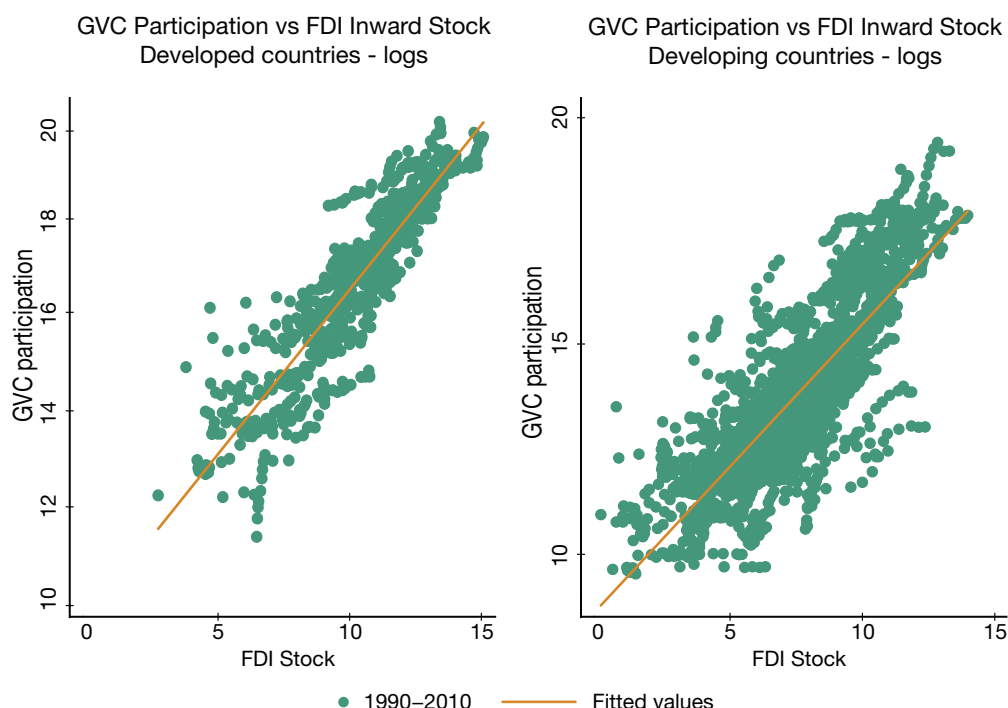
More than half of the gross output of the industry is produced by a relatively small group of foreign affiliates of TNCs: 52 foreign affiliates, part of 35 business groups or TNC networks – corresponding to 4 per cent of the total number of companies registered (some 1,300) – produce 56 per cent of total output. To a large extent, these foreign affiliates also drive the upstream and downstream linkages of the industry in Thailand.

The total TNC network of the 52 foreign affiliates in Thailand comprises some 6,000 co-affiliates located in 61 countries around the world (the sum of affiliates of all 35 business groups). About 27 per cent of the foreign value added used by individual affiliates in Thailand (of the 75 per cent of foreign value added in exports) is sourced intra-firm from within their own TNC networks or business groups. On the downstream side, an estimated 65 per cent of foreign affiliate exports is absorbed by firms within their own network. Downstream linkages are more concentrated, with potential intra-firm export connections limited to some 850 co-affiliates.

Figure IV.15. Sector composition of global gross exports, value added trade, and FDI stock, 2010

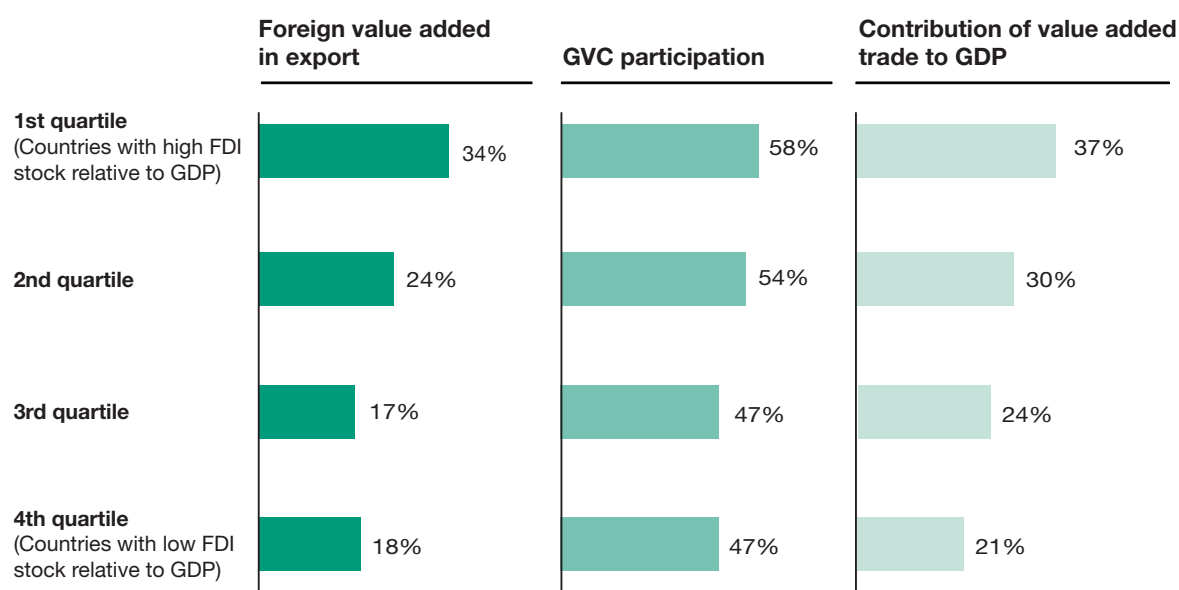


Source: UNCTAD-Eora GVC Database, UNCTAD FDI Database.

Figure IV.16. Correlation between levels of inward FDI stock and GVC participation

Source: UNCTAD-Eora GVC Database, UNCTAD FDI Database, UNCTAD analysis.

Note: Data for 187 countries over 20 years. The regression of the annual GVC participation growth on the annual FDI inward (stock) growth yields a positive and significant correlation (at the 5 per cent level) both for developed and developing countries ($R^2 = 0.77$ and 0.44 , respectively). The correlation remains significant considering the two time periods 1990 - 2000 and 2001 - 2010 separately. Regressions use lagged (one year) inward FDI (stock) growth rates and include year fixed effects to account for unobserved heterogeneity.

Figure IV.17. Key value added trade indicators, by quartile of inward FDI stock relative to GDP, 2010

Source: UNCTAD-Eora GVC Database, UNCTAD FDI Database, UNCTAD analysis.

Note: Data for 180 countries, ranked by inward FDI stock relative to GDP and grouped in quartiles; data reported are median values for each quartile.

Table IV.2. Role of TNCs in shaping value added trade in the Thai automotive industry

Indicators	Values	Example affiliates and co-affiliates
<i>Automotive industry production in Thailand</i>		
Gross output	~\$34 billion	
Export share in gross output	78%	
Domestic value added share in exports	25%	
Share of domestic value added contributed by industries other than automotive in Thailand	40%	
Number of foreign affiliates of TNCs	52	
Number of business groups (TNC networks) to which these foreign affiliates belong	35	<ul style="list-style-type: none"> • Mitsubishi: Tri Petch Isuzu Sales Co. Ltd. • Honda: Thai Honda Manufacturing Co. Ltd. • BMW Manufacturing Co. Ltd.
Foreign affiliates as share of total number of firms	4%	
<i>Upstream: foreign value added used by the automotive industry in Thailand (imports)</i>		
Foreign value added share in exports	75%	
Number of potential intra-firm supplier links	~6,000	
Number of countries in which these intra-firm suppliers are based	61	<ul style="list-style-type: none"> • Mitsubishi: NHK Manufacturing, Malaysia (electronic components) • Honda: Kyusyu TS Co., Ltd., Japan (plastics) • BMW: SGL Carbon Fibers Limited, UK (chemicals)
Estimated share of foreign value added sourced intra-firm (intra-firm import propensity)	27%	
<i>Downstream: exports from the automotive industry in Thailand</i>		
Number of potential intra-firm client links	850	
Number of countries in which these intra-firm clients are based	57	<ul style="list-style-type: none"> • Mitsubishi: Guangzhou Intex Auto Parts Co., China (automotive parts) • Honda Trading de México, SA, Mexico (wholesale) • BMW Brilliance Automotive Ltd., China (wholesale)
Estimated share of intra-firm exports (intra-firm export propensity)	65%	

Source: UNCTAD analysis, based on the UNCTAD-Eora GVC Database and the Business Group Database.

Box IV.4. Assessing value added trade patterns at the firm level

Determining how TNCs and their networks of foreign affiliates and contractual partners shape patterns of value added trade is challenging, as information on TNC ownership structures and financial data is fragmented, and transactions between affiliates within the same group are typically not reported. In order to fill this gap, UNCTAD has linked the UNCTAD-Eora GVC Database with firm-level ownership and financial data from a business group database^a (based on the Orbis ownership database), which allows the mapping of some 50,000 international business groups with nearly 500,000 affiliates worldwide. The database contains key information on TNC activity by country and industry (as classified by the six-digit NAICS standard system), e.g. the number of foreign affiliates, revenues, value added, and number of employees.

Linking value added trade data and business group connections yields an index of the propensity for foreign affiliates to source foreign value added from co-affiliates within their own business group networks, and to provide value added inputs to other parts of their networks. These propensity indices (upstream and downstream) can be used to estimate the relevance of intra-firm trade linkages in TNC-governed GVCs (in the absence of data on actual shipments between affiliates in TNC networks), for a given industry in a given economy.

The methodology includes the following steps:

1. Retrieve sources of production inputs and destinations for production outputs from value added trade data.
2. Match patterns of inputs and outputs (patterns of value added trade) with business group ownership structures. Any overlap between value added trade flows and the web of co-affiliates is considered a potential intra-firm trade connection. (If trade flows do not find a correspondence in the network, these connections are considered to be arm's-length.)
3. Assign weights to the resulting potential trade-ownership linkages based on a production function derived from national I-O tables.
4. Estimate upstream and downstream intra-firm trade propensities at business group level. (The sum of the weights assigned to all intra-firm trade linkages.)
5. Project propensities at the industry level, by applying to the propensities for individual affiliates weights based on (i) cost of goods sold for the upstream side and (ii) revenues for the downstream side.

/...

Box IV.4. Assessing value added trade patterns at the firm level (concluded)

The methodology has a number of limitations. The first is the underlying assumption that any ownership connection in business groups that matches with a value added trade link translates into an intra-firm trade link; i.e. all inputs sourced from a country in which a co-affiliate is present (and carries out the matching economic activity) are assumed to be sourced from that co-affiliate. This assumption is validated by earlier studies that found that 80 per cent of company transactions with countries in which an affiliate is present are intra-firm transactions.^b The second limitation relates to the assumption that all firms in the industry share the same production function. As a consequence, the method cannot discriminate the foreign input share between foreign affiliate and domestic firms. Foreign affiliates can be assumed to have higher foreign value added than domestic firms.

Despite these limitations, and the fact that the current method can treat only one industry/country combination at a time, this approach – one of the first systematic (not based on case studies) analyses of the role of TNCs in GVCs – can provide insights into how TNC group structures shape patterns of value added trade.

Source: UNCTAD.

Note: Notes appear at the end of this chapter.

B. GVC governance and locational determinants

TNC's decisions on where to locate and with whom to partner are decisions on where to invest and from where to trade. These decisions drive patterns of value added in GVCs.

In the period immediately after the Second World War, an international political economy grounded in concepts of national independence, self-sufficiency and import substitution led to international trade essentially being conducted between autonomous enterprises, with

TNC activity mostly in the form of “multi-domestic”, host-country-oriented affiliates. This began to change in the late 1960s and 1970s, with the initial footfalls of offshore production by Japanese, European and United States manufacturing TNCs in South-East Asia, pursuing cost-cutting strategies in the wake of recession and competitive pressures in their home (and later global) markets. Subsequent decades have inexorably built on the dynamic of these incipient GVCs, with technological progress (e.g. modern information and communication technology, international quality standards), political factors (e.g. liberalization and privatization policies, China's emergence as a global manufacturing base) and investor strategies (e.g. fine-slicing of operations and offshoring of every segment or subsegment of their value chains, a greater use of cross-border non-equity modes) jointly – and interconnectedly – leading to the *trade-investment nexus* of today.

As seen in the previous section, trade within the ambit of TNCs in this nexus includes, first, cross-border intra-company trade; second, trade governed by contracts between TNCs and their NEM partners; and finally, cross-border inter-company arm's-length transactions in which TNCs are either supplied with inputs by independent companies or, in turn, supply them (or serve final consumer markets). TNCs simultaneously make decisions on whether to conduct operations internally or externally (i.e. outsource them to other firms either through contracts or markets) and determine if they should be located in their home country or geographically dispersed.

Because such decisions directly impact on investment, production, and value added creation and retention in host countries, this section looks, first, at how TNCs manage their GVCs, including trade flows and, second, at which factors are key locational determinants at each segment or stage within a GVC. TNCs' orchestration and coordination of their GVCs, can significantly affect the strategies of national governments and local firms. For instance, inasmuch as TNCs relocate *segments* of their value chains (or activities within them) to new host countries, countries keen to attract FDI or other forms of TNC participation must formulate their investment promotion policies in line with segment-specific determinants in order to focus their resources more effectively.

Box IV.5. GVC governance: systems, processes and tools

A significant part of TNCs' capabilities or assets in today's GVCs are related to *how* they *manage, control and coordinate* their global networks. Consequently, TNCs design their corporate structures, management processes, functional services and associated procedures and tools to govern GVCs with a number of aims in mind:

- First, the transmission of goals and requirements related to products, processes and activities — along with relevant technologies, skills, technical specifications, etc. — to affiliates, contract partners and independent firms (for arm's-length transactions);
- Second, to maintain and enhance, as much as possible, their power balance over these same firms; and
- Third, to maximize their appropriation of the total value added in the GVC.

In order to manage GVCs and meet their overall aims, TNCs have evolved and reconfigured their corporate services and support processes. They have become full-fledged international infrastructures for the management of far-flung activities, encompassing affiliates, NEMs and arm's-length transaction networks. This infrastructure is adapted by each and every TNC, as appropriate. Differences in industry drivers and dynamics, as well as TNC strategic responses to these, lead to a variety of GVC patterns — so their governance also necessarily varies considerably.

Which particular corporate service or process is outsourced depends on whether it is “core” (i.e. crucial for competitive advantage) or not, the value of doing so (e.g. can external institutions better train a TNC's NEM partners, or indeed its own affiliates), the costs, the availability of suitable NEM partners and other locational determinants. In terms of “core” infrastructure, usually the vision, control and supervisory functions are retained at the TNC headquarters (although they can, in principle, be positioned in different global locations), while supply chain management and support functions can be separated into core and non-core elements, depending on the circumstances of the TNC and its GVC. For instance, distribution and logistics are increasingly seen by TNCs as non-core and outsourced, often to globally integrated logistics TNCs that specialize in offering such services. DHL (Germany), for example, is such a logistics TNC and provides support to major TNCs in different global locations with logistical and supply chain solutions.

Supply chain management strategy is at the heart of TNC's coordination of their GVCs. Of course, the structures of supply chain strategies vary on the basis of contextual factors e.g. demand variation, product life-cycles and managerial objectives.^a Whether elements of supply chain management are located in the home country, set up in critical international locations for global management purposes, designed to favour a strategy of regional value chains or fully farmed out to partner firms at the host country level depends on the specifics of a GVC. For instance, IBM (United States) has moved from a structure defined by regional divisions in the 1960s and 1970s (with product sales in 150 countries), through a globally integrated firm in the 1980s and 1990s, to one in which “supply chain management analytics” within a network structure are at the heart of how it operates today. Along the way, it has integrated over 30 supply chains into one and focuses particular attention on areas such as risk management, visibility, cost containment and sustainability. This process, supported by ICT-based services has improved coordination, reduced costs and boosted profitability.^b

Source: UNCTAD.

Note: Notes appear at the end of this chapter.

1. GVC governance: the orchestration of fragmented and internationally dispersed operations

TNCs manage GVCs through complex webs of supplier relationships and various governance modes. Different governance modes have different development implications.

TNCs are increasingly able to fine-slice activities and operations in their value chains, and place them in the most cost-effective location, domestically and globally (WIR11).

This situation presents companies with a potentially highly fragmented organizational architecture or GVC configuration.

It might include multiple operations, activities and tasks; numerous affiliates (FDI), contractual partner firms (NEMs) and arm's-length transactions, each of these modes on their own or in combination; and, finally, a geographical dispersion of GVC segments, activities and modes of governance. Ultimately, effective GVC governance requires absolute attention to communication, information flows and logistics across the global TNC network.

Such expansive GVCs, in which TNCs must simultaneously manage complex, fragmented, geographically dispersed production processes and flows in trade and investment, have to be

organized, orchestrated and coordinated in line with companies' strategic objectives (see box IV.5). GVCs can be large and complex, and they extend far beyond manufacturing. For instance, even the relatively simple GVC of Starbucks (United States), based on one service (the sale of coffee), requires the management of a value chain that spans all continents; directly employs 150,000 people; sources coffee from thousands of traders, agents and contract farmers across the developing world; manufactures coffee in over 30 plants, mostly in alliance with partner firms, usually close to final market; distributes the coffee to retail outlets through over 50 major central and regional warehouses and distribution centres; and operates some 17,000 retail stores in over 50 countries across the globe.⁷ This GVC has to be efficient and profitable, while following strict product/service standards for quality. It is supported by a large array of services, including those connected to supply chain management and human resources management/development, both within the firm itself and in relation to suppliers and other partners. The trade flows involved are immense, including the movement of agricultural goods, manufactured produce, and technical and managerial services.

The decision on whether a company opts for FDI, NEMs or arm's-length transactions (or a combination of these), as governance modes in its GVC is dictated by elements such as transaction costs, power relations and the risks inherent in externalization (WIR11). Scholars focusing on *global value chain analysis* as an organizing conceptual framework, argue that the *complexity of this knowledge*, whether it can be easily *codified for transmission* and the *capabilities of suppliers or partner firms* have implications for the particular governance mode chosen to manage a GVC (or part of one). This, in turn, requires TNCs to develop and utilize capabilities most appropriate to the mode, i.e. FDI, arm's-length transactions or NEMs.⁸

(i) Foreign Direct Investment (FDI)

In the case of FDI, a TNC has to be able to effectively coordinate and integrate affiliate activities. In GVCs where knowledge flows are complex, but not easy to codify (they may be tacit or not easily separable because of the co-specialization of assets), and if the capabilities of potential partners or arm's-length

suppliers are low, then internalization of operations through FDI is the governance mode most likely to prevail. Managing these activities within a company is itself complex and involves considerable costs, and TNCs have developed complex strategic corporate support infrastructures to manage their operations, i.e. "HQ functions" such as human resources, accounting and operations management. These further enhance a company's ability to organize, coordinate and manage globally dispersed affiliates operating in a range of segments along its GVC. In the GVC literature, this mode is commonly referred to as "hierarchy" and is applied in the case of cross-border vertical integration along different sectors of a value chain.⁹

(ii) Arm's-length transactions

TNCs' reliance on *arm's-length* transactions internationally requires a capacity to source from or service a fully independent company at a distance. This mode of governance is most suitable for standardized products for which it is possible to exchange information on a good or service – prices, specifications (maybe based on international standards), quality assurance – between buyers and suppliers in a simple way. This market mode of GVC governance is a significant feature in some GVCs and requires relatively simple coordination capabilities, namely the ability to source (procurement) and service at a distance, as well as procedures for monitoring compliance.

(iii) Non-equity modes (NEMs)

TNCs use NEMs for governance in GVCs when the complexity of the buyer-seller relationship leads to increased coordination costs and transactional interdependence. The use of NEMs within TNC GVC networks is today highly developed (WIR11), but the mechanisms for coordinating them vary. This variety can be captured by treating these mechanisms as subcategories of NEMs (or NEM modes of governance). In the GVC literature there are three principal types of NEM: captive, modular and relational. A particular NEM supplier is not tied to any one of these modes; depending on its capabilities, it could potentially operate in each of them simultaneously with different TNCs.

In the case of *captive NEMs*, a TNC responds to the limited capabilities of potential suppliers or partners by providing clear, codified instructions for tasks

to be carried out and providing, where necessary, support for the suppliers so that they can develop their competences. This facilitates the building up of a supplier base (often in the form of key suppliers) in order to deliver inputs into a lead TNC's GVC, but given the high power imbalance the suppliers are effectively captive to the lead company. TNCs nevertheless recognize that the development of local capabilities is crucial for their long-term goals. Thus TNCs such as IKEA assist their global network of suppliers through their trading sales offices, which act as the primary interface with local firms, including monitoring them through regular and frequent on-site visits. These offices provide technological support to local suppliers in order to help them improve their operational and innovative capabilities.¹⁰ The low level of independence enjoyed by captive NEMs makes them comparable to tightly controlled affiliates in vertically integrated FDI operations, so the control mechanisms are similar; i.e. the organization and coordination

of suppliers and partners, including managing knowledge transfers and monitoring quality.

Modular NEMs have emerged as a strategy to minimize the costs of orchestrating GVCs and to increase the ease of choosing and switching between suppliers. This form of governance is seen extensively in the electronics industry. The combination of highly competent first-tier suppliers and the standardization of product specifications means that the TNC can source customized products without having to engage in complex transactions with suppliers. The NEM partner works with the TNC to provide a customized product, but it will supply many other companies and can be substituted by other suppliers without undue difficulty.

Relational NEMs result from a mutual dependence between TNCs and partner firms. They arise when collaborations between TNCs and other firms rely on the communication of tacit knowledge and

Table IV.3. Types of GVC governance: lead-firm perspective

Governance types	Key characteristics of TNC-supplier relationship	Typical examples	Explicit TNC coordination
FDI (ownership)	<ul style="list-style-type: none"> Complex transactions Information on product or process specifications proprietary, or not easy to codify and transmit Lead firm may require full managerial control for risk management 	<ul style="list-style-type: none"> Products with high intellectual property content, high quality risks, high brand value 	High
NEMs:			
- Captive	<ul style="list-style-type: none"> Relatively simple transactions Lead firm tends to have significant buying power Lead firm exercises significant control over production 	<ul style="list-style-type: none"> Tiered supplier structures in the automotive industry 	Medium-high
- Relational	<ul style="list-style-type: none"> Complex transactions Information on product or process specifications not easy to codify and transmit Working in partnership 	<ul style="list-style-type: none"> Relationships between suppliers and buyers of retailers or major apparel brands 	Medium
- Modular	<ul style="list-style-type: none"> Complex transactions Information on product specifications easily transmitted Lead firm prefers coordination partner/supplier management firm 	<ul style="list-style-type: none"> Turnkey supplier relationships in electronics industries 	Medium-low
Trade (market)	<ul style="list-style-type: none"> Relatively simple transactions Information on product specifications easily transmitted Price as central governance mechanism 	<ul style="list-style-type: none"> Commodities and commoditized products 	Low

Source: UNCTAD, based on Gereffi, G., J. Humphrey and T. J. Sturgeon (2005) "The governance of global value chains", *Review of International Political Economy*, 12:78-104.

Table IV.4. Types of GVC governance: supplier perspective

Governance types	Key implications for suppliers	Key GVC development implications
FDI (ownership)	<ul style="list-style-type: none"> Supplier is fully vertically integrated and under full managerial control 	<ul style="list-style-type: none"> Fastest and often only approach to gaining ownership advantages required for GVC access Business linkages required to widen the scope of technology and knowledge transfer
NEMs:		
- Captive	<ul style="list-style-type: none"> Relatively small suppliers; high degree of power asymmetry High degree of monitoring and control by lead firm Knowledge sharing focuses on efficiency gains 	<ul style="list-style-type: none"> Can generate relatively high degree of dependency on few TNCs that may have low switching costs Knowledge transfer takes place (due to mutual benefits) but limited in scope
- Relational	<ul style="list-style-type: none"> Degree of mutual dependence between partners Frequent interactions and knowledge exchange between partners Supplier more likely to produce differentiated products 	<ul style="list-style-type: none"> Degree of knowledge transfer and learning relatively high More stable demand due to higher switching costs for lead firms
- Modular	<ul style="list-style-type: none"> Lower degree of dependence on lead-firms; suppliers tend to operate in more than one GVC Limited transaction-specific investments (e.g. generic machinery that can be used for more than one client) 	<ul style="list-style-type: none"> Substantial scope for linkages Relatively high volume of information flowing across firm linkages
Trade (market)	<ul style="list-style-type: none"> No formal cooperation between partners Low switching costs for customers 	<ul style="list-style-type: none"> Full exposure to market forces Learning options limited to trade channels

Source: UNCTAD, based on Gereffi, Humphrey and Sturgeon, 2005 (ibid.).

the sharing of key competences between them. The contractual arrangements that support such relational governance need to reflect the exchange of tacit knowledge and the difficulties of judging the effort put into the business by the partners. For this reason, arrangements such as joint ventures are typical of relational governance.

These modes or types of GVC governance, summarized in table IV.3, have significant implications for suppliers and host country governments as well (table IV.4).

2. Locational determinants of GVC activities

For many GVC segments, tasks and activities, there are relatively few “make or break” locational determinants that act as preconditions for countries’ access to GVCs.

In addition to deciding *how* to orchestrate GVC activities, TNCs must decide *where* to locate the value added activities (or segments) comprised in a value chain. Various

factors determine a TNC’s choice of host country locations, including economic characteristics (e.g. market size, growth potential, infrastructure, labour availability and skills), the policy framework (e.g. rules governing investment behaviour, trade agreements and the intellectual property regime) and business facilitation policies (e.g. costs of doing business and investment incentives).

The “classical” locational determinants for investment (WIR98) have changed over time, as new industries, types of players and GVC modes have come to the fore, and as value chain activities have become increasingly fine-sliced. In particular, the relative importance of specific determinants differs depending on the mode of governance employed by the TNC and the segment or subsegment of the GVC in question. Locational determinants of TNC activity are increasingly specific to GVC segments and GVC modes. By way of illustration, table IV.5 provides an indicative, non-exhaustive list of the key locational determinants for different segments of a generic GVC.

Table IV.5. Key locational determinants for GVC tasks and activities, selected examples

GVC segment or stage	Economic determinants	Policy determinants and business facilitation
<i>All stages</i>		
	<ul style="list-style-type: none"> • Economic, political, social stability • Suitability of characteristics of available labour force (cost, skill level, language proficiency, education, science and technology competences) • Distance and access to market or next stage in value chain • Availability and quality of transport and logistics infrastructure (for goods exports) • Presence and capabilities of locally based firms 	<ul style="list-style-type: none"> • Trade restrictions and promotions • Investment policy • Stable commercial law and contract enforcement regimes • General business facilitation (e.g. cost of doing business, hassle costs) • Business facilitation to support foreign affiliates (e.g. investment promotion, aftercare, provision of social amenities) • Business facilitation to support local firms (e.g. local enterprise development, schemes to upgrade quality, productivity, capabilities of local firms, start-up incentives, support for standards of working conditions and corporate social responsibility (CSR) in local firms)
<i>Knowledge creation stage</i>		
Innovation and R&D	<ul style="list-style-type: none"> • National innovation system • Suitability and characteristics of available labour force (cost, education, science and technology competences) • Presence of research clusters 	<ul style="list-style-type: none"> • Government R&D policy • Intellectual property regime • Policies towards sale of intellectual property (IP) by local firms ("pure" in-licensing of technology) • Laws governing contract research and licensing contracts • Investment incentives • Science and technology parks
Design and branding	<ul style="list-style-type: none"> • Location-specific consumer preferences (for local/regional-market oriented goods and services) • Suitability and characteristics of available labour force (cost, education, marketing competences) • Design, creativity clusters 	<ul style="list-style-type: none"> • IP regime • Policies towards sale of IP by local firms ("pure" in-licensing of brands, trademarks, etc.) • Investment incentives • Design centres and institutional support
<i>Main operational stages</i>		
Raw materials and agricultural inputs	<ul style="list-style-type: none"> • Availability of natural resources, including relevant raw materials, agricultural (land, water) • Availability and quality of utility services (electricity, water) • Low-cost labour • Presence and capabilities of locally based producers of raw material inputs 	<ul style="list-style-type: none"> • Environmental policy • Trade restrictions and promotions, Generalized System of Preferences (GSP) and other Preferential Trade Agreements (PTAs) • Policies pertaining to foreign ownership, lease and exploitation/operations of natural resources, including land • Land tenure system, approaches to traditional rights to land, other resources • Privatization policies • Laws governing contract farming • Customs and border procedures
Manufactured goods, including parts and subassemblies	<ul style="list-style-type: none"> • Basic infrastructure and utility availability and costs (energy, water, telecommunications) • Industrial clusters • Suitability and characteristics of available labour force (cost, skill level) 	<ul style="list-style-type: none"> • Trade restrictions and promotions, GSP and other PTAs • Customs and border procedures and trade facilitation • Policy supporting skills development • Laws governing contract manufacturing • Customs and border procedures • Industrial parks and export processing zones (EPZs) • Investment promotion, including one-stop shops, image-building exercises and facilitation services • Schemes to develop and upgrade capabilities of local firms

/...

Table IV.5. Key locational determinants for GVC tasks and activities, selected examples*Distribution and support services*

Distribution and logistics	<ul style="list-style-type: none"> • Availability and quality of transport and logistics infrastructure • Availability, quality and cost of inputs (transport, communications, energy) • Networks of locally based distribution and logistics companies in relevant industries (e.g. wholesaling, storage, distribution, etc.) 	<ul style="list-style-type: none"> • Policies pertaining to foreign ownership, lease and operations in “strategic” industries • Infrastructure development policies • Customs and border procedures • Regional infrastructure connectivity and corridors
Services (e.g. HQ, IT, human resources, legal, auditing)	<ul style="list-style-type: none"> • Availability and quality of telecom infrastructure and services • Low-cost labour • Suitability and characteristics of available labour force (cost, language proficiency, education) 	<ul style="list-style-type: none"> • Services trade restrictions and promotions • Policy supporting skills development through education, science and technology competences • Tax policy • Confidentiality and data protection laws • Laws governing services outsourcing contracts • Schemes to develop and upgrade capabilities of local firms • “Liveability” of location (especially for expatriate senior staff)

Source: UNCTAD.

Many locational determinants are relevant irrespective of the specific value segment. A stable economic, political and social environment and robust commercial law and contract regimes are important preconditions for all GVC stages. Similarly, business facilitation measures aimed at reducing “hassle” costs or supporting foreign affiliates or local firms. Trade and investment policies are, at a general level, pertinent for all value chain segments, although specific measures may have more influence over one or another segment.

For most GVC segments, however, there are some specific locational determinants which are particularly significant for TNC activity. For instance, at the knowledge creation stage (which includes innovation, research and development (R&D), design and branding), the existence of an appropriate intellectual property regime and the availability of educated, but relatively low-cost, labour are key determinants (table IV.5).

The locational determinants of the main operational segment of a GVC depend principally on the nature of the product or service created. In manufacturing, for example, the choice of location depends on the availability of relatively low-cost skilled/unskilled labour, the quality of the logistics infrastructure, distance to final markets and the availability of inputs. FDI is conditioned particularly by the strength

of local competition or joint venture partners, as well as the availability of industrial parks, whereas the decision to operate through NEMs is swayed by the capabilities of locally based firms and the laws governing contract manufacturing. For raw material and agriculture, the principal determinants are the existence of natural resources, the capacity of infrastructure to support their extraction and transport and the panoply of policies governing their utilization and consumption. In services, the specific characteristics of the labour force (language skills and education, as supported by policy initiatives) are important, as is the reliability of telecommunications infrastructure.

The locational determinants of GVCs as a whole are necessarily different from those affecting individual segments, tasks or activities, whether coordinated through FDI, NEMs or at arm’s length. As shown in table IV.5, although some locational determinants are important to all stages of TNCs’ value chains, as well as all modes of governance, most GVC segments or activities have only a few “make or break” determinants.

Governments are thus in a position to selectively target GVCs and GVC segments in line with their endowments and development objectives. For example, in the case of services outsourcing, governments might first aim to attract call centres

Box IV.6. Locational determinants: high-tech manufacturing in Malaysia

The Malaysian Investment Development Authority (MIDA) has sought to leverage Malaysia's assets and capabilities in contract manufacturing by strengthening its locational determinants to provide the requisite created assets to become a global outsourcing hub for high-tech manufacturing value chains. A further objective is to upgrade the breadth of its participation in key manufacturing value chains, i.e. to "manage the entire process (from product conception to serial production), including logistics, warehousing, packaging, testing and certification." In working towards this goal, the MIDA has sought to identify key strengths and weaknesses, and the areas in which Malaysia needs to improve on its attractiveness as a destination for FDI and NEMs (box table IV.6.1).

The Malaysian Government recognizes that a number of areas need to be strengthened in order to have the appropriate locational determinants to attract FDI and NEM activity. Through this strategy, Malaysia aims to build further on its existing competitive position as an outsourcing destination for TNCs in the electronics, automotive, machinery manufacturing, and oil and gas industries, as well as leverage these strengths to also become a key player in the aerospace, medical, defense and photovoltaic industries.

Box table IV.6.1. High-tech manufacturing strengths and weaknesses as identified by MIDA

Strengths	Weaknesses
<ul style="list-style-type: none"> • Consistent quality and on-time delivery • Competitive cost of high technology products • Language skills • Trainable and educated workforce • Strong government support: financial and operational • IP protection, laws and regulations • Investor protection, rule of law • Ease of doing business • Developed infrastructure, transport and logistics 	<ul style="list-style-type: none"> • Inadequate R&D and design investment • Lack of mid-level technical expertise • Fragmented industry – lack of collaboration between firms • Lack of high-end component manufacturing companies

Source: UNCTAD.

(considered the entry-level activity in the industry) by focusing on a number of key determinants – for instance low-cost labour with basic skills, telecommunications infrastructure and data protection laws – and then pursue a move to business process outsourcing, which requires more specific and higher skills and a concerted industrial policy effort. If as a part of this industrial policy, capable local companies emerge, then this improves the likelihood of TNCs pursuing NEM partnerships, as opposed to FDI.

National governments increasingly recognize the importance of locational determinants and how policy actions can influence the attractiveness of their country as a destination for TNC activities in specific segments of a value chain. More and more countries are now considering how to position and promote themselves as locations for GVC activities, either in a segment or part of the chain or the entire

chain. Some countries initially have limited assets with which to pursue strategies to encourage TNCs to locate segments of a chain in their economy (e.g. the "cut, make and trim" value chain in the garments industry in Cambodia), while others are able to pursue a more sophisticated approach, by building on existing strengths to target desired value chains, segments and activities.

Malaysia is a case in point. The Malaysian Investment Development Authority (MIDA) has developed a sophisticated strategy that aims to leverage its existing locational strengths, in particular in contract manufacturing, to target similar segments in a more diverse range of value chains and segments. In particular, it has identified locational strengths and weaknesses in pursuing its strategy of encouraging the establishment of high-technology manufacturing value chain segments and activities in the country chain (box IV.6).

C. Development implications of GVCs

GVCs can make a contribution to development through direct GDP and employment gains and by providing opportunities for industrial upgrading, but these benefits are not automatic and there are risks involved in GVC participation.

level, that is the essential development contribution of GVCs.

At the level of individual developing economies, the experience is obviously much more heterogeneous. This section explores the role that GVCs play in the development process of countries. As firms within countries gain access to value chains, this affects their value added creation, employment generation and potential for learning and productivity growth. GVCs can also affect the social configuration of countries and the environment. Not all these effects are necessarily positive. Lead firms in GVCs – TNCs – tend to control higher value added activities (from innovation and technological activities to branding and new product development), while other firms (often operating under contractual arrangements in developing countries) engaged in routine assembly tasks or services within GVCs may earn less, have fewer opportunities to grow and be more vulnerable to business cycles. A summary of the main areas of development impact of GVCs appears in table IV.6.

The potential impact of GVC participation for host countries' economic growth and development depends on two main factors.

- The first is the nature of the GVC itself. Is it the type of chain that presents potential for learning and upgrading? Will it enable capabilities to be acquired by firms that can be applied to the production of other products or services? In the garments industry, Mexican firms have been able to acquire new skills and functions, becoming full-package suppliers,¹¹ while it seems very difficult for firms in sub-Saharan Africa supplying garments under the African Growth and Opportunity Act programme to move beyond cut, make and trim.

GVCs are an expression of globalization. They spread economic activities across a broader range of countries. As such, they can accelerate the catch-up of developing countries' GDP and income levels and lead to greater convergence between economies. At the global

- The second factor is the business and institutional environment in the host economy. Is there an environment conducive to firm-level learning and have investments been made in technical management skills? Are firms willing to invest in developing new skills, improving their capabilities and searching for new market opportunities? Local firms' capabilities and competences determine their ability to gain access to cross-border value chains, and to be able to learn, benefit from and upgrade within GVCs. Government policies can facilitate this process.

Although *indicators* of the development impact of GVCs are well established – for example, UNCTAD developed and tested a set of GVC impact indicators in partnership with the G-20¹² – the *measurement* of GVC impact on host countries is difficult, not least because of the multiplicity of actors involved in the GVC (*directly* in terms of the value chain modularity encompassing integrated firms, retailers, lead firms, suppliers, subcontractors, or *indirectly* in the rest of the economy) and the spatial scope of value chains (not just globally but within countries, at the local, subregional or country level). A novel contribution of the section is that UNCTAD combines empirical evidence drawn primarily from the UNCTAD-Eora GVC Database, with case study evidence drawn from UNCTAD field work on GVCs in developing countries, together with existing knowledge from the vast literature and case studies produced by scholars in pertinent fields, including economics, international business, development studies and sociology, reflecting the multidisciplinary nature of the topic.

1. Local value capture

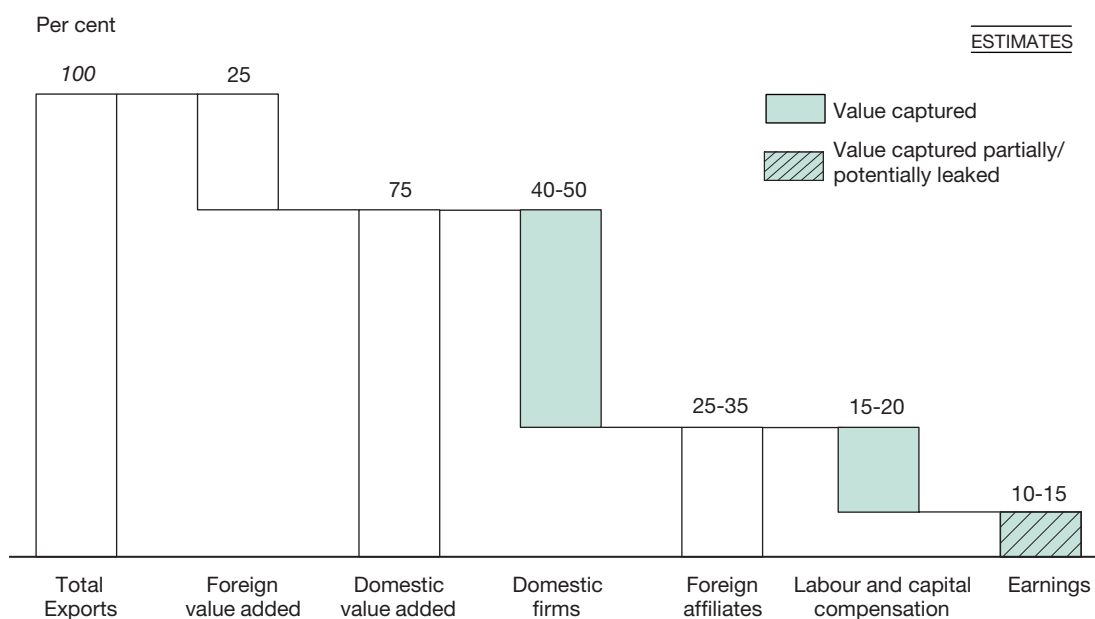
Production for exports directly generates value added and contributes to GDP. However, as shown in Section A, local value added contributions and income generation in GVCs can be limited through the use of foreign value added in exports. In developing countries, on average,

Value capture in GVCs depends on the use of imported contents, on the role of foreign affiliates in value added creation and on TNC policies with regard to income repatriation and transfer pricing.

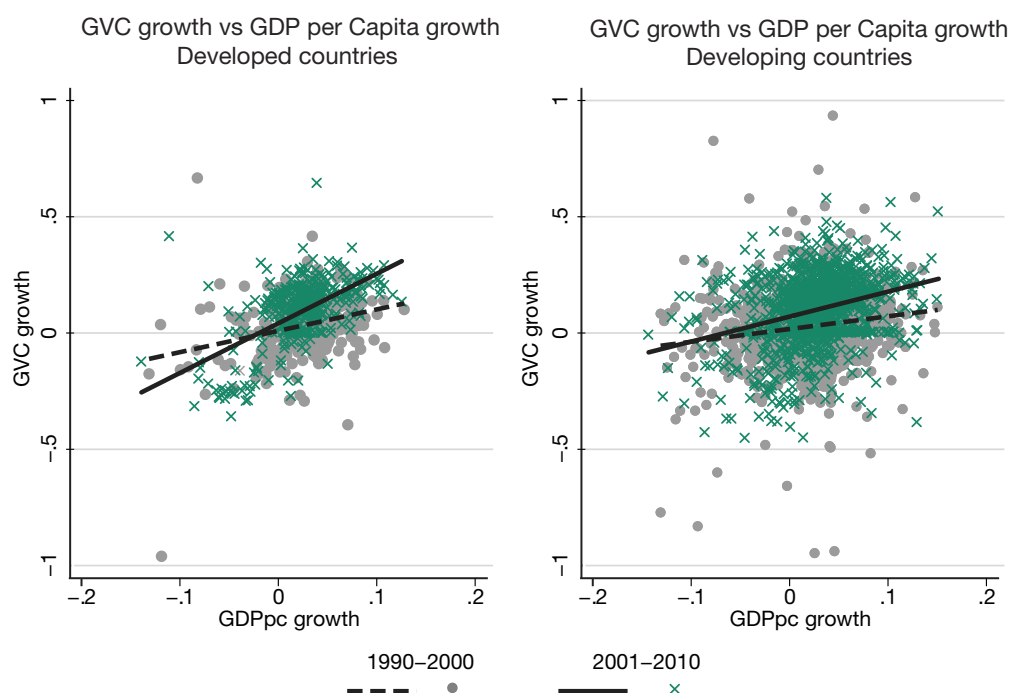
Table IV.6. Development impact of GVCs: highlights of findings

Impact areas	Highlights of findings
Local value capture	<ul style="list-style-type: none"> GVC participation can generate value added in domestic economies and can contribute to faster GDP growth. Concerns exist that the value added contribution of GVCs is often limited where imported contents of exports are high and where GVC participation is limited to a small or lower value part of the overall GVC or end-product. TNCs and their affiliates can provide opportunities for local firms to participate in GVCs, generating additional value added through local sourcing, often through non-equity relationships. A large part of GVC value added in developing economies is generated by affiliates of TNCs. This raises concerns that value can be leaked, e.g. through transfer price manipulation. Also, part of the earnings of affiliates will be repatriated, with possible effects on the balance of payments, although evidence shows that these effects are limited in most cases.
Job creation, income generation and employment quality	<ul style="list-style-type: none"> GVC participation tends to lead to job creation in developing countries and to higher employment growth, even if GVC participation depends on imported contents in exports; GVC participation tends to have, with variations by country and industry, a positive effect on the employment of women. GVC participation can lead to increases in both skilled and unskilled employment; skill levels vary with the value added of activities. Pressures on costs from global buyers mean that GVC-related employment can be insecure and involve poor working conditions. Stability of employment in GVCs can be relatively low as oscillations in demand are reinforced along value chains, although firm relationships in GVCs can also enhance continuity of demand and employment.
Technology dissemination and skills building	<ul style="list-style-type: none"> Knowledge transfer from TNCs to local firms operating in GVCs depends on knowledge complexity and codifiability, on the nature of inter-firm relationships and value chain governance, and on absorptive capacities. GVCs can also act as barriers to learning for local firms, or limit learning opportunities to few firms. Local firms may also remain locked into low-technology (and low value added) activities.
Social and environmental impacts	<ul style="list-style-type: none"> GVCs can serve as a mechanism for transferring international best practices in social and environmental efforts, e.g. through the use of CSR standards. Implementation of standards below the first tier of the supply chain remains a challenge. Working conditions and compliance with applicable standards in firms supplying to GVCs have been a source of concern where they are based on low-cost labour in countries with relatively weak regulatory environments. Impacts on working conditions can be positive within TNCs or their key contractors, where they operate harmonized human resource practices, use regular workers, comply with applicable CSR standards and mitigate risks associated with cyclical changes in demand. GVCs cause environmental impacts (such as greenhouse gas emissions) of demand in one country to be distributed across many other countries. Lead firms in GVCs are making efforts to help supplier firms reduce environmental impacts.
Upgrading and building long-term productive capabilities	<ul style="list-style-type: none"> GVCs can offer longer-term development opportunities if local firms manage to increase productivity and upgrade to activities with higher value added in GVCs. Some forms of GVC participation can cause long-term dependency on a narrow technology base and on access to TNC-governed value chains for activities with limited value added. The capacity of local firms to avoid such dependency and the potential for them to upgrade depends on the value chain in which they are engaged, the nature of inter-firm relationships, absorptive capacities and framework conditions in the local business environment. At the country level, successful GVC upgrading paths involve not only growing participation in GVCs but also the creation of higher domestic value added and the gradual expansion of participation in GVCs of increasing technological sophistication.

Source: UNCTAD.

Figure IV.18. Value capture in GVCs: value added trade shares by component, developing country average

Source: UNCTAD estimates based on the UNCTAD-Eora GVC Database and the Business Group Database (see box IV.4).

Figure IV.19. Correlation between growth in GVC participation and GDP per capita

Source: UNCTAD-Eora GVC Database, UNCTAD analysis.

Note: The regression of the annual real GDP per capita growth on the annual GVC participation growth yields a positive and significant correlation (at the 5 per cent level) both for developed and developing countries ($R^2 = 0.43$ and 0.30 , respectively). The correlation remains significant considering the two time periods 1990 - 2000 and 2001 - 2010 separately. To avoid picking-up a compositional effect resulting from the correlation between a country's domestic value added (affecting the GVC participation) and its per capita GDP, all regressions use lagged (one year) GVC participation growth rates. Regressions include country and year fixed effects to account for unobserved heterogeneity.

foreign value added in exports is about 25 per cent (see figure IV.18). However, not all domestic value added is preserved for the domestic economy. In most developing countries, the share of domestic value added in the exports produced by foreign affiliates rather than domestic firms is very high – UNCTAD estimates this share to revolve around 40 per cent on average in developing countries, with significant variations (leading to a range estimate of foreign affiliate domestic value added in exports of 25–35 per cent). The lion's share of the value added produced by foreign affiliates is still preserved for the domestic economy, through compensation for factors of production, in particular labour and capital (and levies on production net of subsidies). However, the operating surplus component of value added produced by foreign affiliates – on average some 40 per cent in developing countries – can have multiple destinations. It can pay for corporate income taxes in the local economy, it can be reinvested in the local economy or it can be repatriated to the home country of the parent TNC. Furthermore, where the value added produced by foreign affiliates is exported to parent firms or other affiliates within the TNC network, the overall size of the earnings component of value added depends on intra-firm transfer pricing decisions by the TNC.

These key considerations – (a) domestic value added share, (b) value added produced by domestic

firms, (c) foreign affiliate value added preserved for the local economy, and (d) transfer pricing – largely determine the actual value captured from GVCs by participating countries and will be examined further in this section.

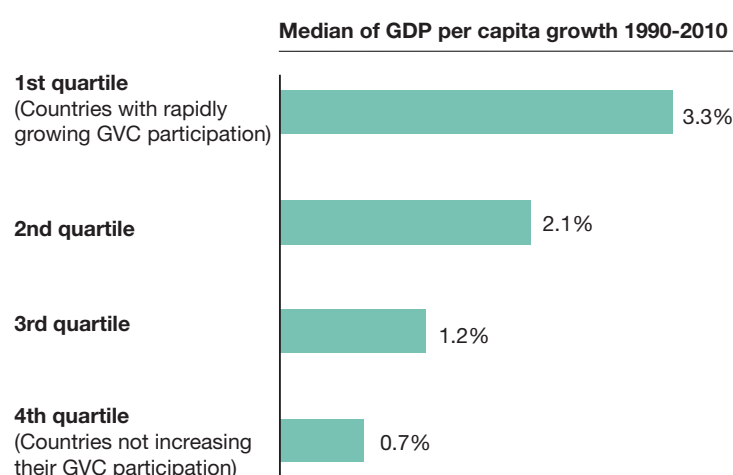
a. GVC contribution to GDP and growth

Experience over the past 20 years shows that, as countries increase their participation in GVCs, their growth rates tend to increase as well. A statistical analysis correlating GVC participation and per capita GDP growth rates shows a significant and positive relationship, for both developed and developing economies (figure IV.19).

GVCs can contribute to domestic value added creation even where participation requires higher imported content of exports. GVC participation is positively correlated with GDP per capita growth.

Although this statistical analysis, despite the strong correlation, cannot show direct causality, increased GVC participation tends to go hand in hand with faster GDP per capita growth (figure IV.20). The 30 developing economies with the highest GVC participation growth rates in the 20-year period from 1990 to 2010 (first quartile) show a median rate of GDP per capita growth in the same period of 3.3 per cent, compared with 0.7 per cent for the bottom 30 countries.

Figure IV. 20. GDP per capita growth rates by quartile of growth in GVC participation, developing economies only, 1990–2010



Source: UNCTAD-Eora GVC Database, UNCTAD analysis.

Note: Data for 120 countries, ranked by GVC participation growth and grouped in quartiles; growth rates reported are median values for each quartile.

Because not all exports constitute domestically produced value added, the share of domestic value added in trade for a given country can be quite different from its share in global exports. Looking at the relative value added contribution from trade for the top 25 developing country exporters (excluding predominantly oil exporters), in the countries with low shares of global value added trade relative to their global export shares, exports contribute on average about 30 per cent to GDP. In contrast, in the countries with high shares of global value added trade relative to their export shares, exports contribute on average less than 20 per cent to GDP. This result shows that focusing on increasing the domestic value added share in exports

is not always the most effective policy objective. Entering dynamic value chains even if doing so implies a relatively modest domestic value added share may yield better results (see discussion in section IV.5.b).

A country's share of domestic value added in trade can also be compared with its share in global GDP – another relative measure of value added trade performance. The absolute contribution of value added trade to some economies can be significant, even when the share of domestic value added in exports is low (this is the case for selected countries in East and South-East Asia). In this case, GVC participation is achieved, maintained and consolidated by using imported intermediary goods and services. Such a strategy may be particularly important for small economies that may not be in a position to provide domestic inputs across the entire value chain for any industry.

b. Domestic value added in trade and business linkages

Within countries participating in GVCs, the domestic value added content of exports is produced not only by the exporting firms themselves, but also by other firms involved in the supply chain through backward linkages. Such suppliers may operate

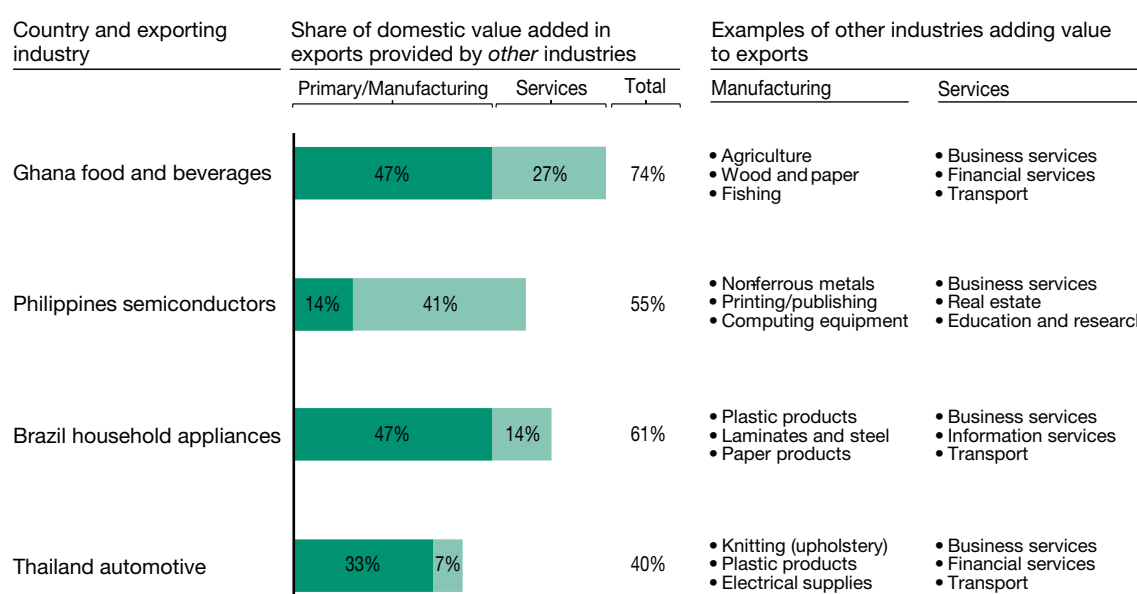
within the same industry or in other industries, including services. Thus, the domestic value added incorporated in exports can be broken down into value added provided by the exporting industry and value added contributed

by other activities, which can be considered a rough proxy for the scope of business linkages (although linkages between exporting firms, often TNC affiliates, and local firms may also occur within the same industry, where component suppliers may have the same industry classification).

Figure IV.21 shows a breakdown of domestic value added in exports for four country-industry cases – the Thai automotive industry, the Brazilian household appliances industry, the Philippine semiconductor industry and the Ghanaian food and beverages industry. The total share of domestic value added in exports varies between these countries and industries. It is high for Brazilian household appliances (86 per cent) and Ghanaian food and beverages (73 per cent). By contrast, the share is less than half for the Philippine semiconductor industry (44 per cent) and the Thai automotive industry (48 per cent).

The potential for business linkages – connecting local firms to GVCs by linking them to lead firms and affiliates operating in their countries – can be high both in manufacturing and in services.

Figure IV.21. Origin of domestic value added in exports: the scope for linkages, 2010



Source: UNCTAD-Eora GVC Database, UNCTAD analysis.

Table IV.7. Examples of financing schemes offered by lead firms in business linkages programmes

Types of schemes	Examples
Own financing institutions	<ul style="list-style-type: none"> • Anglo American's Anglo Zimele • Grupo Martins' Tribanco • ECOM Supplier Finance
Capitalization of external (often joint) funds	<ul style="list-style-type: none"> • The \$15 million Supplier Finance Facility of BP and IFC in Azerbaijan • The Aspire SME-financing facilities of GroFin and the Shell Foundation, together with local banks in Africa • Starbucks' investment in Root Capital to provide financing for small-scale coffee suppliers in Central America
Links with microfinance institutions	<ul style="list-style-type: none"> • Pepsico and BASIX in India
Non-traditional collateral	<ul style="list-style-type: none"> • Barclays accepts grain stocks as collateral in Zambia • Barclay accepts purchasing agreements as guarantees to BL suppliers in Uganda • Spar supermarkets in South Africa accept special advance payments to their small suppliers
Links with commercial banks	<ul style="list-style-type: none"> • Chevron's partnerships with Kazakh banks BankTuranAlem and KazKommertzBank • Votorantim Papel e Celulose helps eucalyptus farmers access credit from Banco Real in Brazil • Mundo Verde refers suppliers to Caixa Econômica Federal and Banco do Nordeste in Brazil
Develop financial literacy	<ul style="list-style-type: none"> • Anglo Zimele incorporates financial literacy into its Small Business Start-Up Fund's lending requirements instead of loans • Real Microcrédito credit agents provide financial education along with other skills development programmes • IPAE-Empretec in Peru, jointly with UNCTAD, offers accounting and financial management courses • Empretec Jordan-BDC offers financial literacy and special programmes for female entrepreneurs

Source: Jenkins, B., A. Akhalkatsi, B. Roberts and A. Gardiner (2007) "Business Linkages: Lessons, Opportunities, and Challenges", IFC, International Business Leaders Forum, and the Kennedy School of Government, Harvard University.

The findings confirm that key exporting firms in these industries provide opportunities for local firms to participate in GVCs, generating additional value added through local sourcing within and across industries.¹³ In the selected cases, between one fifth and one third of domestic value added originates from within the industry of the export (39 per cent of the domestic value added in exports for the Brazilian household appliances originates from within the industry – i.e. within the producing firm itself or from suppliers within the same industry – whereas this share in Ghana is 26 per cent). The scope of linkages with suppliers across sectors is highest in the Brazilian household appliances (61 per cent of domestic value added in export). In this industry, suppliers produce a variety of steel (semi-fabricates, laminates, bars and tubes), plastic or paper products, and the services sector accounts for 14 per cent of value added (providing business services, finance and insurance, information services and freight transport).

In some cases the value added of indirect exports – or supplier firms contributing domestic value added to exporters – remains predominantly with other TNCs located in host economies. For instance, the automotive industry, where lead firms develop close and complex relationships with suppliers, is characterized by mega-suppliers that can co-locate and co-produce with their customers on a global scale, taking prime responsibility for selecting and coordinating lower-tier suppliers. As a result, domestic value added may occur predominantly among TNCs. Evidence of TNC dominance in specific industry segments was found mostly among first-tier suppliers in the automotive industry,¹⁴ e.g. in the Czech Republic and in Colombia. TNCs can also dominate the value capture along a single product value chain, as in the well-known case of the iPod cross-border value chain.¹⁵

TNC lead firms can provide support to local firms in developing countries to strengthen linkages in

their mutual interest. Table IV.7 presents examples of lead firms that have developed schemes to facilitate suppliers' access to finance. Corporations and financial institutions can accept different forms of collateral when suppliers are part of a value chain. Suppliers in a value chain can present a joint investment plan with a lead firm. Other measures may involve making lending to small and medium-sized enterprises (SMEs) viable for financial institutions.

Not all local firms have the ability or potential to take part in GVCs. Smaller local firms may have fewer opportunities to become part of GVCs because of limited resources, and asymmetric information and bargaining power. Smallholders in the agriculture sector have limited access to information concerning market trends, and how product prices, royalties and dividends are calculated, which puts them at a disadvantage to large-scale producers in accessing GVCs. These disadvantages may be overcome, partly, when smallholders enhance their CSR, gain legitimacy in local markets or create niche products.

Within individual industries and sectors, linkages with firms locally vary over time (the more mature the industry is, the higher the potential share of local goods and services) and depend upon global competition (i.e. potential access to competitively priced and quality supplies elsewhere).¹⁶

c. Foreign affiliates and value added retention for the local economy

Given that key exporters and their suppliers in GVCs are often TNCs, there are concerns that value added created by foreign affiliates in developing countries does not confer the same benefits as value added created by local firms. This is because foreign affiliates may repatriate the earnings component of value added. Although overall domestic value added trade in developing economies in 2010 was more than 20 times higher than total repatriated FDI income from developing countries, the situation for individual countries may be more nuanced.

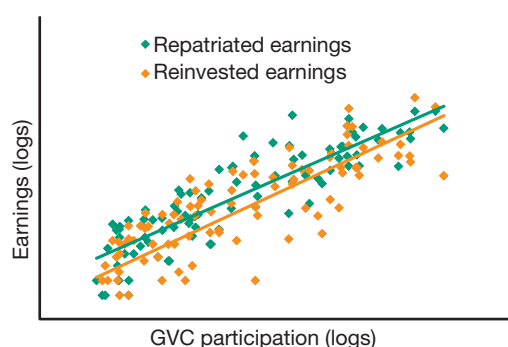
There is indeed a strong positive relationship between repatriated profits from a host country and its participation in GVCs. This is a corollary of the fact that GVC participation is driven by TNC activities. Increased TNC activity equally results in increased reinvested earnings (figure IV.22). GVC participation can thus induce further productive investment in the host economy.

Globally in 2010, about 60 per cent of total FDI income on equity was repatriated (figure IV.23). To some extent, the share may vary according to the type of GVC involvement of foreign affiliates in host countries and the value chain segments in which they operate. Income on market-seeking FDI at the end of value chains appears to be less likely to be reinvested. Foreign affiliates in countries involved in the middle of GVCs, in both manufacturing and services activities, may be more likely to invest further in production facilities, expanding efficiency-seeking FDI. Investment in extractive industries embodies a short value chain with high upfront investments and a higher propensity to repatriate. For example, although reinvestment rates appear low in aggregate for Africa, once the main oil and minerals exporters are removed from the sample, reinvestment rates are broadly in line with the global average.

The overall level of GVC participation of countries does not appear to significantly influence countries'

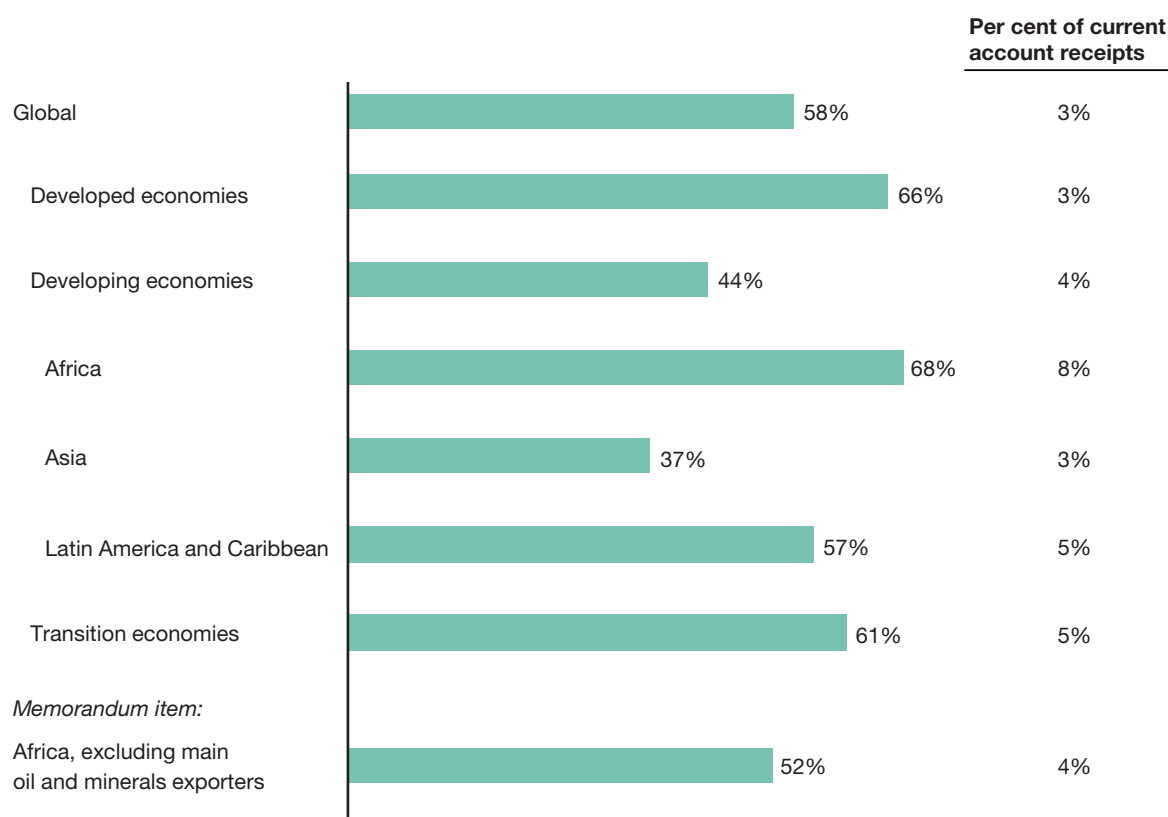
There is a strong correlation between countries' GVC participation and both repatriation and reinvestment of earnings. The net effect on countries' balance of payments is mostly marginal.

Figure IV.22. GVC participation, repatriated and reinvested earnings, 2010



Source: IMF Balance of Payments database and UNCTAD calculations.

Note: Data are for 2010 for all reporting countries, excluding top and bottom deciles ranked by repatriated earnings share in total FDI income. Repatriated earnings correspond to debit entry for current account item. All data are natural logarithms of absolute values.

Figure IV.23. Repatriated earnings as a share of total FDI equity income, by region, 2010

Source: IMF Balance of Payments database and UNCTAD calculations.

Note: Data are for 2010 for all reporting countries. Repatriated earnings correspond to the debit entry for current account item "dividends and withdrawals from income of quasi-corporates".

reinvested and repatriated earnings ratios. The median repatriated earnings share for the top quartile of developing countries ranked by GVC participation rate is 50 per cent; for the bottom quartile, it is 52 per cent.

Finally, the overall current account effect of repatriated earnings is very low, at an average of 4 per cent of total current account receipts in developing countries, and rarely exceeding 8 per cent. In most cases, negative income effects from repatriated earnings are marginal in comparison to the positive current account effects of higher net export generation in GVCs.

d. GVCs and transfer pricing

Transfer pricing is the setting of prices for products and services that are traded between related parties. Where firms share equity ownership, opportunities exist to maximize joint profits by manipulating the

prices of products moving between them, i.e. through transfer price manipulation.

Where TNCs view government policies as a cost (e.g. trade and corporate income taxes, foreign exchange controls) or opportunity (e.g. export subsidies), transfer price manipulation provides a method by which TNCs can cut their costs and take advantage of opportunities. Such trade mispricing, however, can lower the effectiveness of host country policies, significantly weaken the national tax base and deprive national governments of their fair share in global value added.¹⁷ In order to discourage this behaviour, governments have adopted the OECD's arm's-length standard, requiring TNCs to set transfer prices based on what independent enterprises would have done under the same or similar facts and circumstances.

Transfer price manipulation is highly relevant in the context of GVCs, for two main reasons:

- *GVCs and value added trade have significantly widened the scope for transfer price manipulation by TNCs.* GVCs enable TNCs to fine-slice their international production networks, locating each value adding activity in its lowest-cost location on a regional or global basis. The greater fragmentation of international production increases cross-border trade in intermediate goods (i.e. raw materials, parts, components and semi-finished goods), and generates a rising share of foreign value added in world exports. Fine-slicing value adding activities increases the length and variety of GVCs, providing more cross-border opportunities for transfer price manipulation of goods and services by TNCs.
- *The importance of services in GVCs make transfer price manipulation harder to combat.* Almost half of value added in exports comes from service-related activities, which is more than twice the share of services in worldwide gross exports. Whereas price comparisons with external markets may be possible for intra-firm transactions in the agriculture and manufacturing sectors (i.e. there may be enough inter-firm transactions to apply the

arm's-length standard), this is less likely to be the case for intra-firm transactions in services (e.g. front and back office functions) and intangibles (e.g. patents and licenses) where comparable arm's-length prices are less likely to exist.

Transfer price manipulation may actually influence the distribution of value added in GVCs. The development contribution of exports rests in the domestic value added generated from trade. To the extent that domestic value added is created by foreign affiliates of TNCs – a high share, in the case of many developing countries – the profit component of value added (about 40 per cent in developing countries on average) may be affected by transfer price manipulation, potentially “leaking” value added and associated fiscal revenues and reducing value capture from GVCs.

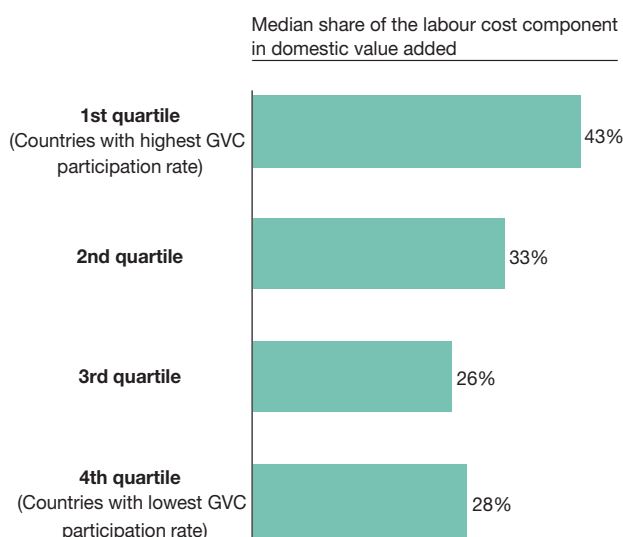
2. Job creation, income generation and employment quality

a. GVC participation, job creation and income generation

Overall, employment increases with trade, but the employment effects of trade and participation in GVCs are highly variable. First, some industries are more labour-intensive than others: exports of garments or agricultural products are more labour-intensive than exports of minerals. Second, even within the same industries, some product lines are more labour-intensive than others: cultivation of fruit and vegetables is more labour-intensive than growing cereal crops. Third, the size and composition of the labour force involved in generating exports depends on the position of countries within GVCs: countries specializing in high value added activities have a higher demand for high-skilled employees and higher wages. One analysis of the computer hard disk industry in the 1990s estimated that the United States had 20 per cent of the worldwide labour force in this industry and accounted for 40 per cent of the global wage bill, while South-East Asia had 40 per cent of the labour but only 13 per cent of the wage bill.¹⁸

GVC participation tends to lead to higher domestic employment generation from exports and faster employment growth, even if it implies a higher imported content of exports.

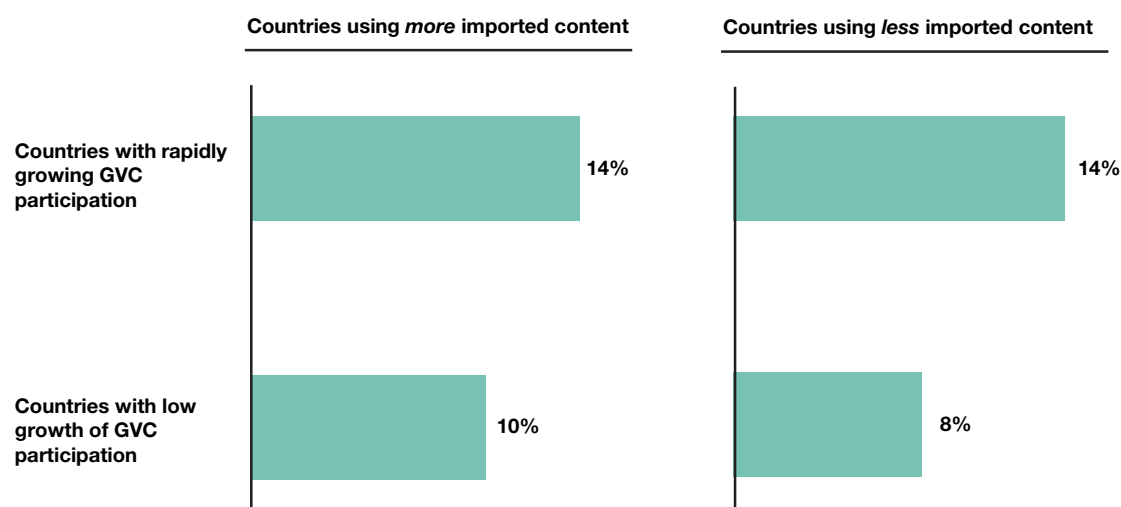
Figure IV.24. GVC participation and the labour component of domestic value added, 2010



Source: UNCTAD-Eora GVC Database, UNCTAD analysis

Note: Data for 187 countries ranked according to the 2010 GVC participation rate and grouped in quartiles; the reported share of the labour cost component of the domestic value added is the median value of the quartile.

Figure IV.25. Growth of the labour component of domestic value added in exports, by level of GVC participation growth and foreign value added



Source: UNCTAD-Eora GVC Database, UNCTAD analysis.

Note: Data for 187 countries. "Countries with rapidly growing GVC participation" refers to the 50% of countries with the highest 2000-2010 GVC participation growth rate. "Countries using more imported content" refers to the 50% of countries with the highest foreign value added share in exports in 2010.

GVCs tend to generate employment. The labour cost component of domestic value added in exports – a proxy for the employment generation potential of exports – increases with higher GVC participation (see figure IV.24). The median share of labour reaches 43 per cent for countries within the highest quartile of GVC participation, against a share of 28 per cent for countries that participate least in GVCs. Further, from 2000 to 2010, the countries that experienced high growth in GVC participation saw the labour component of exports rise faster (at 14 per cent) than countries with low growth in GVC participation (9 per cent) (see figure IV.25). This effect holds irrespective of whether GVC participation occurs in conjunction with high foreign value added in exports. In other words, even when countries' participation in GVCs depends on higher imported content that reduces the share of domestic value added, the growth of the overall labour component of exports is higher than in cases where countries are less involved in GVCs.

The employment rate of women has been rising in export-oriented industries (such as apparel, footwear, food processing and electronics assembly), services (such as business services outsourcing, including call centres) and agriculture

– although the impact of GVCs on female employment in agriculture varies considerably with the type of production and gender divisions of labour in different countries. The relative dynamism of female employment growth tends to decrease as countries move up the value chain.¹⁹

b. GVCs and the quality of employment

As a result of the rise of global production capabilities and the growth of export-oriented industries in many developing countries, combined with intensifying global competition due to the entry of major new

producers and exporters (located largely in Asia), TNCs face significant pressure to reduce costs and increase productivity in their GVCs (also referred to as "global factories"). In turn, this is putting considerable pressure on both wages and working conditions. Especially in labour-intensive sectors (such as textiles and garments) where global buyers can exercise bargaining power to reduce costs,

Jobs created by GVCs vary in quality. Workers can face low pay, tough working conditions, and insecurity as GVC jobs are more exposed to the vagaries of international demand and competition.

Table IV.8. Examples of workforce development initiatives

Private sector workforce initiatives	<ul style="list-style-type: none"> • Intra-firm on- and off-the job training programmes (includes corporate training centres) • Inter-firm training programmes (lead exporters training suppliers) • Specialized training companies providing training services to lead exporters and suppliers • Private specialized colleges, vocational schools, universities • Private employers association (e.g. Turkish Textile Employers' Association)
Sectoral initiatives	<ul style="list-style-type: none"> • Tourism: UNWTO training programmes in the Tourism Sector, Association of Community-Based Tourism (ACTUAR in Costa Rica) • Agriculture: Kenya Horticulture Practical Training Centre • Textile and Garment Associations (e.g. Garment Manufacturers Association Cambodia; Turkish Clothing Manufacturers Association; Bangladesh BIFT Sweater Manufacturing Training Centre, etc.)
Public-private collaboration	<ul style="list-style-type: none"> • Public-private training partnerships: selected examples include <ul style="list-style-type: none"> - Skills Development Centres Malaysia - CORFO – Chile fruit and vegetables industry “Plan Fruticola” involving a partnership between Universidad de Chile and Instituto Nacional de Investigación Agropecuaria - Professional qualifications authority (e.g. Mesleki Yeterliki Kurumu Resmi for Turkish textiles and apparel) - “Buenas Practicas Agricolas” in Chile (training programme coordinated by the government, private sectors and other stakeholders in agriculture) • Government incentives for investment in training by private firms • ILO Better Work Programme: for instance, in Lesotho, it works with the Industry Employers Association, the Textile Exporters Association and five major international buyers: Gap Inc., Jones New York, Levi Strauss & Co., Primark and Walmart

Source: UNCTAD, based on various country and industry cases (Gereffi, G., K. Fernandez-Stark and P. Psilos (2011) “Skills for upgrading: Workforce Development and Global Value Chains in Developing Countries”, Durham: Center on Globalization, Governance & Competitiveness, Duke University.).

this pressure often results in lower wages, although there are substantial variations between countries and across sectors within countries.²⁰

Various initiatives aim to develop workforce skills, which enables producers to enhance productivity, meet industry and global standards, and align skills with demand needs (see table IV.8 for examples of workforce development initiatives). In the horticulture industry, labour training is needed to meet food safety and health standards. Such training may even be provided to the temporary workforce.²¹ In tourism, the type of training varies along the value chain, from hospitality training (hotel cuisine, food preparation, wait services, housekeeping and reception) to tour operator training, language training²² and soft skills training (such as communication skills, customer services and time management).

Despite such initiatives, some employment in GVCs provides insecure incomes and job prospects for workers. Participating countries face a number of potential employment-related risks:

- Pressures on costs from global buyers mean that GVC-related employment can be insecure and involve poor working conditions. While some core workers for key suppliers gain most in terms of pay and benefits, companies supplying global buyers frequently reduce costs by employing temporary or casual workers in their plants and outsourcing work to subcontractors where working conditions are considerably poorer.²³
- Some GVC activities are footloose, and relocation can lead to a decline in local employment.²⁴ TNCs have more options for switching production between countries than most domestic firms. For the simplest tasks in the value chain and where the domestic value added component is low, the costs of relocation tend to be lower. Equally, global buyers that use NEMs to source products from local suppliers (domestic- or foreign-owned) can switch orders from one country to another. The increasing use of global intermediaries that actively seek out and choose between low-

cost locations for order fulfilment increases this pressure. Conversely, the more production is embedded in the local economy and the more the local supplier base has been built up, the greater the costs of switching locations.

- Export-oriented employment in general is more subject to fluctuations in global demand and supply, and therefore influenced by factors occurring far from where employment takes place. GVC-related jobs can be lost in case of demand fluctuation and economic crisis.²⁵ Fluctuation in demand can be seasonal (as in the fashion industry), resulting from weather conditions (in the food industry), or caused by economic downturns and crisis. Temporary workers are more at risk of losing their job, but permanent workers can be affected too.
- For subcontractors at the end of the value chain, which are often used as “pop-up” suppliers to provide additional capacity, these fluctuations in demand are particularly harmful as they are the marginal producers whose output is most likely to be cut. This effect is further exacerbated by lags between demand fluctuations and order fluctuations, resulting in greater variation upstream in the supply chain with negative consequences on suppliers in developing countries, a phenomenon referred to as the “bullwhip effect”.²⁶

3. Technology dissemination and skills building

a. Technology dissemination and learning under different GVC governance structures

The governance structure of GVCs affects the scope for and methods of knowledge transfer to developing-country firms operating in GVCs.

Business relations and governance structures in value chains are determined by the complexity of information and knowledge transfer required to sustain transactions, the codifiability of information and knowledge, and the ease with which it can be transferred, as well as by firms’ capabilities and competence (Section B). The types of governance structures in GVCs are thus an indication of the potential for technology and skills

transfer between various actors in the chain, and related learning mechanisms (see table IV.9).

When operating through *pure market transactions*, suppliers learn from the demands placed upon them by buyers and from feedback about their performance. Learning by exporting can be an effective way for companies to acquire capabilities, but it requires investment by these companies so that they can respond to the challenges that they encounter. Firms can even benefit from learning by importing. In Uganda, firms learned through the process of importing pharmaceuticals to start activities in packaging, assembly and original equipment manufacturing.²⁷ In this case, imports of products provided an initial impetus for domestic economic activity.

Other forms of GVC governance structure are more conducive to learning. *Value chain modularity* occurs when it is possible to codify specifications for complex products. In this case, turnkey suppliers have sufficient competences to engage in full-package activities.²⁸ Although this reduces the need for buyers to engage in inter-firm technology transfer, local suppliers learn through the need to comply with firm or industry standards, and technology transfer is embodied in standards, codes and technical definitions.

By contrast, in *relational value chains*, specifications cannot be codified, transactions are complex, and the capabilities of the suppliers are high. In this case, suppliers possess complementary competences of interest to buyers, and tacit knowledge must be exchanged between buyers and sellers. Both buyers and suppliers benefit from mutual learning, predominantly arising from face-to-face interactions.

In *captive value chains*, complexity and the ability to codify specifications are high, but suppliers do not possess the needed competences. This encourages technology transfer from buyers but can lead to transactional dependencies, with suppliers locked into supply relationships. For example, TNCs may establish very structured supplier development programmes in which local partners receive training and transfers of technology. These are designed to increase the capabilities of the local supply base. In order to protect their investments in these suppliers, companies may ensure a high degree of

Table IV.9. Learning mechanisms within GVCs

Governance type	Technology/knowledge-related determinants of governance types			Predominant learning mechanisms
	Complexity of transactions	Codification of transactions	Competence of suppliers	
FDI (ownership hierarchy)	High	Low	Low	<ul style="list-style-type: none"> • Imitation • Turnover of skilled managers and workers • Training by foreign leader/owner • Knowledge spillovers
NEMs:				
- Modular	High	High	High	<ul style="list-style-type: none"> • Learning through pressure to accomplish international standards • Transfer of knowledge embodied in standards, codes, technical definitions
- Relational	High	Low	High	<ul style="list-style-type: none"> • Mutual learning from face-to-face interactions
- Captive	High	High	Low	<ul style="list-style-type: none"> • Learning through deliberate knowledge transfer from lead firms; confined to a narrow range of tasks – e.g. simple assembly
Trade (market)	Low	High	High	<ul style="list-style-type: none"> • Learning from exporting or importing • Imitation

Source: Adapted from Pietrobelli, C. and R. Rabellotti (2011) "Global Value Chains Meet Innovation Systems: Are There Learning Opportunities for Developing Countries?", *World Development*, 39:1261-9.

transactional dependence, making the suppliers "captive". In the Vietnamese software industry, IBM has developed a programme called "PartnerWorld" to integrate its suppliers into its GVC. The Vietnamese partners provide IBM software services and solutions to their own clients, which include banks, enterprises and the Government; other partners distribute hardware including servers.²⁹ In some cases, training is conducted in conjunction with external bodies, such as the collaboration between TNCs with local or national governments in the Penang Development Centre in Malaysia. Development agents may also try to promote such linkages, as seen in the case of the Projeto Vinculos in Brazil, with involvement from the United Nations.

Under the *hierarchy* governance type (FDI), or *vertical integration*, the lead firm takes direct ownership of the operations and engages in intra-firm trade. This structure takes place when suppliers lack competences; where they are small and dependent on larger, dominant buyers that exert high levels of monitoring and control and where transactions are easy to codify. TNCs' technology transfer occurs within and across firms in a variety of ways.³⁰ The internal configuration of TNCs facilitates intra-firm knowledge transfer, predominantly

from headquarters to local subsidiaries. Local subsidiaries also increasingly engage in R&D activities and build their own competences. This means that TNCs engage in intra-firm trade as well as inherent technology and skills transfer; these occur within the firm across borders and benefit both headquarters and affiliates. These unique ownership advantages distinguish TNC affiliates from other local firms in host economies, and subsequent technology spillovers are enhanced. Although the degree of horizontal and vertical spillovers varies by country and industry, FDI impact does tend to be positive, especially in developing countries.

Knowledge transfer effects tend to be more positive when TNCs act directly as lead firms within the value chain, as opposed to supply chain management firms (to whom TNCs may outsource part of the burden of coordination of GVCs) or global buyers (e.g. for retailers).³¹ When global buyers have operations in the host country, technology and skills transfer do occur more efficiently. However, compared with global buyers and supply chain management firms, TNCs are generally more inclined to initiate supplier development programmes in developing countries. This is illustrated in the automotive industry with

AB Volvo and its suppliers across Asia and Latin America, as well as with IKEA in the home-furnishing industry.

b. Learning in GVCs: challenges and pitfalls

Learning in GVCs is not automatic. It depends on numerous factors, including local absorptive capacities. Skills transfers to lower tier suppliers are often limited

There are caveats to knowledge transfer:³² (i) learning is *not costless* (access to external knowledge means that local firms use resources to identify, absorb and utilize knowledge);³³ (ii) not all knowledge is *useful* (the knowledge imparted by global buyers is specific to the products bought and may not be useful for the local firm in developing its own product lines and competences); (iii) even for lead firms there are *risks involved in knowledge sharing* (especially if the knowledge recipient possesses the resources and competences to become a competitor);³⁴ and (iv) transfer is not automatic (to facilitate transfer, mechanisms must be put in place in both the transferor and the recipient).

Local firms' competences and absorptive capacity affect technology and skills transfer within GVCs. For local firms to develop, they need to engage in internal investment in equipment, organizational arrangements and people. Local firms can then either try to penetrate markets in which their global buyers do not operate (with the proviso that entering new markets requires additional capabilities that local firms may not have) or move into functions which their global buyers are willing to relinquish. The first case was illustrated by electronic contract manufacturers from Taiwan Province of China, including Acer, which applied knowledge learned from one part of its production to supply customers in other markets.

A number of actions can be adopted by local firms to enhance the potential for and assimilation of knowledge transfer.³⁵ One is to operate across value chains. Another is linked to strategies to raise local firms' bargaining power (e.g. diversification of buyers, proactive internal technology development to expand their product portfolio). Collective actions by local producers in developing countries can also facilitate knowledge transfer and absorption. This

can take place in industry clusters, where SMEs combine knowledge and technical resources to improve their export potential or facilitate adoption of standards.

For developing countries, the development of lower-tier suppliers is critical, not all suppliers have similar access to technology.³⁶ In the automotive sector, *tier 1 suppliers* are typically dominated by a small number of foreign TNCs, particularly so since the emergence of global mega-suppliers that meet the needs of their customers across many countries has undermined the position of mostly domestically oriented local companies. Domestic suppliers tend to be numerous in *tier 2 and tier 3*. However, the highly concentrated structure of the industry means there is little room for knowledge transfer to lower-tier suppliers (which operate predominantly through market transactions). In Mexico, very few, if any, of the SMEs in the second and third tiers have been able to leverage their links to GVCs as springboards for their own internationalization. Market pressures and the introduction of international standards do encourage suppliers to improve both product and processes when they first join GVCs, but the use of modularization (driving suppliers to produce standardized components) limits access for the lower-tier suppliers to the new information, knowledge and activities of assemblers and top-tier suppliers.³⁷

4. Social and environmental impacts

The social impact of GVCs has been mixed. Positive impacts have been achieved through strengthened formal job opportunities and poverty reduction along with the dissemination of

environmental management systems and cleaner technology. However, the downward pricing pressure found in many GVCs has led to significant negative social and environmental impacts. Addressing these issues at the firm level throughout a GVC is a key challenge of CSR initiatives. TNC CSR programmes have had some successes, but their limited ability to influence practices must be complemented by public policies.

TNC CSR programmes have had some successes, but their ability to mitigate negative social and environmental impacts in GVCs is limited and must be complemented by public policies.

a. CSR challenges in GVCs

Implementing good CSR practices throughout a GVC is challenging. Reaching beyond first-tier suppliers remains difficult. And from a supplier perspective, compliance efforts can be costly.

For many years, TNCs have been working, primarily at the first-tier level, to promote improved social and environmental impacts, but the nature of GVCs makes this work complicated and its uneven success is due at least in part to differences in GVC structures. TNC efforts beyond the first-tier level of suppliers are especially fraught with challenges and require public policy assistance and collective action within multi-stakeholder initiatives. The 2013 Rana Plaza disaster in Bangladesh demonstrates that TNC CSR programmes alone are not sufficient to address the challenges faced; public sector and multi-stakeholder support for suppliers is key to improving social and environmental impacts.

Buyer-driven GVCs are typically focused on reduced sourcing costs, and in many labour-intensive industries this means significant downward pressure on labour costs and environmental management costs. Some suppliers are achieving reduced labour costs through violations of national and international labour standards and human rights laws. Practices such as forced labour, child labour, failure to pay minimum wage and illegal overtime work are typical challenges in a number of industries. In addition to downward pressure on wages, the drive for reduced costs often results in significant occupational safety and health violations. Common examples in factories include inadequate or non-existent fire safety features, leading to a number of well-publicized deaths in factory fires, and poor ventilation systems leading to chemical exposures and “dust disease” illnesses (pneumoconioses) that the ILO characterizes as a “hidden epidemic”.³⁸

Similarly, downward pricing pressure has created economic incentives for violating environmental regulations and industry best practices, leading to the increased release of disease-causing pollutants and climate-change-related emissions. Cutting costs by engaging in negative social and environmental practices is a particularly acute

trend in developing countries, which often lack the regulatory infrastructure to ensure compliance with the laws and/or have lower social and environmental standards in place as a result of the competitive pressures of GVCs.

For more than a decade, large global companies, whether they be TNCs with operations in many countries or global buyers working through NEMs, have faced increasing pressures to take responsibility for these social and environmental challenges in the value chain. These pressures are particularly strong in sectors such as food, electronics and garments, where consumers can perceive a direct relationship between the products they buy and the conditions under which those products are produced.

Companies have responded to these pressures by adopting a range of standards and codes of conduct. In most companies, these codes are supported by specific staff with responsibility for the code's implementation and complemented by CSR management systems (including supplier oversight programmes) and corporate reporting. Despite the advancement of CSR management practices in recent years, addressing social and environmental problems in value chains remains a challenge.

The international instruments of the United Nations (e.g. ILO Core Labour Standards, the UN Guiding Principles on Business and Human Rights) represent a global consensus on CSR and are commonly cited by TNCs in their company codes of conduct.³⁹ While there is strong consensus on the normative dimension of what *should* be done, the practical implementation of CSR standards is the key challenge, especially in the context of complex GVCs and when working with suppliers beyond the first tier.

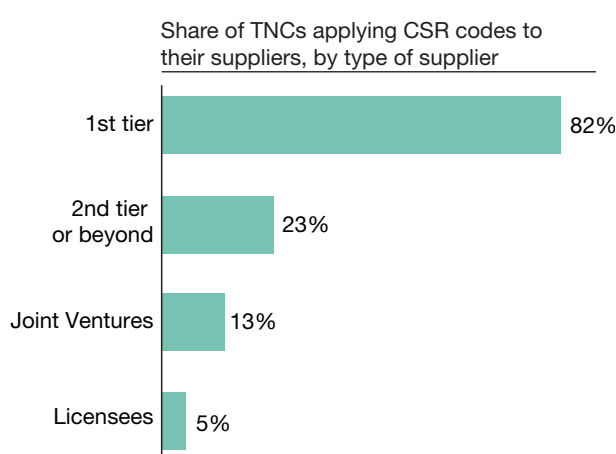
The impact of supplier codes of conduct on GVC members is not uniform; rather, most of it is concentrated on first-tier suppliers. At this level, TNCs in many industries have more influence and are engaged in a number of monitoring activities. Some companies require their suppliers to undergo an audit before the first contract is established and then expect their suppliers to be monitored every three to four years. In other industries, suppliers can be inspected as frequently as every six months.

Generally, the audit process involves an inspection of the factory site, interviews with management and workers (individually and in groups) and an analysis of company files and records, such as time sheets, wage records and employment contracts. The time required to complete an audit can vary between half a day and six days, depending on the size of the supplier.

These CSR programmes can have a beneficial impact at the level of tier-one suppliers, improving some aspects of their social and environmental practices. They do not, of course, solve all problems at the tier-one level, where TNCs still face many challenges implementing their codes. Such programmes, however, can also place a burden on suppliers who are often the subject of frequent (sometimes weekly) inspections from multiple customers. And there is little investment in capacity building and training for suppliers, especially SME suppliers, to improve their social and environmental practices.

Beyond first-tier suppliers, the challenge of influencing the CSR practices of value chain members becomes increasingly difficult. Companies are beginning to apply their CSR codes to members of the value chain beyond first-tier suppliers (figure IV.26). However, the influence of TNCs at these lower levels of the value chain is typically very weak.

Figure IV.26. Application of CSR codes beyond tier-one suppliers



Source: UNCTAD (2012), "Corporate Social Responsibility in Global Value Chains".

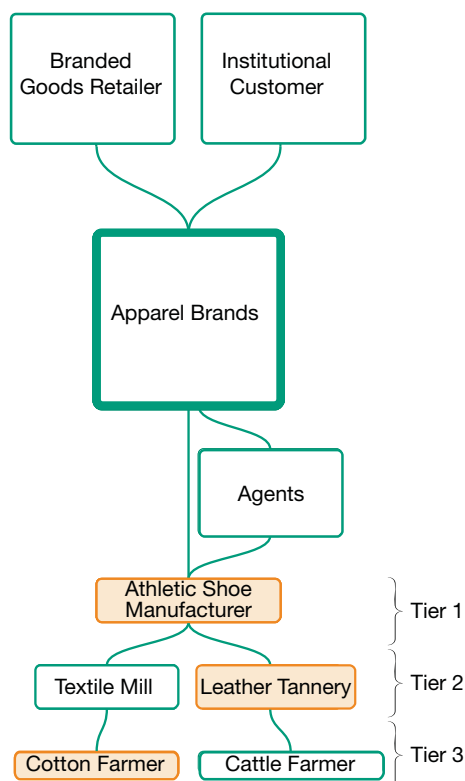
Note: Based on study of 100 TNC CSR codes. Indicates what value chain member the company says its code applies to.

One of the key factors in determining the potential usefulness of company CSR codes is the power of the TNC relative to other members of the value chain, and the proximity of the TNC to those members in terms of direct and indirect dealings. Power differentials between members of a GVC can differ vastly across industries, and sometimes even across specific product categories within an industry. Within apparel, for example, lead firms in some product categories (such as athletic shoes) maintain significant power in relation to their first-tier suppliers, while in other product categories (such as t-shirts) TNCs have much less power over their suppliers.⁴⁰ A significant factor influencing power differentials is the level of concentration at different levels in a GVC, as indicated by the market share that any one buyer or supplier maintains for a given product. TNCs will typically, but not always, have the most influence in value chains where they are a part of a highly concentrated set of buyers dealing with a large number of suppliers at the tier-one level (e.g. the branded athletic shoe market). Their power is much reduced when they are part of a large group of potential buyers (e.g. the t-shirt market). Influence is also significantly reduced as TNCs attempt to reach deeper into their GVCs. To influence the social and environmental practices of suppliers at the second or third tier, TNCs will typically need to form industry associations, join multi-stakeholder initiatives and/or rely on public policy solutions (figure IV.27).

Watchdog organizations, such as non-governmental organizations and trade unions, and strong national laws help to develop an institutional framework in which corporate behaviour can be adequately monitored and violations can be tracked and corrected. An immediate impact of the Rana Plaza disaster in Bangladesh, for example, was a public policy shift allowing the formation of labour unions without prior consent by the employer. The strengthening of watchdog organizations, including trade unions, can have a positive impact on CSR issues by shedding light on violations and empowering workers to self-regulate the industries in which they work. These impacts can be further strengthened through a vibrant civil society network, including open dialogue and opportunities for press publications on all issues surrounding corporate environmental, social and governance practices.

Figure IV.27. TNC influence on CSR practices in the athletic shoes GVC

Orange indicates areas that have come under scrutiny for CSR issues. Size of box indicates relative power in the GVC.



Source: UNCTAD.

Note: Tier 1: Use of company codes and inspections; Tier 2 and 3: Use of industry associations and multi-stakeholder initiatives (e.g. Better Leather Initiative, Better Cotton Initiative).

b. Offshoring emissions: GVCs as a transfer mechanism of environmental impact

Offshoring of emissions will remain a challenge even with best practice environmental management systems. Deliberations on global emissions reduction must take into account the effect of GVCs.

Trade and GVCs are the mechanism through which the emission impact of final demand is shifted around the globe. Manufacturing for exports was responsible for 8.4 billion tons of carbon dioxide in 2010, or 27 per cent of global carbon

dioxide emissions (roughly in line with the share of gross exports in GDP of 30 per cent in 2010). As developing countries continue to engage in export-oriented industrialization, they tend to have a higher share of emissions caused by final demand in other

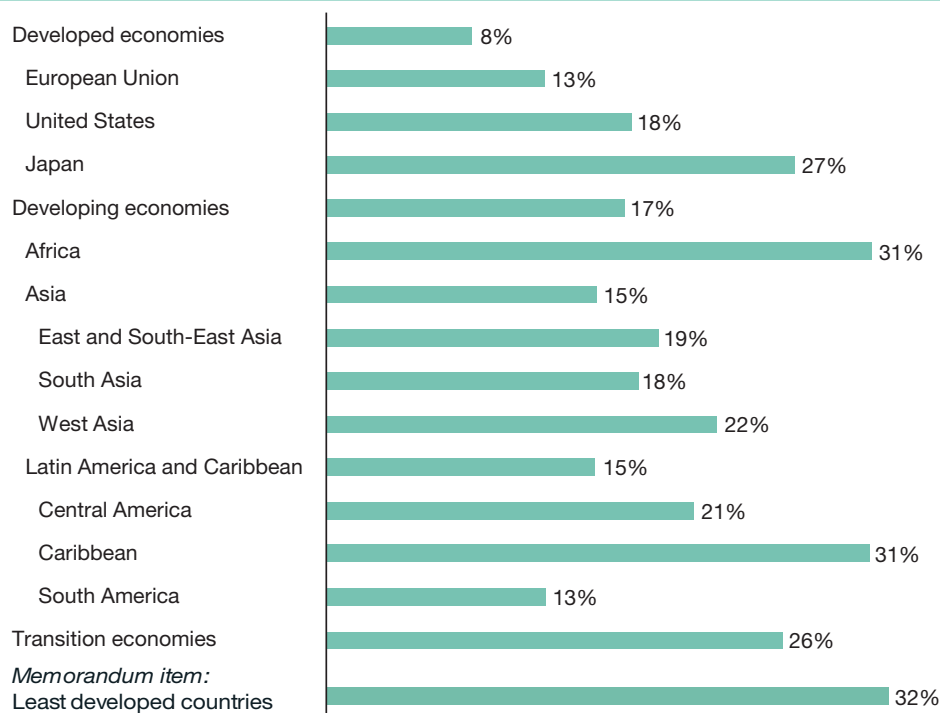
countries (i.e. trade- or GVC-related emissions) as compared with developed countries (figure IV.28). Only 8 per cent of total carbon dioxide emissions produced in developed countries were used to satisfy final demand in developing countries, whereas more than double that proportion (17 per cent) of emissions produced in developing countries served final demand in the developed economies. Africa and the least developed countries account for small fractions of global emissions (4 per cent and 1 per cent respectively), but relatively large shares of those emissions are transferred through GVCs to satisfy demand elsewhere.

This offshoring of emissions facilitated by GVCs can have a significant impact on a country's ability to achieve its national environmental goals, as well as its ability to meet internationally negotiated emissions reductions targets. Deliberations on global emissions reduction must take into account this offshoring effect when considering national emissions targets.

Engaging in GVCs, even when firms employ environmental best practices, will typically lead to a shifting of the burden of emissions reduction to developing countries, which often have the least capacity to address it. The situation can be further exacerbated by the energy sources used in different countries: shifting energy-intensive manufacturing from a country with low-carbon energy sources (e.g. nuclear, hydro, solar) to a country with high-carbon energy sources (e.g. coal) can lead to higher overall emissions even when all manufacturing processes remain the same. Addressing the issue of emissions offshoring can involve greater coordination between investment promotion and export promotion authorities, on the one hand, and environmental protection authorities, on the other, as well as coordination with the energy production strategy for the country.

5. Upgrading and industrial development

The previous sections have demonstrated that participation in GVCs can yield *direct* economic benefits to developing countries such as the value added contribution to GDP, job creation and export generation. A number of mechanisms have been addressed through which participation in GVCs can improve the *longer-term* development prospects

Figure IV.28. Share of total emissions that are “imported” through GVCs, by region, 2010

Source: UNCTAD analysis, based on information from the Eora MRIO database.

Note: The UNCTAD-Eora GVC Database has its origins in the Eora MRIO (multi-regional input-output) database which was conceived as a means to track the true carbon footprint of countries and other economic agents.

GVCs can offer longer-term development opportunities – in addition to direct economic impacts – if local firms manage to increase productivity and upgrade to higher value added activities in GVCs.

of countries, in particular the potential for technology dissemination and skill building, which can help firms (i) improve their productivity in GVCs and (ii) enter or expand into higher value added activities in GVCs. Both are essential ingredients of industrial upgrading.

a. Upgrading dynamically at the firm level

(i) GVCs and firm productivity

Firm-level evidence shows that participation in GVCs is linked to firm *productivity*. Compared with non-exporters (or non-importers), firms that engage in international activities show significantly higher productivity levels. Similarly, firms that engage in GVCs with NEMs have productivity levels that are lower than those of TNCs, which have activities in

more than one country. Internationalization is therefore closely linked to productivity levels of firms (figure IV.29).

Firm-level productivity and country competitiveness go hand in hand. It is firms with high productivity levels that are behind countries' participation in GVCs, and it is the further improvement of these firms' productivity that is, to a great extent, behind countries' success in upgrading.

(ii) Types of firm upgrading

Local firms can enhance their competences in GVCs through four main channels, namely products, processes, functional areas and inter-chain interactions.⁴¹

- *Product upgrading.* Firms can upgrade by moving into more sophisticated product lines

Firms can enhance capabilities in GVCs through product, process, functional and chain upgrading. Upgrading is a function of GVC structure and governance, lead and local firm characteristics, and host country context.

(which can be defined in terms of increased unit values). For instance, in the tourism value chain, firms can upgrade within the hotel segment by offering higher-quality hotels or by adding niches such as ecological or medical tourism.

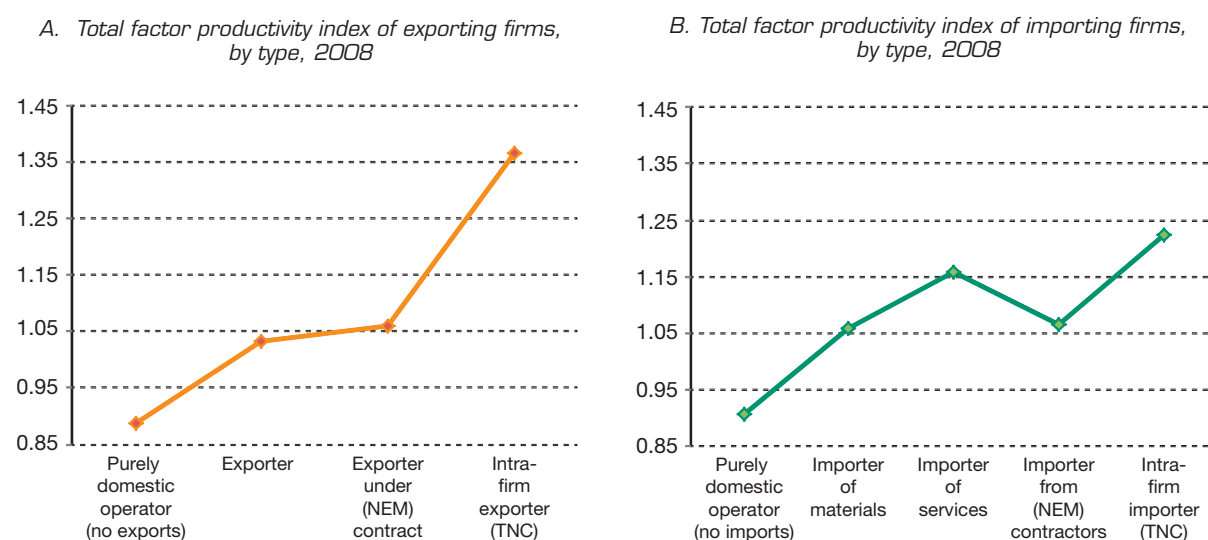
- *Process upgrading.* Firms can upgrade processes by transforming inputs into outputs more efficiently through superior technology or reorganized production systems. Increased efficiency includes processes within the firm as well as processes that enhance links in the chain (e.g. more frequent, smaller and on-time deliveries). The dissemination of business practices and standards among firms serving GVCs can be triggered by lead firms or market pressures. For example, to meet higher standards in agricultural produce, many TNCs encourage adoption of “GAP” (good agricultural practice) among their suppliers in developing countries, offering them training and technical assistance in field care, post-harvest practices, storage and transportation.
- *Functional upgrading.* Firms can acquire new functions in the chain, such as moving from production to design or marketing, to increase the overall skill content of activities. For instance, in the global apparel value

chain, functional upgrading would involve a move from cut, make and trim forms of offshore contracts to a model where the firm offers a wider range of production capacities and services to buyers (such as limited design, warehousing and embellishment), to ODM (own design manufacturers) where firms carry out all parts of the production process including design, to OBM (own brand manufacturers) where firms engage in R&D, design and marketing functions.

- *Chain upgrading.* Firms apply the competence acquired in a particular function of a chain to a new industry. For example, firms in the apparel industry may shift into other value chains such as automotive (e.g. providing seat covers) or technical textiles for non-apparel uses. In the case of the Indian offshore services value chain, local firms became involved in software development in the 1990s (and still are today), before developing competences in business process and knowledge process outsourcing in the early 2000s.

The route to upgrading is unique to individual industries and countries. Various types of upgrading can take place simultaneously. In tourism,⁴² for example, upgrading paths and policies have included (i) pro-FDI policies to attract international

Figure IV.29. Firm participation in GVCs and productivity



Source: UNCTAD analysis, based on EFIGE; Altomonte, C., T. Aquilante and G. Ottaviano (2012) “The Triggers of Competitiveness: The EFIGE Cross-Country Report”, Bruegel Blueprint Series, Vol. XVII.

Note: Reference productivity index for the sample set to 1.00.

hotel chains and coordination between global tour operators and local incoming agents (in Viet Nam and Costa Rica, agents upgraded to serve as regional tour operators as well as in-country tour coordinators), (ii) IT utilization (the Viet Nam National Administration of Tourism focused attention on developing a web presence for the country), and (iii) diversification of product offerings (such as eco-tourism in South India).

Recent evidence suggests that through upgrading, local firms can also create new chains. Through its internationalization and with incentives from the Brazilian Government, Foxconn now assembles iPhones in Brazil. The location of a lead firm in this large emerging country is expected to not only increase consumer electronics manufacturing but also generate demand for locally made components (although, for the moment, many of the components are still shipped from Asia).

(iii) Factors driving firm-level upgrading

A number of factors influence the potential for local firm upgrading through GVCs, including the nature, structure and governance of GVCs and their lead firms' characteristics, as well as host country and local firm characteristics (see table IV.10).

In terms of structure and governance, a GVC that involves too many intermediaries limits the potential for local firms to learn from lead firms. Some governance mechanisms, particularly the modular or relational forms of business relationships, lead to enhanced firm-level upgrading. And lead firms have an incentive to encourage product and process upgrading but may raise entry barriers through brand names, technology or R&D, which can mean functional upgrading is more difficult to achieve.

Focusing on host country and firm-level characteristics, it is clear that physical infrastructure (ports, roads, power, telecommunications), knowledge infrastructure (universities, technology parks, etc.) and business infrastructure (EPZs, clusters, agglomerations, etc.) increase the upgrading potential of local firms. The quality, quantity and cost of appropriate factors of production (labour, capital, natural resources) facilitate upgrading. Local firm competences and absorptive capacity determine upgrading potential.

And the value chain position (e.g. first-, second- or third-tier supplier), and power relations within the value chain mean that local firms have varying access to lead-firm technology and knowledge and related upgrading potential.

The nature of GVCs means that *authority* and *power relationships* are key to explaining learning by local producers. In addition, there are *sector-specific differences* in the ways firms can learn. In *buyer-driven* GVCs, buyers tend to intervene directly in local firm processes. In *producer-driven* GVCs, especially in the case of complex product systems, the potential for technological upgrading is high, first because suppliers tend to already possess technological capabilities, and second because purchasers provide incentives to upgrade. However, the potential for upgrading is higher for first-tier suppliers than for second- and third-tier suppliers.

For local firms, operating in multiple value chains, including TNC-independent chains, can act as an impetus for upgrading. First, when local firms operate in value chains that are not dominated by global buyers or TNCs, such as national or regional chains, they often need to develop their own competences across a variety of functional activities (without the fear of competing with their key customers).⁴³ Second, once local firms have acquired the competence to develop and sell products under their own names within their own markets, they are in a position to start exporting these under their own brands and designs to export markets.⁴⁴ Third, when a number of local firms in an industry or cluster develop such a range of competences, their effects may subsequently spill over to other local firms.

The origin of lead firms can result in varying benefits.⁴⁵ The Zambian copper mining sector provides a good ground to compare various lead firms in GVCs. North American, European and South African buyers have aligned their supply chain practices to global practices that are increasingly dominant in the mining sector, characterized by emphasis on quality, lead times and trust as key market requirements, with support and cooperative practices for suppliers to improve their management and technological competences. Chinese buyers are considered result-oriented buyers, but their

Table IV.10. Factors influencing firm-level upgrading potential in GVCs

Driving force	Factors	Description
Lead firms and GVC structure and governance	Fragmentation and configuration	<ul style="list-style-type: none"> Spatial scale (within and across borders), number of stages of the value chain, number and types of key actors involved (lead firms, intermediaries, suppliers)
	Governance mechanism	<ul style="list-style-type: none"> Governance in terms of market, modular, relational, captive and hierarchy and its implication in terms of the type of relationship between lead and local firms
	Technology level	<ul style="list-style-type: none"> Levels of technology in various segments of the value chain within an industry
	Dynamic changes	<ul style="list-style-type: none"> Speed with which global competition changes (global strategic rivalry, threats of new entrants) and changes in the GVC structure and governance
	Entry barriers	<ul style="list-style-type: none"> Number of existing competitors at various stages of the value chain, type of entry barriers such as brand names, technology or R&D
	Bargaining power	<ul style="list-style-type: none"> Degree of power held by the lead firms in terms of decisions over suppliers and guidance in activities performed by key suppliers
	Organizational convergence	<ul style="list-style-type: none"> Harmonization of key activities and standards across various locations (such as human resources and environmental practices, inter-firm cooperation), supplier auditing and monitoring practices
Host country and firm-level characteristics	Infrastructure	<ul style="list-style-type: none"> Physical infrastructure (ports, roads, power, telecommunications), business infrastructure (EPZ, SEZs, Industrial Zones)
	Key resources	<ul style="list-style-type: none"> Availability, quality and cost of key resources (labour, capital, natural resources)
	Supply conditions	<ul style="list-style-type: none"> Availability, quality and cost of supplies locally, technological competence of local suppliers
	Market conditions	<ul style="list-style-type: none"> Local (and regional) market size, growth, consumer preferences
	Knowledge environment	<ul style="list-style-type: none"> Macro-innovatory, entrepreneurial and educational capacity environment
	Degree of specialisation	<ul style="list-style-type: none"> Country's past, current and future specialization in specific GVC segments, tasks and activities
	Geographic position	<ul style="list-style-type: none"> Size and potential of regional markets, membership of a regional integration agreement facilitating inter-country division of labour,
	Firm resources	<ul style="list-style-type: none"> Local firm's own resources, capabilities and degree of absorptive capacity
	Value chain position and involvement	<ul style="list-style-type: none"> Position of the firm (1st, 2nd or 3rd tier supplier), including bargaining power, and number, type and geographic spread of value chains the firm is involved in.
	Competitive dynamics	<ul style="list-style-type: none"> Local (regional or global) strategic rivalry, threats of new entrants, threats of substitutes

Source: UNCTAD.

supply chain is governed more at arm's length. Indian buyers are more price-driven, but by adopting low entry barriers and low performance requirements, they ensure high levels of competition in the supply chain. Different supply chain practices have been found to affect upgrading efforts of local suppliers in different ways.

Local firms often have to enhance their competences as a result of country, industry or firm standards related to the production and processing of various products.⁴⁶ Firm-specific standards are driven by organizations that reflect the interests of the corporate sector (i.e. ISO 9000 quality procedures or ISO 14000 environmental standards). Once lead

firms implement these quality standards, there is often a cascade effect, as numerous suppliers need to follow suit and adopt similar procedures. Implementation of such procedures can improve processes among a wide range of companies involved in the value chain.

Agglomeration and clustering facilitate economic benefits from GVC participation. Local firms have a greater chance of capturing the benefits of GVC participation when they are located in clusters because of *collective efficiency*⁴⁷ resulting from geographical proximity and increased potential for business interactions and learning.

(iv) Upgrading risks

Local firms may find themselves *locked into* low value added activities despite having successfully gone through product and process upgrading, because functional upgrading is more difficult to achieve. This can result from a number of factors, namely prevailing business *practices of lead firms*,⁴⁸ global *competitive dynamics* of value chains and *local firms acting inefficiently* by maximizing short-term profits at the cost of long-term efficiency, as well as the *routines of contractors* involved in the value chain.⁴⁹

Access to various functions may be more contentious if local producers start engaging in activities conducted by the lead firms.⁵⁰ In such cases, power relations may limit knowledge flows within the chain. Local firms become tied into relationships that prevent functional upgrading, especially when they depend on powerful buyers for large orders. This is illustrated in the Sinos Valley shoe cluster in southern Brazil. In the 1960s, new buyers from the United States drove a change in the configuration of the cluster from numerous small producers to larger producers that could deliver larger volumes of standardized products. This affected power relations within the cluster. Process standards and product quality rose, as local firms gained access to international markets. The early 1990s saw the rise of rival Chinese producers and downward price pressure. Despite this competition, large producers in the Sinos Valley were reluctant to move up to areas of design and marketing for fear of consequences from the cluster's main buyers, which represented nearly 40 per cent of the total cluster exports. It became apparent that the Brazilian producers achieved high production standards but lagged behind in terms of innovative design. These competences were instead developed by firms targeting the local Brazilian market or regional Latin American export markets.

Other risks associated with upgrading relate to the *impact* of the upgrading process. Economic upgrading can have detrimental social impacts.⁵¹ This can take place, for instance, when greater process efficiency leads to an increased use of casual labour. In a few cases (as in the agro-food

sector of some countries), process improvements have been accompanied by weak pro-poor, environmental and gender outcomes.

Rising standards in an industry can also create barriers to entry into the value chain for local firms.⁵² In the horticultural industry, new supplier countries often start in export markets where standards are less stringent. To upgrade, e.g. from production to packing, suppliers must first understand the market (especially when buyer-driven), invest in new technologies (for instance, to meet high hygiene standards in packhouse operations, they need to set up on-site laboratories for product and staff health tests), and have access to a local packaging industry that can supply appropriate containers. Where a good local packing supply industry does not exist, value loss can occur initially as producers ship their products to neighbouring countries for repackaging before final exports.

b. Upgrading at the country level and GVC development paths

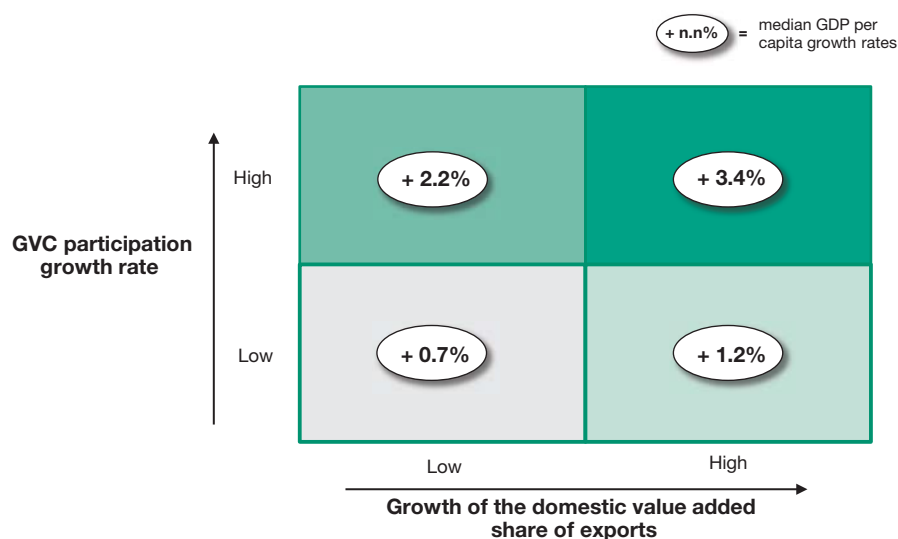
(i) Participation in GVCs and domestic value added creation

When firms enter or expand into *higher value added activities* in GVCs, they create more domestic value added from trade for the country in which they are based. This is not automatic. Participation in GVCs often implies entering more fragmented value chains that are, by definition, characterized by a higher use of foreign value added inputs. At the entry level, the share of domestic value added in exports thus tends to decrease initially when countries increase GVC participation, although the absolute value of the contribution of exports to GDP is likely to increase.

This conceptual trade-off between GVC participation and domestic value added creation from trade is shown in figure IV.30. At the country level, as seen in section A, GVC participation

Most developing countries have increased their participation in GVCs over the past 20 years, usually at the cost of a higher share of foreign value added in exports. The optimal policy outcome is higher GVC participation and higher domestic value added creation.

Figure IV.30 GDP per capita growth rates for countries with high/low growth in GVC participation, and high/low growth in domestic value added share, 1990–2010



Source: UNCTAD-Eora GVC Database, UNCTAD analysis.

Note: Data for 125 developing countries, ranked by growth in GVC participation and domestic value added share; high includes the top two quartiles of both rankings, low includes the bottom two; GDP per capita growth rates reported are median values for each quadrant.

depends on both upstream and downstream links in the value chain. Countries increase their GVC participation both by increasing imported content of exports (foreign value added in exports) and by generating more value added through goods and services for intermediate use in the exports of third countries. Naturally, the latter mechanism yields the positive results for the domestic economy, as it implies growing domestic value added in exports.

In fact, both the right hand quadrants in figure IV.30 – countries that reduce their reliance on foreign value added in exports – indicate higher GDP per capita growth results than the left hand quadrants. Examples of countries that have achieved such results include China, Chile, the Philippines, Thailand and Morocco.

Interestingly, both the top quadrants in the matrix – countries with faster GVC growth rates – have significantly higher GDP per capita growth rates than the bottom quadrants. This suggests that even those countries that rely more on foreign value added in exports, on average, may be better off if it results in higher GVC participation. Countries with high GVC participation growth rates include Indonesia, Malaysia, Viet Nam, Bangladesh, Mexico and Turkey.

Clearly the optimal policy outcome is depicted in the top right hand quadrant, where countries increase GVC participation through growth in the domestic value added in exports. Examples of countries in the top right quadrant include China, Indonesia, Thailand and Peru. While increasing foreign value added content in exports may be a short-term trade-off for policymakers, in the longer term the creation of domestic productive capacity yields the better results.

Although the matrix is a simplification of reality that cannot capture all the dynamics of development, the different outcomes in each of the combinations of GVC participation and domestic value added creation suggest that there may be a set of distinct “GVC development paths” or evolutionary lines in countries’ patterns of participation in GVCs.

Figure IV.31, based on an analysis of value added trade patterns of 125 developing countries over 20 years, shows the frequency of the various directions in which countries tend to move in terms of participation and domestic value added creation. The implicit trade-off between participation and domestic value added share is confirmed by the high frequency of moves towards higher GVC

participation at the cost of domestic value added share.

GVC development paths are not one-off moves along the participation and upgrading dimensions, they are a *sequence* of moves. The most commonly observed sequential moves can be grouped into a number of prototypes. For most countries (some 65 per cent), increasing participation in GVCs over the past 20 years has implied a reduction in domestic value added share, with the increase in GVC trade significantly outweighing the decline in value added share such that the result in terms of absolute contribution to GDP was positive. Some countries (about 15 per cent) have managed – often after initial rapid increases in GVC participation – to regain domestic value added share, mostly by upgrading within the GVCs in which they gained strong positions and by expanding into higher-value chains.

A number of countries have, over the past 20 years, not seen a significant increase in the relative contribution of GVCs to their economies. This group includes countries that may have started out on a path towards higher GVC participation but dropped back to below the starting point, as well as countries that maintained the role of GVCs in their economies at a low level or decreased it.

Each of the prototypes of GVC development paths tends to show a predominant pattern of trade and investment:

- When developing countries increase participation in GVCs, they have tended to see increases in imports of intermediate goods, components and services increase, as well as in the importance of processing exports. In many countries – as in Bangladesh, Costa Rica, Mexico, and Viet Nam – this pattern has coincided with an influx of processing FDI or the establishment of NEM relationships (e.g. contract manufacturing) with TNCs.
- Some developing countries that have managed to increase domestic value added in GVCs, after achieving a significant level of GVC participation, have succeeded in increasing exports of higher value added products and services or in capturing a greater share of value chains (covering more segments). In many countries, including China, Malaysia, the Philippines and Singapore, such export-upgrading patterns have combined with an influx of FDI in adjacent value chain segments and higher-technology activities. A few countries, including Thailand, have experienced very rapid development of domestic productive capacity for exports that compete successfully at relatively high value added levels. In these cases, FDI has often acted as a catalyst for trade integration and domestic productive capacity building.
- A number of countries that have not seen a significant increase in the relative contribution of GVCs to their economies have seen exports remain predominantly within sectors and industries that have domestic productive capacity (with limited need for imported content). This does not mean in all cases that these countries have remained entirely isolated from GVCs. In a few cases, FDI inflows have been aimed at producing intermediate goods and services for export products, substituting imports. These patterns of trade and FDI preserve domestic value added in trade, but at the cost of more rapid growth in GVC participation.

Figure IV.31. Frequency of moves along dimensions of GVC participation and domestic value added creation, developing economies, 1990–2010, five year intervals

Type of Move			Number of cases	%
GVC integration	DVA creation	Direction of move		
⊕	⊖	↙	216	43%
⊕	⊕	↗	46	9%
⊕	⊕	↗	46	9%
⊕	⊕	→	51	10%
⊖	⊕	↘	35	7%
Others			106	21%
Total			500	100%

Source: UNCTAD-Eora GVC Database, UNCTAD analysis.

(ii) Upgrading and industrial development

Any analysis of GVC development paths at the country level risks overlooking the fact that countries may have moved along the dimensions of GVC participation and domestic value added creation in different ways. They may rely on different industries and GVC segments, which they may have grown by different means – including through FDI, NEMs or domestic enterprise development. The overall GVC development path of countries is an average of the development paths of many industry and GVC activities, which may have followed different paths.

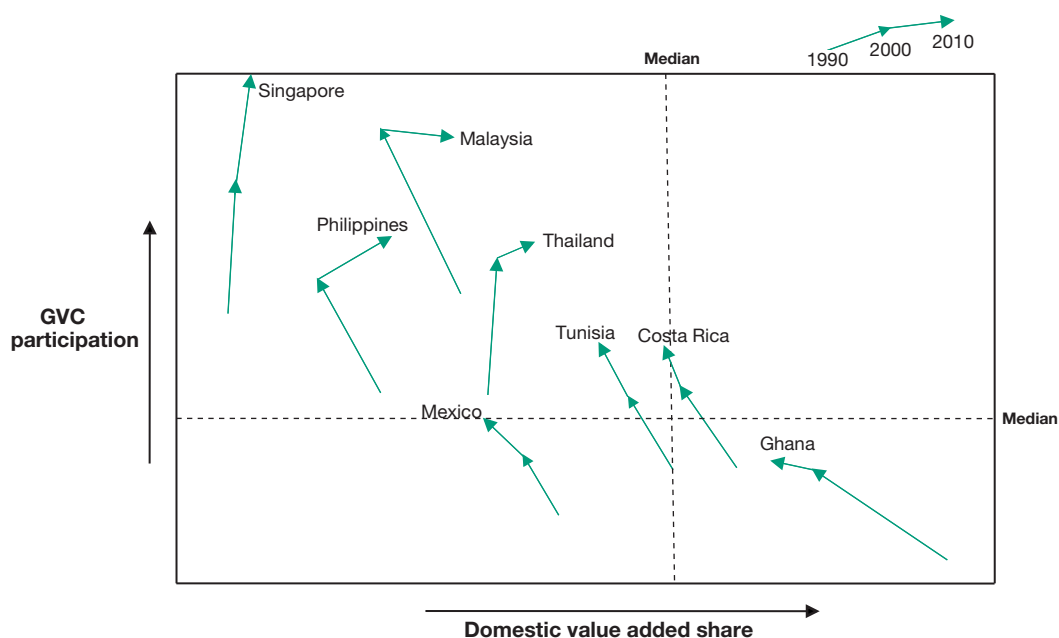
Moreover, domestic value added creation should not be equated with upgrading. Upgrading may be one (important) factor behind increasing domestic value added. But even countries with decreasing shares of domestic value added in exports may well be on an upgrading path, if they increasingly participate in GVCs that create higher overall value, or engage in GVC tasks and activities at higher levels of technological sophistication that generate

more value in absolute terms but at the same time depend on increasing foreign content in exports.

Figure IV.33 shows a number of examples of countries participating in GVCs at different levels of sophistication, from resource-based exports to low-, medium- and high-tech manufacturing exports, to exports of knowledge-based services. Upgrading paths for these countries could include process, product or functional *upgrading within* each of the categories of technological sophistication, or *diversifying* and expanding into higher-level categories.

Upgrading and industrial development can come from improving productivity and expanding the range of tasks and activities within, e.g. resource-based GVCs, where countries move from exporting commodities to processing raw materials. It can mean moving to adjacent categories of increasing technological sophistication and value added, such as moving into medium-technology manufacturing after learning and building productive capacities through low-tech manufacturing activities. Or it can mean jumping into categories several levels

Figure IV.32. GVC Development Paths: country examples



Source: UNCTAD-Eora GVC Database, UNCTAD analysis.

up the technology ladder, often using skills related to existing exports, such as engineering skills employed in resource-based activities that can be exported as knowledge-based engineering services.

A number of examples illustrate how some countries have succeeded in upgrading through investment in GVCs. China has successfully expanded into ever more high-tech export-oriented activities (figure IV.34). Knowledge-based services exports from China also increased eight-fold between 2000 and 2010 (although the total value of these exports is dwarfed by exports of goods). The basis for the export growth from China, and for the expansion of

productive capacity in higher-technology GVCs, can be found initially in the influx of foreign investment and the establishment of contract-based links (NEMs) with TNCs, but the growth of capacity of domestic firms has kept pace.

In Costa Rica, a large initial foreign direct investment project (by Intel in 1996) resulted in a jump in high-tech exports, from a starting point of predominantly resource-based exports (figure IV.34). Subsequently, the attraction of further investment by services outsourcing firms, benefiting from spillovers from the high-tech segment, has led to an expansion of knowledge-based services exports.

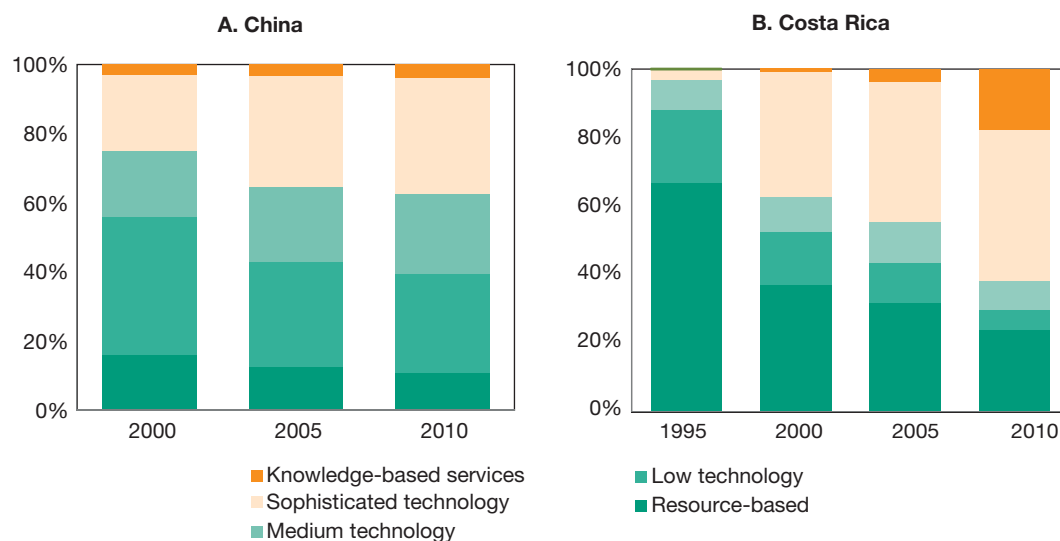
Figure IV.33. Examples of countries participating in GVCs at different levels of technological sophistication and value added, 2010

Country	Exports by level of technological sophistication				
	Resource-based	Low-tech manufacturing	Mid-level manufacturing	Sophisticated manufacturing	Knowledge-based services
Brazil	60%	5%	15%	5%	10%
China	10%	25%	20%	30%	5%
Costa Rica	20%	5%	5%	35%	15%
India	35%	15%	10%	5%	25%
Lesotho	30%	60%	0%	5%	0%
Malaysia	30%	10%	15%	30%	5%
Russian Federation	75%	5%	10%	0%	5%
Singapore	20%	5%	15%	35%	15%
South Africa	55%	5%	25%	0%	5%

Source: UNCTAD analysis, based on Globstat.

Note: Product categories are based on Lall's classification of technology-intensity. Knowledge-based service exports include insurance, financial services, computer and information services, royalties and license fees, and other business services. See Lall, S. (2000) "The Technological Structure and Performance of Developing Country Manufactured Exports, 1985-1998", *QEH Working Paper Series*, Queen Elizabeth House, University of Oxford. Other, non-knowledge-based services are excluded from calculations, hence percentages do not sum to 100. Resource-based products is the sum of commodities and natural resource-based manufacturers.

Figure IV.34. Exports by category of technological sophistication



Source: UNCTAD analysis, based on Globstat.
 Note: For method and source, see figure IV.33.

This section has demonstrated that participation in GVCs can bring benefits for developing countries, including direct contributions to value added and GDP, job creation and income generation. However, capturing the value of GVCs is not a given, and the social and environmental consequences of GVC participation can be significant.

The section has also shown that GVC participation can bring long-term development benefits in the

form of upgrading opportunities and industrial development options. However, relatively few developing countries have made significant inroads into increasing domestic value added share and upgrading, and the build-up of technological capabilities and productive capacity through GVCs is not automatic. *Policies matter* to maximize the development contributions of GVCs and minimize the risks involved.

D. Policy implications of GVCs

Countries can make a strategic choice whether or not to actively promote GVC participation. However, the key question for most is how to incorporate GVCs in development strategy.

As shown in the preceding sections, participation in GVCs can generate considerable economic development benefits but also involve risks. The potential social and environmental consequences of GVCs, and the experience of some countries with limited local value capture from GVCs, have led many developing-country policymakers to ask the legitimate question; are active promotion of GVCs and GVC-led development strategies the only available options or are there alternatives?

Active promotion of GVCs and GVC-led development strategies imply the encouragement and provision of support to economic activities aimed at generating exports in fragmented and geographically dispersed industry value chains, based on a narrower set of endowments and competitive advantages. And they imply active policies to encourage learning from GVC activities in which a country is present, to support the process of upgrading towards higher value added activities and diversifying into higher value added chains.

The alternative, by implication, is an industrial development strategy aimed at building domestic productive capacity, including for exports, in all stages of production (extending to the substitution of imported content of exports) to develop a vertically integrated industry that remains relatively independent from the key actors of GVCs for its learning and upgrading processes.

As seen in the previous sections, almost all countries have increased their GVC participation over the past two decades, but a significant group (about 20 per cent) has not seen a relevant increase in GVC growth relative to the size of their economies. Some countries, those with either significant resource-based exports, or sufficient growth potential based on domestic demand, or a combination of both size and resource factors, have seen economic performance in line with the most successful GVC-led-growth countries.

It thus appears that countries can make a strategic choice whether to promote or not to promote GVC participation. To do so, they need to carefully weigh the pros and cons of GVC participation, and the costs and benefits of proactive policies to promote GVCs or GVC-led development strategies, in line with their specific situation and factor endowments. It should be noted that promoting GVC participation implies targeting specific GVC segments, i.e. GVC promotion is often selective by nature. Moreover, promotion of GVC participation is only one aspect of country's overall development strategy.

However, for the majority of smaller developing economies with limited resource endowments there is often little alternative to development strategies that incorporate a degree of participation in GVCs. The question for those countries is not *whether* to participate in GVCs, but *how*.

To help answer that question, a number of key policy challenges can be distilled from the findings presented in the previous sections on patterns of value added trade and investment, drivers and locational determinants for GVC activities, and the development impact of GVCs:

- Most developing countries are increasingly participating in GVCs, but many are still at an early stage of GVC development. An encouraging aspect of GVCs is that the prerequisites for the development of activities within value chains, and the determinants of investment in such activities, are generally fewer than the prerequisites for industries as a whole. Nevertheless, a key challenge for policymakers remains *how to gain access and connect local firms to GVCs*.
- GVC links in developing countries can play an important role in developing economies, in particular by contributing to GDP, employment and growth. The scope for these potential contributions depends on the configuration and governance of GVCs and on the economic context in GVC participant countries (including productive capacities and firm capabilities). The policy challenge is thus *how to maximize the development benefits from GVC participation*.

- In the longer term, GVCs can support the build-up of productive capacity, including through technology dissemination and skill building, and bring opportunities for industrial upgrading and increasing domestic value added in trade. However, the potential development benefits of GVCs – in particular technology dissemination, skill building and upgrading – are not automatic. Developing countries can remain locked into low value added activities. A strategic policy challenge is *how to ensure that opportunities to upgrade in GVCs are realized*.
- There are other risks and potential downsides to GVC participation, including negative effects on working conditions and job security, as well as social and environmental impacts. The question is *how to mitigate the risks involved in GVC participation*.
- Countries' participation and role in GVCs and their value added trade patterns are often shaped by TNCs' decisions on where to invest and with whom to partner. The

challenge for policymakers is thus *how to align and synergize trade and investment policies* in a world in which the two are inextricably intertwined.

Gaining access to GVCs, benefiting from GVC participation and realizing upgrading opportunities in GVCs requires a structured approach that includes (i) embedding GVCs in overall development strategies and industrial development policies, (ii) enabling GVC growth by maintaining a conducive investment environment and by putting in place infrastructural prerequisites, and (iii) building productive capacities in local firms. Mitigating the risks involved in GVC participation requires (iv) a strong environmental, social and governance framework. And aligning trade and investment policies implies the identification of (v) synergies between the two policy areas and in relevant institutions. These key elements of a policy framework for GVCs and development are summarized in table IV.11 and provide the structure of the remainder of this section.

Table IV.11. Building a policy framework for GVCs and development

Key elements	Principal policy actions
Embedding GVCs in development strategy	<ul style="list-style-type: none"> • Incorporating GVCs in industrial development policies • Setting policy objectives along GVC development paths
Enabling participation in GVCs	<ul style="list-style-type: none"> • Creating and maintaining a conducive environment for trade and investment • Putting in place the infrastructural prerequisites for GVC participation
Building domestic productive capacity	<ul style="list-style-type: none"> • Supporting enterprise development and enhancing the bargaining power of local firms • Strengthening skills of the workforce
Providing a strong environmental, social and governance framework	<ul style="list-style-type: none"> • Minimizing risks associated with GVC participation through regulation, and public and private standards • Supporting local enterprise in complying with international standards
Synergizing trade and investment policies and institutions	<ul style="list-style-type: none"> • Ensuring coherence between trade and investment policies • Synergizing trade and investment promotion and facilitation • Creating "Regional Industrial Development Compacts"

Source: UNCTAD.

1. Embedding GVCs in development strategy

GVCs imply a new role for trade and investment in industrial development strategies, which should be based on countries' starting points and growth opportunities along GVC development paths.

In most developing countries, economic development requires not just increased productivity of the existing industrial structure but also a change in the structure of production (e.g. diversifying from a resource-based economy into manufacturing and services), involving industrial transformation and higher value-added activity. As production is increasingly organized within GVCs, development is likely to occur within such chains. Economic upgrading in GVCs – moving into higher value added functions within chains and into more technologically sophisticated value chains – is thus an important channel of development and industrialization.

Industrial policies focused on final goods and services are less effective in a global economy characterized by GVCs.⁵³ GVCs require a new approach to industrial development, one based on new markets, new products and new skills. Policymakers must understand the key elements of a GVC-based approach to industrial development:⁵⁴

- *GVCs require more finely targeted policies.* GVC-based industrial development policies require a shift away from traditional industrial policies aimed at developing production capacity for final goods and services. Improvements in competitiveness do not necessarily arise from the development of integrated industries, but from upgrading to higher value tasks within industries. Measures aimed at encouraging the development of a vertically integrated industry can be an inefficient use of scarce resources.
- *GVCs increase the need for policies dealing with the risk of the middle-income trap.* The fragmentation of industries increases the risk of “thin” industrialization, where a country enters an industry, but only in its low-value and low-skill aspects, such as assembly of electronics products or call centres in the services sector, without the ability to upgrade (see Section C). Although countries can also get stuck

producing low value added final goods, in GVCs the risk of getting stuck in low-value added tasks and activities is arguably greater.

- *GVCs require a new approach to trade policies in industrial development strategies.* Protective trade policies can backfire in the context of GVCs if imports are crucial for exports, and non-tariff barriers to a country's imports can have a negative impact on its export competitiveness. To the extent that intermediate goods and services produced abroad are necessary for the production of a country's own exports, GVC participation requires easy and cheap access to such imports, especially on a regional basis and in a South-South context, as imports for export production involve a high degree of regional trade (see Section A).
- *GVCs increase the importance of regional production networks.* The rationale for regional integration is no longer just market expansion; it is now also based on the organization of GVCs. For developing countries, whereas export-oriented industrial policies were typically focused on exports to advanced economies, GVC-based industrialization relies on stronger ties with the supply base in neighbouring developing economies. As an industrialization strategy, GVC-based industrial development (unlike export orientation) can thus also be utilized to promote upgrading for regional markets.
- *GVCs strengthen the rationale for governments to seek mutually beneficial partnerships with lead firms for industrial development.* Upgrading in GVCs and moving into higher value added activities involves raising productivity and skills and the introduction of new technologies, which requires connecting closely with lead firms. At the same time, while traditional trade policy was based on the assumption that industry value added accrued to the domestic economy, value capture in GVCs depends on power relationships in the chain. In this respect, competition policies take on a crucial role in surveying such power relationships and preventing or sanctioning anti-competitive behaviours by lead firms as countries increase GVC participation.

- *GVCs require institutional support for social and environmental upgrading.* Active intervention is needed for industrial upgrading within GVCs to translate into sustainable social gains, including employment and wage growth and improved labour and environmental standards. As highlighted in Section C, industrial upgrading does not always necessarily bring social upgrading. Joint economic and social upgrading can be facilitated by multi-stakeholder initiatives and linkages between firms, workers and small-scale producers.
- *GVCs require a more dynamic view of industrial development.* The location of tasks and activities within GVCs is determined by dynamic factors – including relative labour productivity and cost, as well as other determinants – and as such can shift around the international production networks of TNCs (they can be footloose), causing disruption in industrial upgrading processes and negative social impacts. On the one hand, industrial policies and trade and investment strategies can include measures to improve stickiness, e.g. by building partnerships with investors and creating GVC clusters (focusing on complementary tasks in GVCs, rather than generic industrial clusters), including regional GVC clusters through regional government partnerships (cross-border industrial cooperation). On the other, industrial policies should aim to develop long-term competitive advantages along GVCs by selectively investing in building and improving investment determinants (e.g. skill development, access to finance, trade facilitation) for higher value-added activities and by building partnerships with investors for co-creation of markets, co-development of skills, co-establishment of clusters, co-nurturing of new value chains (e.g. green GVCs).

A starting point for the incorporation of GVCs in development strategy is an understanding of countries' current positioning in GVCs. Two key variables determining countries' positioning are (i) the level of participation of domestic economic activity in GVCs and domestic value creation (see the matrix in the previous section) and (ii) the existing

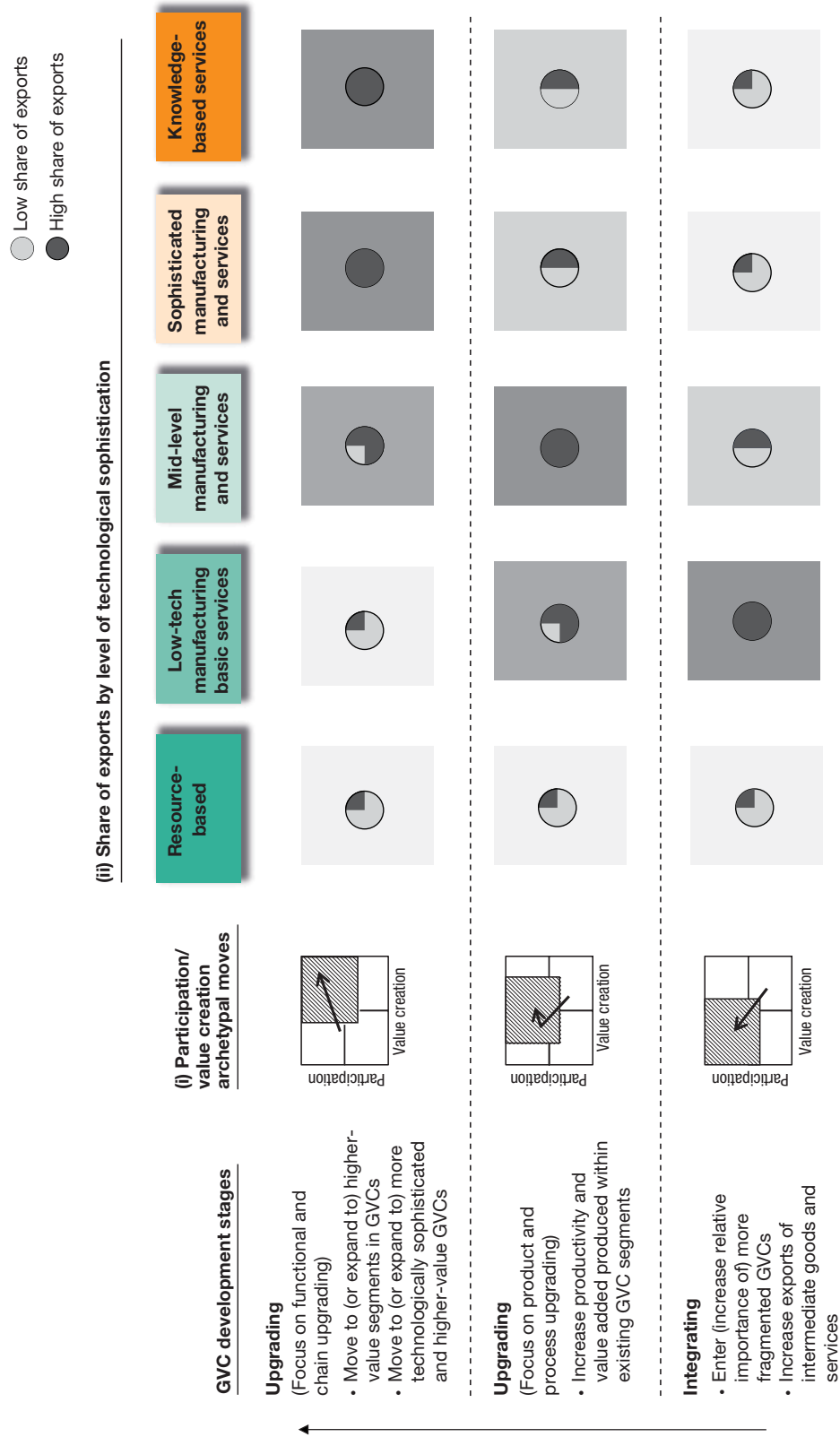
presence and strengths of the economy in GVCs of different degrees of technological sophistication and value, from resource-based activities to low-, medium- and high-tech activities, to knowledge-based activities positioned at the high-value ends of chains, e.g. design, innovation, R&D, marketing and branding.

These two variables (i) and (ii), discussed empirically in section C, are mapped in figure IV.35, which offers a tool for policymakers to assess their economy's position along GVC development paths. A country's position can be plotted by looking at the distribution of its exports by level of sophistication, at the imported contents of exports and at domestic value added created. From the starting point, policymakers can set objectives for growth along GVC development paths for *strategic positioning*.

For countries with a resource-based economy, GVC development typically implies increasing GVC participation through diversification into more fragmented value chains and increased exports of intermediate goods and services, often starting with manufacturing exports at the lower end of technological sophistication, on the basis of low-cost labour. This pattern mostly results in increased GVC participation and a lower share of domestic value added in exports (but higher absolute levels of domestic value added creation). Alternatively, GVC development for resource-based economies can occur by attracting investment in processing activities, increasing domestic value added, where advantages from proximity to resources outweigh economies of scale.

Upgrading mostly implies, first, upgrading products and processes, increasing productivity and value added creation within existing GVC segments and activities, before functional and chain upgrading opportunities materialize, allowing countries to move into GVCs at higher levels of technological sophistication. Moving into more sophisticated and fragmented GVCs often implies higher foreign content in exports. Paradoxically, upgrading may often result in a lower domestic value added share in exports, especially in early stages of GVC participation. Subsequently, upgrading opportunities will aim to increase domestic value added share – although more important than the domestic value added *share* is the *absolute* GDP contribution of GVCs (see section A).

Figure IV.35. Assessing a country's position along GVC development paths



Source: UNCTAD analysis.
Note: The "moons" refer to the level of GVC participation in the different industries grouped by level of technological sophistication. As countries access GVCs and engage in product/process upgrading and functional/chain upgrading, they will increase their participation in more sophisticated GVCs, relative to other GVCs.

As seen in Section C, countries can simultaneously develop in GVCs at different levels of technological sophistication. This may occur where they can exploit capabilities honed in lower-level GVCs or GVC segments to expand into higher levels. Or it can occur where the facilitating factors and conditions for GVC development at different levels are in place, either built gradually based on GVC participation at lower levels or helped by active policy intervention (figure IV.36).

These facilitating factors and conditions are akin to determinants of foreign and domestic investment in GVC activities. As seen in Section B, the prerequisites for the development of activities, and the determinants of investment in such activities, are different (and fewer) compared with those for industries as a whole. Development strategy and industrial policy should focus on determinants that can be acquired or improved in the short term and selectively invest in building others for medium- and long-term investment attractiveness.

In identifying the potential for accessing and upgrading GVCs, policymakers should be aware of a number of considerations:

- Priorities for GVC development – in terms of growing GVC segments and activities, and in terms of building facilitating factors and conditions – should be based on both *existing and future domestic factor endowments and prerequisites* for successful progression along GVC development paths.
- Upgrading can become a necessity for countries. For example, in the case of China, economic development and increasing per capita incomes are pushing up wages, causing the country to no longer be competitive in the less sophisticated sectors (e.g. garments), even though it has many advantages of agglomeration and infrastructure. Similar paths of forced upgrading as a result of success were seen in Japan and the Republic of Korea.
- The domestic value added impact of GVC growth opportunities at higher levels of sophistication, and the wider effects on the economy, may not always be positive. At times, participation at higher levels of sophistication may imply capturing a smaller

share of value created, generating less employment and exposing the economy to greater competitive risk. Strengthening participation at existing levels or even “*strategic downgrading*” can be a viable option.

- Upgrading options have consequences that extend beyond economic development impacts. Social consequences and the participation of the poor differ at each level. Employment creation and poverty alleviation effects may well be stronger at lower levels of technological sophistication and GVC participation. Policymakers must consider options congruous with their *overall inclusive and sustainable development strategies*.

2. Enabling participation in GVCs

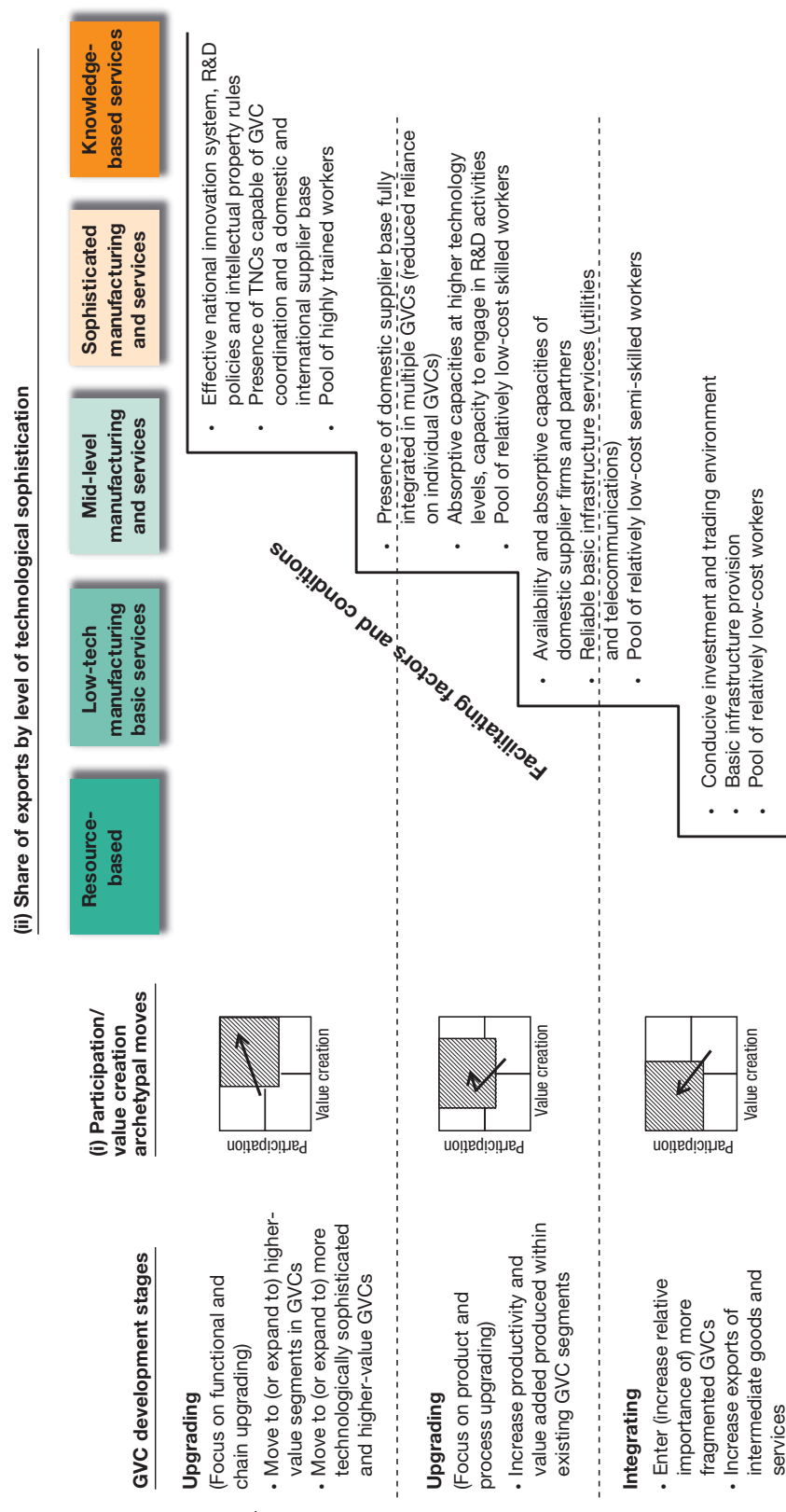
Enabling the participation of local firms in GVCs primarily implies creating and maintaining an environment conducive to investment and trade, and putting in place the infrastructural prerequisites for GVC participation, in line with the locational determinants of GVCs for relevant value chain segments (see Section B).

Enabling GVC participation implies facilitating investment and trade and building infrastructural prerequisites.

A conducive environment for trade and investment refers first and foremost to the overall policy environment for business, including trade and investment policies, but also tax, competition policy, labour market regulation, intellectual property rights, access to land and a range of other policy areas (see UNCTAD’s Investment Policy Framework for Sustainable Development, or IPFSD, which addresses relevant trade and other policy areas).

For example, competition policies take on a crucial role as countries increase GVC participation. Value capture for the domestic economy in GVCs is often determined by power relationships in GVCs. Such relationships may involve contractual arrangements between independent operators in GVCs which can restrict competition. Examples are the fixing of purchase or selling prices or other trading conditions, the territorial distribution of markets or sources of supply and the application of different conditions to equivalent transactions with different

Figure IV.36. Factors and conditions that facilitate climbing the GVC development ladder



Source: UNCTAD analysis.

trading parties. Competition policies can play a crucial role in preventing or sanctioning such anti-competitive behaviours. GVCs thus require enhanced competition-law enforcement.

Beyond the general policy framework for trade and investment, trade facilitation specifically is key to the creation of a conducive environment for trade and investment. The international community aims to make progress on the trade facilitation agenda in a new WTO agreement. The importance of trade-facilitating measures, such as fast, efficient port and customs procedures, has risen exponentially with the growth of GVCs in which goods now cross borders multiple times, first as inputs and ultimately as final products. The WTO estimates that the cost of trading across borders amounts to some \$2 trillion, two thirds of which is a result of border and customs procedures, and notes that the gain in global trade from smoother border procedures could be higher than the gain from tariff reduction. UNCTAD has provided active assistance to developing countries on trade facilitation and on border and customs procedures since the early 1980s, through various capacity-building programmes including ASYCUDA, the automated system for customs data, which is now used in over 90 countries.⁵⁵

Trade facilitation measures are usually uncontroversial, not coming at the expense of firms, political constituents or other policy imperatives. The benefits of trade facilitation measures tend to have a positive ripple effect on the economy, as imports and exports are less costly and flow more freely across borders in GVCs. Comprehensive trade facilitation reform is more effective than isolated or piecemeal measures. The most beneficial areas for reforms tend to be reducing or eliminating the “procedural obstacles” to trade, such as harmonising and simplifying documents, streamlining procedures, automating processes, ensuring the availability of trade-related information and providing advance rulings on customs matters.⁵⁶

Investment facilitation measures can be equally important for building up productive capacity for exports. The most important facilitation measures relate to entry and establishment processes, e.g. procedures for the start-up of foreign-invested

businesses, registration and licensing procedures, and access to industrial land, as well as procedures for the hiring of key personnel (including foreign workers) and the payment of taxes.⁵⁷ UNCTAD’s work in investment facilitation includes assistance to investment authorities and investment promotion agencies (IPAs), as well as the e-Regulation programme – deployed in 27 countries – which helps governments (including subnational administrations) to simplify procedures for investors and businesses, and to automate procedures where possible.⁵⁸

Providing reliable *infrastructure* (e.g. roads, ports, airports, telecommunications, broadband connectivity) is crucial for attracting GVC activities. Improvements in technology and decreasing data transmission costs can facilitate the sourcing of services, in particular, “knowledge work” such as data entry, research and development or remotely supplied consultancy services. Energy and transportation costs are an issue in particular for those countries that are connected to GVCs over longer distances. Developing good communication and transport links can also contribute to the “stickiness” of GVC operations.

Methods that governments have employed to improve infrastructure in support of local GVC development include public-private partnerships (PPPs) in infrastructure – such as roads, telecommunication, office buildings and the establishment of industrial clusters. Such GVC-targeted PPP initiatives can help firms, including SMEs, to better connect to GVCs and increase the attractiveness of domestic suppliers.⁵⁹ In particular the establishment of industrial parks for GVC activities – with good communication and transport links – can be instrumental, including at the regional level. As value chains are often regional in nature, international partnerships for infrastructure development can be particularly beneficial. Governments can usefully promote inter-agency cooperation for export and investment promotion in regional partnerships, including through the redefinition of export processing zones (EPZs) to satisfy the needs of regional value chains. *Regional development banks* can also play a role, bolstering investment-export links in those sectors that are strategic for the enhancement of value added in

regional value chains. By pooling risks, regional groups of developing economies can improve their terms of access to donor funding, leveraged technical assistance and global capital markets.⁶⁰

Building the infrastructural prerequisites to enable GVC participation and building productive capacity (the subject of the next section), are the two key elements of the WTO initiative *Aid for Trade*. Aid for Trade is aimed at lowering the cost of trade, thereby raising a recipient country's export competitiveness. The majority of infrastructure support under Aid for Trade relates to improvements in ports, railroads and roads, although some of the aid in this category involves utilities and communication infrastructure. Aid for productive capacity is more varied and includes training programmes, machinery and equipment, support for cooperatives and other forms. Aid for Trade can therefore represent an important vehicle for the international community to help developing countries access GVCs. To do so, a priority area should be trade facilitation, as the implementation of reforms, such as customs reforms, can be very costly for developing countries.

To help countries to increase GVC participation and reap the benefits of GVCs for long-term development, Aid for Trade could also be better targeted to ensure that the benefits accrue to intended recipients (see box IV.7). In addition, the programme could adopt a wider set of objectives in addition to boosting trade, including diversifying trade, increasing participation in GVCs, reducing the price of imported inputs and moving to higher value-added segments in GVCs. Doing that would imply not just addressing barriers to trade, but explicitly addressing investment issues, as well as a broader range of barriers to GVC participation, focusing on, e.g. improving the business environment, strengthening the services sector, supporting adherence to standards in production, increasing the legal security of investment, fostering innovation and enabling companies to find new markets and new buyers.

3. Building domestic productive capacity

GVC participation requires the prior build-up of a minimum level of productive capacity in order to step on the first rung of the GVC development ladder. Subsequently, the sequence of economic

roles in GVCs involves an expanding set of capabilities that developing countries must aim to attain in pursuing an upgrading trajectory in diverse industries, by developing the capabilities of local enterprise and of the local workforce.⁶¹

Proactive enterprise development policies and a strategy for workforce and skills development are key to improving the chances of successful upgrading in GVCs.

A number of focus areas are key for proactive enterprise development policies in support of GVC participation and upgrading:

- *Enterprise clustering.* Enterprise agglomeration may determine “collective efficiency” that in turn enhances the productivity and overall performance of clustered firms. It is particularly relevant for SMEs in developing countries, which often participate in clusters and value chains at the same time, with the local and global dimensions operating simultaneously. Both offer opportunities to foster competitiveness via learning and upgrading.
- *Linkages development.* Domestic and international inter-firm and inter-institution linkages can provide local SMEs with the necessary externalities to cope with the dual challenge of knowledge creation and internationalization, needed for successful participation in value chains as first, second or third-tier suppliers.
- *Science and technology support and an effective IP rights framework.* Technical support organizations in standards, metrology, quality, testing, R&D, productivity and SME extension are increasingly needed to complete and improve the technology systems with which firms operate and grow. Appropriate levels of IP protection can help give lead firms confidence in employing advanced technologies in GVC relations, and provide incentives for local firms to develop or adapt their own technologies.
- *Business development services.* A range of services can facilitate GVC-related trade and investment, and generate spillover effects. Such services might include business development services centres (BDSCs) and capacity-building facilities to help local firms

Box IV.7. Targeting Aid for Trade at the upstream part of GVCs

A key concern related to Aid for Trade, stemming from the rise of GVCs, is that gains resulting from lower trade costs may mostly flow downstream – that is, to TNC lead firms in GVCs – rather than to supplier firms in developing countries and to their workers and communities.

In general, the economic gains from GVCs are not distributed equally along the chain. The ability of local firms and workers to capture value depends to a significant extent on power relationships in the chain. TNCs with a multitude of potential supply sources will be in a strong position to dictate contractual terms with suppliers. Also, the greater the depth of the supply chain, the greater the capacity of TNCs to exploit the segmentation of labour markets, such that non-organized workers, among which women, seasonal workers or homeworkers can be paid less. The benefits from Aid for Trade may thus largely accrue to lead firms in a chain and not to the workers, small producers and local communities that are the intended beneficiaries.

Aid can enter a value chain at different points. A port improvement will lower transport costs at the border, affecting mostly the link between a first-tier supplier and a lead firm. Aid to build a refrigerated warehouse for a local agricultural cooperative or to train garment workers enters the value chain at or near the bottom of the chain. Other forms of aid may enter at other points in the chain: a road linking a rural region to an international trade hub, for example, may strengthen the link between small suppliers and a first-tier supplier. Because few of the benefits of aid travel down the supply chain, if the goal of Aid for Trade is to benefit those at the bottom, it needs to be targeted at that point of the chain.

Aid might be targeted more directly at workers in one of two ways. The first is by improving their productivity by investing in training or providing technology. Such measures will increase the overall economic efficiency of the chain, leaving more of the benefits at lower ends in the chain. The second is by empowering workers and small producers in relationship with buyers further up the chain, e.g. by facilitating collective action, supporting the establishment of agricultural cooperatives or associations of female garment workers. Such interventions might not increase the overall economic efficiency of the value chain, but they do have the potential to alter the allocations of gains within the chain.

Source: UNCTAD, based on Mayer, F. and W. Milberg (2013), “Aid for Trade in a World of Global Value Chains: Chain Power”, working paper, Sanford School of Public Policy, Duke University.

meet technical standards and improve their understanding of international trade rules and practices.

- *Entrepreneurship promotion.* Entrepreneurial development policies aim to support existing entrepreneurs and encourage new enterprise creation, thereby supporting development. University and public research institute spin-offs, incubator programmes and other forms of clustering; managerial and entrepreneurial training; and venture capital support are some of the tools of entrepreneurship development policy. A detailed discussion on all the elements of entrepreneurship development policies can be found in UNCTAD's Entrepreneurship Policy Framework.⁶²
- *Access to finance for SMEs.* Inclusive finance initiatives and programmes to increase access to finance for micro, small and medium-sized enterprises are fundamental mechanisms

for supporting the development of domestic productive capacity and directing development efforts at the upstream end of value chains where they most directly benefit local firms, small producers and workers.

Enterprise development and workforce skills development go hand in hand. Without sufficient investment in skills, technological progress and involvement of local firms in GVCs may not translate into productivity growth, and countries can no longer compete in an increasingly knowledge-based global economy. An effective skills strategy is key to engagement and upgrading in GVCs and to the necessary adjustment:

- Skills strategies in GVCs should be based on a thorough understanding of the economy's position in GVCs and the most likely trajectory of upgrading, which will determine skill requirements.
- GVC skill strategies should recognize the rising importance of training to comply with product

and process standards and internationally recognized certifications.

- International partnerships are more important in GVC skill strategies because lead firms act as gatekeepers to enforce skill requirements and product quality.

In addition, as discussed in Section C, GVC participation and upgrading processes imply economic adjustments. Skill strategies should facilitate this adjustment process and help displaced workers find new jobs. Social policies and a well-functioning labour market, including re-employment and vocational training programmes, can also help this process.

A broad package of labour and product market reforms is more likely to deliver larger overall gains in job creation and labour market performance than piecemeal reforms. Several countries have recently announced or implemented reforms to tackle labour market duality – a risk in GVCs, as discussed in Section C – by reducing the gap in employment protection between permanent and temporary workers. Such reforms, accompanied by re-employment programmes and adequate safety nets, promote labour adaptability and facilitate the adjustment of the labour market to the dynamics of GVCs.

Finally, success in both enterprise and workforce development is influenced by power relationships in GVCs. Policymakers should consider options to strengthen the bargaining power of domestic producers relative to their foreign GVC partners, to help them obtain a fair distribution of rents and to facilitate their access to higher value added activities in GVCs. There are several ways to strengthen the bargaining position of local firms in GVCs. First, supporting collective bargaining, including the formation of domestic producer associations, can help to create a better counterweight to the negotiating power of TNCs. Second, host countries can develop specific laws and regulations for individual GVC activities, such as contract farming. Third, governments can offer training courses on bargaining or provide model contracts, covering the economic aspects of GVC participation (e.g. distribution of business risks), financial considerations (e.g. taxation) and legal elements (implications of the contract) (WIR11).

4. Providing a strong environmental, social and governance framework

a. Social, environmental and safety and health issues

Strong social and environmental policies to minimize risks associated with GVCs are essential to maximizing the sustainable development impact of GVC activities, creating better jobs and improving environmental practices while also promoting the stable business and investment climate required for GVC development.

At a minimum – and in line with the United Nations Guiding Principles on Business and Human Rights – host countries have an obligation to protect the human rights. They also need to ensure that GVC partners respect international core labour standards as embodied in ILO Conventions. Equally important are the establishment and enforcement of occupational safety and health standards in GVC production sites (such as safe construction standards and fire protection) alongside strong environmental protection standards. Lead firms in GVCs, TNCs and their home countries can make an important contribution to safer production by working with suppliers to boost their capacity to comply with host country regulations and international standards, strengthening the capacity of watchdog organizations such as trade unions and civil society groups, and avoiding suppliers that persistently fail to work towards full compliance with such regulations and standards.

In the medium and long run, upgrading strategies of developing countries that involve a move towards more value added GVC activities and services are likely to contribute to raising living standards in host countries over time, including an improvement of social and environmental conditions. In the short run, regulatory measures must address urgent safety and health issues – such as those found in the wake of the recent Rana Plaza tragedy in Bangladesh. That instance led the Government of Bangladesh to change laws to allow garment workers to form trade unions without prior permission from factory

Addressing social, safety and environmental risks associated with GVCs requires effective regulation, social dialogue and an active civil society.

owners, and to announce a plan to raise the minimum wage for garment workers.

In addition to adopting and enforcing domestic laws, government procurement policies that require compliance with international core labour and human rights standards in GVCs can further foster such compliance among TNCs and their suppliers. Governments can also promote the use of multi-stakeholder industry-specific standards such as those developed by the Marine Stewardship Council or Forest Stewardship Council. Governments may wish to incorporate some aspects of successful voluntary multi-stakeholder standards into regulatory initiatives in order to scale up compliance.

When designing and enhancing their domestic policy framework related to socially and environmentally sustainable GVC activities, host countries can derive guidance from various international principles and standards. They cover social, human rights, health, economic and environmental risks associated with GVCs (table IV.12).⁶³ More international coordination in the promotion and implementation of these standards would help to alleviate the “first mover” problem, as countries may hesitate to move forward unilaterally out of fear of losing a perceived GVC-related competitive advantage. Even without such international coordination, host countries are increasingly realizing that a social and environmental framework in line with international standards enhances international competitiveness because consumers pay increasing attention to production conditions in developing countries. Similarly, companies engaged in GVC activities have an interest in showing compliance with higher standards for commercial and reputational reasons.⁶⁴

In many industries, SMEs must often comply with CSR standards imposed by TNCs as a condition of entry into GVCs (WIR12). However, enterprise development programmes in most countries do not provide any form of capacity-building to assist SMEs in meeting these standards. Meanwhile, in some GVCs, as many as half of all potential suppliers can be rejected because of CSR concerns. The capacity constraints SMEs (in particular developing-country SMEs) face in meeting these private sector CSR codes can present a significant competitive challenge. Promoting capacity-building through

existing enterprise development programmes can help SMEs to better meet the demands of their clients, while improving their overall contribution to sustainable development.

Dozens of industry-specific multi-stakeholder initiatives are currently influencing sustainability practices throughout GVCs (WIR11). These include such initiatives as the Fair Labour Association in the apparel industry, and the International Cocoa Initiative in the cocoa/chocolate industry. Each of these initiatives provides practical, market-tested approaches to promoting sustainable business practices throughout a GVC, typically affecting multiple members in the chain.

Policymakers can enhance the sustainable development benefits of GVCs by promoting the adoption and further development of such sector-specific initiatives. In some countries, governments require certification to one or more of the standards promoted by these sustainability initiatives as a condition for investment in certain sectors or for government procurement. This can be a useful policy approach that promotes wider adoption of a standard, while allowing for the flexible and dynamic development of a multi-stakeholder-driven process. Governments can also participate in the development of such standards by contributing directly as stakeholders, or by hosting or otherwise providing material support to the process that develops the standard. Ultimately, governments should note that CSR programmes will not be sufficient to meet all of the social and environmental challenges found in complex GVCs – public policy solutions will be required to complement private sector and multi-stakeholder initiatives.

b. Transforming EPZs into centres of excellence for sustainable business

TNCs around the world are increasingly demanding that their products be produced in line with international social and environmental standards. Suppliers are under pressure to adapt to CSR policies in order to ensure their continuing role in GVCs (WIR12). As EPZs are an important hub in GVCs, policy makers could consider adopting improved CSR policies, support services and infrastructure in EPZs, transforming them into

Table IV.12. Examples of international standards for responsible investment in GVCs**International principles or initiatives**

- Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy” Framework (“Ruggie Principles”)
- United Nations Global Compact
- OECD Guidelines for Multinational Enterprises
- ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy
- United Nations Convention Against Corruption
- OECD Convention on Combating Bribery of Foreign Public Officials
- “Rio Declaration” on environmental standards
- Principles for Responsible Agricultural Investment (PRAI) (UNCTAD, FAO, IFA, World Bank)
- African Union Declaration on Land Issues and Challenges in Africa
- Extractive Industries Transparency Initiative
- International Conference on the Great Lake Region Initiative (extractive industries)
- OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas
- ISO 14001 Environmental Management System Standard
- ISO 26000 Guidance Standard on Social Responsibility

Source: UNCTAD (based on *WIR11*) and the report to the G-20 on “Promoting Standards for Responsible Investment in Value Chains” produced by an inter-agency working group led by UNCTAD.

Sustainability is an important factor in the attraction of GVC activities. EPZs could adopt improved CSR policies, support services and infrastructure, evolving into centres of excellence for sustainable business.

tions, academia, and the private sector for their poor labour, environmental and health and safety practices.

Around the world there are thousands of EPZs, which have long been a popular policy tool to attract export-oriented FDI. EPZs employ over 66 million people worldwide⁶⁵ and play an important role in global value chains, providing a vehicle for efficiency-seeking FDI and a mechanism for host countries to develop light manufacturing skills and a competitive industrial labour force. As governmental or quasi-governmental entities, EPZs have an obligation to protect the human rights of their workers and promote environmental best practices. Adding sustainable development services also makes good business sense: with increasing scrutiny into the social and environmental conditions in GVCs, creating infrastructure and services to promote sustainable business practices will enhance EPZs’ ability to attract and retain investment. The competitive landscape for EPZs

centres of excellence for sustainable business. That would be a significant shift away from previous practices: EPZs have long been criticized by intergovernmental organizations, non-governmental organiza-

is changing because of the WTO’s *Agreement on Subsidies and Countervailing Measures* which may limit financial incentives for investing in EPZs in the future. Thus investment promotion policymakers may wish to expand the portfolio of services and infrastructure that EPZs offer. Providing the sustainable development services demanded by TNCs is one way of doing this.

Sustainable development support services and infrastructure would bring a number of potential benefits to firms in EPZs. The costs of such services would be shared, leading to economies of scale. Centralized services would lead to standardization and harmonization of practices. The number of on-site inspections, often a key issue in suppliers’ CSR compliance efforts (see *WIR12*), could be reduced. And public oversight might bring further benefits, including in terms of positive “branding” of zones.

A survey of 100 EPZs conducted by UNCTAD in 2013 shows that, today, most provide very limited sustainability related services, if any.⁶⁶ However, a handful of pioneering EPZs offer services across multiple areas of sustainability.

Responsible labour practices. Some EPZs provide assistance with labour issues to companies operating within their zone, ranging from policy (informing about national labour regulations including minimum wages and working hours), to support services (e.g. an on-site labour and human

resources bureau that assists in resolving labour disputes), to infrastructure (e.g. labour inspectors). The majority only state the legal obligations of employers towards their employees. Some EPZs maintain clear policies on labour practices, including minimum wage standards, regulations on working hours, and trade unions. In most cases these stated labour standards conform to local and national laws, however, in a few cases these standards are higher. Very few EPZs explicitly indicate the availability of services to assist companies in implementation, although some indicate that labour inspectors are present within the EPZ. The ZONAMERICA, in Uruguay, provides management assistance services through skills training for employees as well as training on business ethics.

Environmental sustainability. Sustainability policies can include standards concerning land, air, and water pollution, waste, noise and the use of energy. Some zones have relatively well developed environmental reporting requirements under which companies are required to report their anticipated amounts of wastes, pollutants, and even the decibel level of noise that is expected to be produced. This is the case in approximately half of the zones in Turkey, two of the three zones in South Africa, several in India, the United Arab Emirates, and Morocco, and to a degree in zones in Argentina and China. In addition to policies, some EPZs provide support services and infrastructure to assist companies and ensure standards are complied with. Most common is the availability of hazardous waste management systems, including methods for how waste should be disposed of properly, which can be found in EPZs in, for example, Argentina, Saudi Arabia, South Africa, the Republic of Korea and Turkey. Only a few EPZs provide recycling services (South Africa, Saudi Arabia, Uruguay, and two in the Republic of Korea and Turkey). To complement standard energy services, a few EPZs offer alternative low-carbon energy services to the companies operating within their zone, including EPZs in Saudi Arabia, South Africa, the Republic of Korea and Turkey. Some EPZs located in China's "low carbon cities" provide a broad package of environmental sustainability services including the development of alternative sources of energy, enhanced waste management systems, grey water recycling and waste recycling

systems. In addition, several EPZs around the world have been certified to the ISO 14001 environmental management system standard, including locations in China and India. The EPZ authority of Kenya has launched a strategic plan to achieve ISO 14001 certification for all of its zones.

Health and safety. Very few EPZs have stated policies and regulations on employee occupational safety and health (OSH) and few, if any, EPZs provide services to assist companies in developing improved OSH practices. A notable exception is the ZONAMERICA, which offers labour risk prevention programs. Elsewhere, support is generally limited to infrastructure. Medical clinics or on site medical personnel are available in approximately half of all EPZs, offering assistance during medical emergencies as well as routine medical exams. The majority of EPZs offer firefighting services for all factories within the EPZ. Nearly all EPZs include 24 hour surveillance and security.

Good governance: combating corruption. Very few EPZs offer any services to assist companies in combating corruption. One EPZ from South Africa has a clear no tolerance policy for corruption, and offers contact phone numbers for companies to raise complaints. However, the service is not explicitly geared towards corruption-related complaints. Very few EPZs make note of any structured system for curbing corruption, or advertise systems in place to assist companies.

Policymakers should consider broadening the availability of sustainable development related policies, services and infrastructure in EPZs to assist companies in meeting stakeholder demands for improved CSR practices and meeting the expectations of TNC CSR policies and standards. This should also strengthen the State's ability to promote environmental best practices and meet its obligation to protect the human rights of workers. EPZs pursuing this path should also improve their reporting to better communicate the sustainable development services available for companies operating within zones.

International organizations can assist countries in transforming EPZs through the establishment of benchmarks, exchanges of best practices, and capacity-building programmes to assist the

management of EPZs and other relevant zones. UNCTAD could provide this assistance, working together with other UN bodies such as the High Commissioner for Human Rights, UNEP and the ILO, international organizations such as the World Bank, and relevant bodies such as the World Economic Processing Zones Association (WEPZA) and the World Association of Investment Promotion Agencies (WAIPA).

c. Other concerns and good governance issues in GVCs

Improving the corporate governance of GVCs encompasses a range of issues, including addressing transfer price manipulation. As discussed in Section C, GVCs have expanded the scope for transfer price manipulation and made it more difficult to detect. Governments of both developed and large emerging economies such as India and China, in particular, have been very responsive to such trends, strengthening their regulatory frameworks for transfer pricing and assessing more tax fines and penalties for noncompliance with the arm's-length standard. This has created the potential for increased litigation between TNCs and tax authorities worldwide (box IV.8).

Greater international cooperation on transfer pricing issues is needed if host countries are to reap the

tax benefits that come from participation in GVC networks. More use of advance pricing agreements between TNCs and national tax authorities – through which they agree on an appropriate transfer pricing method for transactions over a period of time – is one important means to create more predictability in the taxation of GVC-related operations. Also, international cooperation to reduce the complexity of national taxation rules and price computing methods can be instrumental in improving the governance of GVCs. For example, a group of countries are now working on new United Nations transfer pricing guidelines designed specifically for developing-country governments.

Finally, development strategies with regard to GVCs should seek to foster a resilient supply chain that is prepared for and can more readily withstand shocks, and recover quickly from disruption. Governments can put in place policies to mitigate systemic vulnerability as well as policies to promote speedier trade resumption. Coordination with the international community and foreign stakeholders that have key supply chain roles and responsibilities can also enhance GVC security. To this end, countries may seek to develop and implement global standards, strengthen early detection systems, interdiction, and information sharing capabilities, and promote end-to-end supply chain security efforts (box IV.9).

Box IV.8. Examples of transfer pricing litigation

In the *United States*, software maker Veritas (later bought by Symantec) set up a cost-sharing arrangement and transferred its European market rights and pre-existing intangibles to a wholly owned Irish affiliate in return for a lump-sum buy-in payment of \$118 million by the affiliate in 2000. In 2009, the United States tax revenue agency (the IRS) filed a claim against Veritas, arguing the Irish affiliate had underpaid for the buy-in rights. Using an income-based method to estimate the net present value of the transferred intangibles, the IRS set the arm's-length price as \$1.675 billion and claimed over \$1 billion in taxes, penalties and interest. The Tax Court found the IRS's allocation to be unreasonable, and found in favour of Symantec.^a

In *India*, a special bench of the Income Tax Appellate Tribunal ruled in favour of the tax department that advertising, marketing and promotional expenses of TNCs incurred by Indian subsidiaries to promote the brand and trademarks will be taxable in India. It also upheld the usage of the Bright Line test, which uses the expenses incurred by comparable companies to decide arm's-length pricing. The ruling came on an appeal by LG Electronics, but 14 other Indian arms of TNCs also argued as "interveners" against a decision of a transfer pricing officer. Pepsi Foods, Maruti Suzuki, Glaxosmithkline, Goodyear India, Bausch & Lomb, Amadeus, Canon, Fujifilm, Star India, Sony, Haier Telecom, Haier Appliances, LVMH Watch and Jewellery, and Daikin Industries also faced transfer pricing adjustments on excessive advertising, marketing and promotional expense.^b

Source: UNCTAD.

Note: Notes appear at the end of this chapter.

Box IV.9. The United States National Strategy for Global Supply Chain Security

Through the National Strategy for Global Supply Chain Security, the United States Government articulates its policy to strengthen the global supply chain in order to protect the welfare and interests of the American people and secure the country's economic prosperity. The strategy includes two goals:

Goal 1: Promote the efficient and secure movement of goods – to promote the timely, efficient flow of legitimate commerce while protecting and securing the supply chain from exploitation, and reducing its vulnerability to disruption. To achieve this goal, the Government will enhance the integrity of goods as they move through the global supply chain. It will also understand and resolve threats early in the process, and strengthen the security of physical infrastructures, conveyances and information assets, while seeking to maximize trade through modernizing supply chain infrastructures and processes.

Goal 2: Foster a resilient supply chain – to foster a global supply chain system that is prepared for, and can withstand, evolving threats and hazards and can recover rapidly from disruptions. To achieve this, the Government will prioritize efforts to mitigate systemic vulnerabilities and refine plans to reconstitute the flow of commerce after disruptions.

The approach is informed by two guiding principles:

“Galvanize Action” – Integrate and spur efforts across the Government, as well as with state, local, tribal and territorial governments, the private sector and the international community; and

“Manage Supply Chain Risk” – Identify, assess and prioritize efforts to manage risk by using layered defences, and adapting the security posture according to the changing security and operational environment.

Source: The White House, National Strategy for Global Supply Chain Security. Available at <http://www.whitehouse.gov> (accessed 18 March 2013).

security efforts (box IV.9).

5. Synergizing trade and investment policies and institutions

a. Ensuring coherence between investment policies affect trade in GVCs, and trade policies affect investment in GVCs. Policymakers need to make sure their measures work in the same direction.

Since investment and trade are inextricably linked in GVCs, it is crucial to ensure

coherence between investment and trade policies. Inconsistent policies weaken the effectiveness of GVC-related policies and can ultimately be self-defeating. For example, import restrictions or tariff escalation on intermediate inputs discourage export-oriented investment in GVCs and can hurt a country's export competitiveness. Similarly, FDI restrictions in industries where foreign capital or skills are needed for the development of productive capacity can hinder access to GVCs and, hence, value added exports.

Avoiding inconsistent investment and trade policies requires paying close attention to those policy instruments that simultaneously affect investment

and trade in GVCs, i.e. (i) trade measures affecting investment (TMAls) and (ii) investment measures affecting trade (IMATs). Tables IV.13 and IV.14 illustrate the potential reciprocal effects between trade and investment measures.

(i) Trade measures affecting investment include various types of measures affecting market access conditions, market access development preferences, and export promotion devices, among others (table IV.13).

TMAls can help capture and increase the benefits associated with GVCs. For example, rules of origin can be designed in ways that encourage greater local value added production and sourcing, thus strengthening linkages between domestic suppliers and TNCs. Export performance requirements have in the past played a crucial role in stimulating TNCs to reorient their patterns of international sourcing to include a given host country site within the parent firms' regional or global networks. Because most of these measures apply to *specific* goods or products – and not to trade in general – they can be designed in such a manner as to apply to individual activities or tasks within GVCs (e.g. the supply of specific inputs for the production process or GVC) or individual industries (e.g. car manufacturing). This allows host countries to use TMAls for GVC-

Table IV.13. Potential effects of trade policy measures in GVCs

Trade policy measure	Potential investment-related effect (illustrative)
<ul style="list-style-type: none"> • Import tariffs, tariff escalation • Non-tariff barriers: regulatory standards (e.g. technical barriers to trade and sanitary and phytosanitary measures) 	<ul style="list-style-type: none"> • Negative effect on export-oriented investment in operations that rely on imported content that is subject to the measure • Positive effect on market-seeking or import substitution investment (barrier-hopping)
<ul style="list-style-type: none"> • Trade facilitation (applying to both imports and exports) • Export promotion (e.g. export finance, credit guarantees, trade fairs) 	<ul style="list-style-type: none"> • Positive effect on export-oriented investment by reducing the cost of multiple border crossings on both the import and export sides and through expedited exports (of particular relevance in time-sensitive GVCs) • Positive effect on market-seeking investment that benefits from facilitated (and cheaper) imports
<ul style="list-style-type: none"> • Preferential or free trade agreements (including rules of origin and sector-specific agreements) 	<ul style="list-style-type: none"> • Positive effect on investment that benefits from easier (and cheaper) trade between member countries, strengthening regional value chains • Positive effect on market-seeking investment through economies of scale from serving a bigger market • Consolidation effect on investment (primarily through mergers and acquisitions) as a result of reconfiguration of GVCs in member countries
<ul style="list-style-type: none"> • Market access development preferences (e.g. GSP, EBA, AGOA) 	<ul style="list-style-type: none"> • Positive effect on foreign investment in preference-recipient countries targeting exports to preference-giving countries
<ul style="list-style-type: none"> • Trade remedies (e.g. anti-dumping, safeguards and countervailing duties)⁶⁷ 	<ul style="list-style-type: none"> • Negative effect on export-oriented investment in the country affected by the measure (and on existing export-oriented investors who made investment decisions prior to the measure's enactment)

Source: UNCTAD.

(ii) Investment measures affecting trade comprise a wide variety of policy instruments that apply to the activities of foreign investors in the host country. Broadly, they include entry and establishment rules, trade-related operational measures, production requirements and knowledge-related requirements, as well as promotion and facilitation measures (table IV.14).

IMATs can also be used for industrial development purposes related to GVCs, and their application can be tailor-made for specific sectors, industries or activities. Applied in the right context, they may help domestic suppliers connect to GVCs and upgrade their capacities. An important distinction needs to be made between mandatory performance requirements and those that are linked to the granting of an advantage to investors. While the former may constitute a disincentive for firms in selecting a host country for the location of GVC activities, foreign investors may accept certain performance requirements linked to fiscal or financial incentives.

WTO rules and some investment agreements limit countries' policy discretion to impose performance requirements. The WTO Agreement on Trade-Related Investment Measures (TRIMS), and its corollary in numerous preferential trade and investment agreements, specifically prohibits the application of trade restrictions that are incompatible with the obligation to provide national treatment or that constitute quantitative restrictions (e.g. the imposition of local content requirements, export controls, and trade balancing restrictions). Non-member countries are not bound by these disciplines (unless they are signatories to a free trade or regional trade agreement that contains restrictions on performance requirements). A number of WTO member countries would like to review the TRIMS agreement and its existing prohibitions with the objective of affording greater policy space.

Several international agreements concluded in the aftermath of the Uruguay Round have taken additional steps to curtail policy space linked to

Table IV.14. Potential effects of investment policy measures in GVCs

Investment policy measure	Potential trade-related effects (illustrative)
<ul style="list-style-type: none"> Investment promotion, in particular for export-oriented FDI, including financial incentives; fiscal incentives; other incentives (e.g. subsidized infrastructure, market preferences and regulatory concessions in special economic zones (SEZs)) 	<ul style="list-style-type: none"> Positive effect on exports, possibly with higher imported content, and at risk of distortive effects Negative effect on export competitiveness where they result in an increase in costs of production once incentives are phased out
<ul style="list-style-type: none"> Investment facilitation (e.g. reduced registration and licensing procedures, access to land) 	<ul style="list-style-type: none"> Positive effect on exports, possibly with higher imported content, where facilitation helps attract export-oriented (i.e. efficiency-seeking) investment
<ul style="list-style-type: none"> Entry and establishment restrictions 	<ul style="list-style-type: none"> Negative effect on exports where restrictions discourage export-oriented investment Negative effect on export competitiveness where restrictions discourage investors that produce critical inputs (intermediates) used by other firms (domestic or foreign) in the country for exports
<ul style="list-style-type: none"> Joint venture requirements 	<ul style="list-style-type: none"> Negative effect on export competitiveness in the absence of a competent local joint venture partner Positive long-run effect on export competitiveness of domestic firms and on domestic value added
<ul style="list-style-type: none"> Export performance requirements Trade balancing requirements * 	<ul style="list-style-type: none"> Positive immediate effect on exports, possibly with higher imported content, but with a risk of distortive effects Negative effect on exports where requirements discourage export-oriented investors (or increase costs of production)
<ul style="list-style-type: none"> Local employment requirements and restrictions on hiring key foreign personnel Training, transfer of technology and R&D requirements WTO TRIMs: Local content requirements * 	<ul style="list-style-type: none"> Positive long-run effects on export competitiveness of domestic firms, domestic value added, and upgrading potential Negative effect on exports where requirements discourage export-oriented investors Negative effect on export competitiveness where requirements result in an increase in costs of production

Source: UNCTAD.

* These measures as applied to trade in goods are prohibited for WTO member states.

performance requirements (so-called “TRIMs plus” provisions). This includes prohibitions on performance requirements in services or concerning trade in goods that are not covered by the WTO TRIMs Agreement. Whether countries should accept such additional reductions in policy space depends on their individual development strategies.

It should be noted that the actual effects of TMAs and IMATs are more complex, and they are necessarily context (i.e. country- and sector-) specific. Also, individual measures do not act independently, such that different combinations of policy measures may generate different policy effects. Furthermore, these measures have other

potential effects beyond trade and investment and therefore need to be viewed from a broader development impact perspective.

At the international level, GVCs are governed by both trade and investment agreements. Despite the close relationship between trade and investment, international law has largely developed separately in each policy area. While trade is primarily covered by WTO rules, foreign investment is subject to close to 3,200 IIAs. Other types of trade and/or investment treaties at the bilateral, regional, sectoral and plurilateral levels have added a multitude of layers, making both regimes highly complex (chapter III). Each body of law pursues its

Each body of law pursues its own set of objectives and imposes different kinds of obligations on contracting parties. Policymakers thus need to be aware of potential interactions and overlaps between international investment and trade law with a view to promoting policy synergies and avoiding inconsistencies.

Given the close link between trade and investment in GVCs, limitations of policy space in trade arrangements may indirectly impact on investment policies, and vice versa. There is a risk that countries' trade policies will be challenged under investment agreements, and that some aspects of their investment policies will be scrutinized under WTO rules or free and preferential trade agreements. For instance, most international investment agreements (IIAs) prohibit discrimination in respect of all economic activities associated with an investment, including its trade operations. Both the national treatment and the most-favoured-nation provisions in IIAs may therefore result in trade issues being adjudicated by investment arbitration tribunals. The fact that some WTO agreements (the WTO TRIMS Agreement and the General Agreement on Trade in Services) also deal with investment-related issues leaves room for raising such matters in trade disputes. Thus, when adopting trade (or investment) measures for GVCs, policymakers cannot limit themselves to verifying that such measures are in accordance with international trade (or investment) law. To be on the safe side, they also need to check whether trade measures could unduly interfere with IIAs, and investment measures with WTO rules or with the trade rules found in preferential trade agreements.

b. Synergizing trade and investment promotion and facilitation

Ever intensifying trade and investment links in GVCs call for closer coordination between domestic trade and investment promotion agencies, as well as better targeting at specific segments of GVCs in line with host countries' dynamic locational advantages. The need for coordination is leading many policymakers in charge of Investment Promotion Agencies (IPAs) and trade promotion organizations (TPOs) to consider merging the two.

In a world of GVCs, IPAs and TPOs should coordinate their activities closely. A country's GVC position and objectives should guide the institutional set-up for trade and investment promotion.

Combining different, although apparently related functions of trade and investment promotion in a single organization has both advantages and disadvantages. Commonly considered advantages include strategic benefits and cost savings potential.

- Strategic benefits:
 - Potential for greater policy coherence
 - Potential for enhanced continuity in service delivery for export-oriented investors
 - Common ground for policy advocacy in national competitiveness
- Cost savings:
 - Shared support services (IT, human resources, accounting, legal services,

Table IV.15. Key operational differences between IPAs and TPOs

	Trade promotion	Investment promotion
<i>Clients</i>	• In-country exporters (SMEs)	• Overseas TNCs
<i>Targeting</i>	• Purchasing director	• CEO, CFO, COO
<i>Cycle</i>	• Purchase (routine decisions)	• Strategic decision (years)
<i>Business information</i>	• Country production and exporters	• Investment climate and cost of operations
<i>Staff skills</i>	• Sales and marketing	• Location consultant
<i>Performance indicators</i>	• Exports, jobs	• FDI projects, jobs
<i>Support</i>	• Full support from local industry	• Partial support - pressure by local industry fearing competition

Source: UNCTAD (2009), based on "Promoting Investment and Trade: Practices and Issues", Investment Advisory Series, Series A, number 4.

- public relations, research) and shared office accommodation
- Synergies in overseas promotion, branding and representation

However, joint trade and investment promotion does not result in automatic synergies or savings. From an operational perspective, the arguments for separate trade and investment promotion organizations remain compelling (table IV.15).

Over the years, the balance of advantages and disadvantages of joint trade and investment promotion, has resulted in as many agency mandate splits (e.g. Chile, Costa Rica and Ireland) as mergers (e.g. Germany, New Zealand, Sweden and the United Kingdom). The number of joint agencies has thus tended to remain relatively stable over time: from 34 per cent in 2002, stabilizing at about 25 per cent between 2008 and 2012. Interestingly, the share of joint agencies is significantly higher in developed countries (43 per cent).

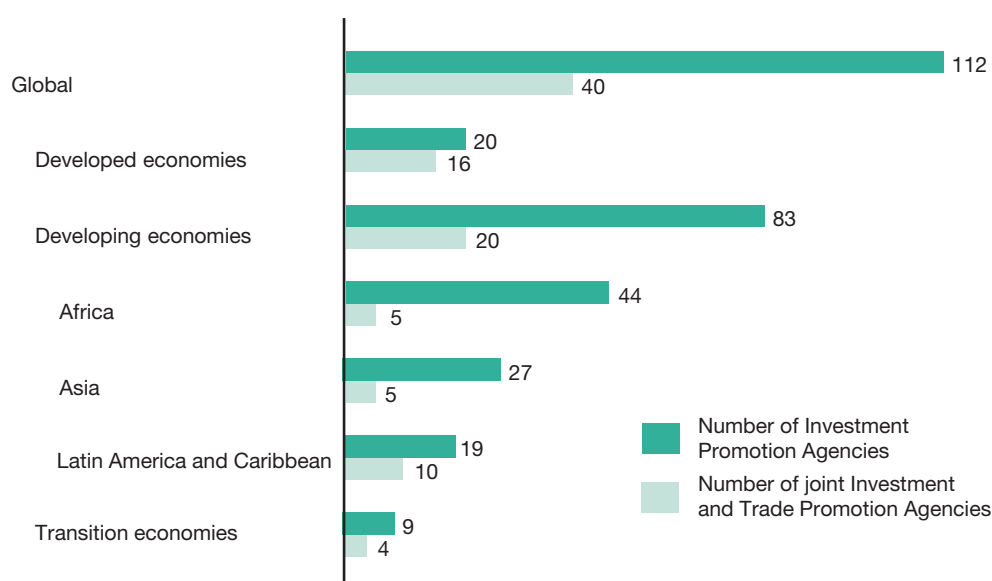
From a strategic perspective, the growing importance of GVCs and the concomitant nexus between investment and trade it entails may well be changing the cost-benefit equation of joint investment and trade promotion. GVCs add to the potential strategic synergies that can be achieved

through joint promotion, including relationship management with foreign investors and afterservices to promote and safeguard intra-firm exports, promoting investment with the objective to increase export capacities, engaging in matchmaking with investors to support exporting NEMs and targeting investment to reduce the import content of exports, thereby increasing domestic value added.

A number of objective criteria, based on a country's GVC participation and positioning, can help determine the most appropriate institutional set-up for trade and investment promotion:

- If a country depends significantly on the influx of foreign capital, skills and technologies for the build-up of export capacities, it may be a more effective use of resources to engage in joint trade and investment promotion in order to focus on attracting export-oriented FDI and projects contributing to the growth of productive capacities.
- If a country's existing exports are driven to a large extent by TNC foreign affiliates, it is likely that much of those exports will go to other parts of the parent firm's network. Rather than lobbying such firms to increase purchases from their own affiliates (export promotion), it may

Figure IV.37. Overview of institutional set-up of trade and investment promotion



Source: UNCTAD (2013), "Optimizing government services: a case for joint investment and trade promotion?", *IPA Observer*, No. 1.

be more effective to target them for further investment and to expand local production and exports of foreign affiliates (investment promotion).

- When domestic exporters are mostly engaged in NEMs, i.e. participating in GVCs (which can also be proxied by characteristics of exports, e.g. high shares of intermediate manufactures or services), a large share of exports will most likely go to other parts of a TNC network, with “pre-defined” or captive markets, making separate export promotion less effective.
- If the import content of a country’s exports is high, those exports are already fully participating in GVCs. Rather than promoting such exports separately, it may be preferable to focus efforts on FDI attraction to increase the domestic value added of exports.

Overall, there is no “one size fits all” solution, as the pros and cons of joint agencies significantly depend on country-specific circumstances.

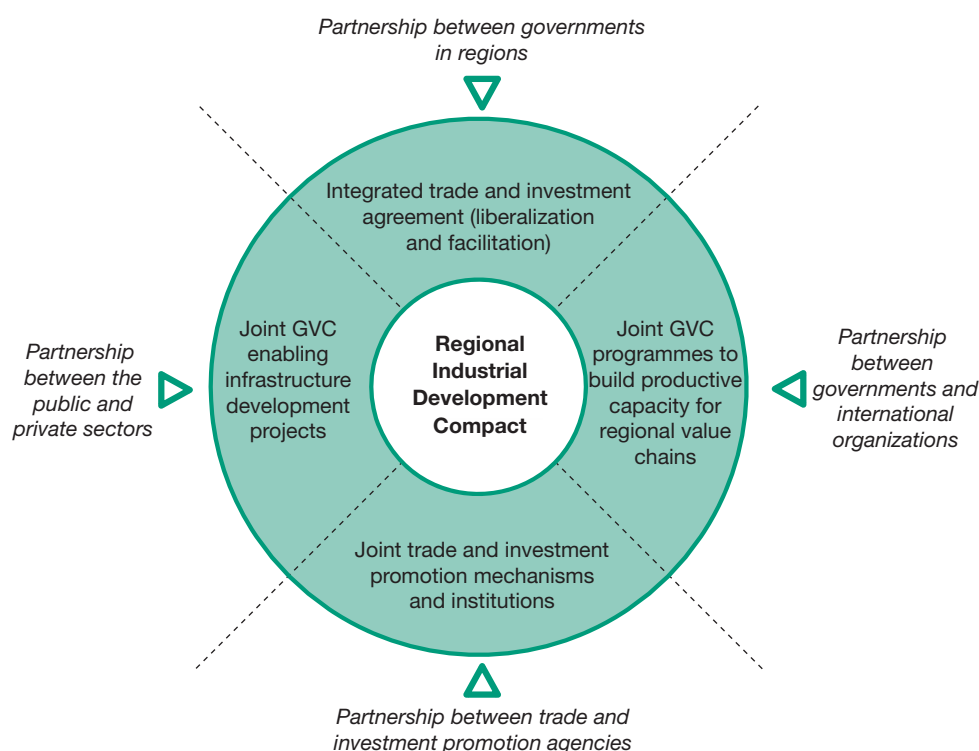
c. Regional industrial development compacts

As seen in section A, regional production networks are important in GVCs. GVC-based industrial development benefits from strong ties with supply bases and markets in neighbouring economies. A key area where policymakers should seek to create synergies between trade and investment policies and institutions is thus in regional cooperation efforts.

Regional trade and investment agreements could evolve towards “*regional industrial development compacts*.” Such compacts could focus on liberalization and facilitation of trade and investment and establish joint investment promotion mechanisms and institutions. An important challenge would be to reorient investment and

The relevance of regional value chains underscores the importance of regional cooperation. Regional trade and investment agreements could evolve into industrial development compacts.

Figure IV.38. Regional industrial development compacts for regional value chains



Source: UNCTAD.

export promotion strategies from a focus on isolated activities as suppliers of GVCs to the needs of emerging regional markets.

Regional industrial development compacts could include in their scope all policy areas important for enabling GVC development, such as the harmonization, mutual recognition or approximation of regulatory standards and the consolidation of private standards on environmental, social and governance issues. And they could take steps in crucial policy areas such as the free movement of workers (the issue of migration and visas is crucial in value chains, which require people to be able to travel easily between countries to visit suppliers or work for periods in local operations to provide technical assistance) and services liberalization

(particularly logistics and transportation), as regional value chains require intensified regional cooperation on a wider front.

Regional industrial development compacts could aim to create cross-border industrial clusters through joint investments in GVC-enabling infrastructure and productive capacity building. Establishing such compacts implies working in partnership, between governments of the region to harmonize trade and investment regulations, between investment and trade promotion agencies for joint promotion efforts, between governments and international organizations for technical assistance and capacity-building, and between the public and private sector for investment in regional value chain infrastructure and productive capacity (figure IV.38).

Concluding remarks: GVC policy development – towards a sound strategic framework

GVC policy development should begin with the strategic positioning of countries along GVCs, based on an assessment of the current position in GVCs and opportunities for growth.

This chapter has shown that GVCs are now a pervasive phenomenon in the global economy. Most countries are increasingly participating in GVCs, to different degrees and at various stages and levels in the chains.

GVCs and patterns of value added trade are shaped to a significant extent by TNCs – from mining TNCs to manufacturing or retail TNCs. Successful participation in GVCs for countries thus often hinges on the extent to which they can attract investment or the extent to which local firms manage to interact with TNC lead firms.

GVCs can bring a number of economic development benefits. They lead to direct economic impacts, in terms of value added, employment, income and exports. They can also contribute to longer-term economic development through technology and skills dissemination and industrial upgrading. However, none of these benefits are automatic, and countries can remain stuck in low-value activities, unable to upgrade and capture more value for economic development. In addition, GVC participation can exert negative social and

environmental effects, including on wages and working conditions, on safety and health issues for workers, on the community, on emissions and others.

An important question facing policymakers is whether or not to actively promote GVC participation and adopt a GVC-led development strategy. For many countries, however, the question is less *whether* to promote GVC participation, but rather *how* to gain access to GVCs, maximize the benefits from participation, minimize the risks and upgrade in GVCs.

The policy section of this chapter has set out the main policy challenges stemming from the rise of GVCs and outlined a new GVC-based approach to industrial development policies with new roles for trade and investment policies. Key elements of the approach – the GVC Policy Framework – include (i) embedding GVCs in a country's overall development strategy, (ii) enabling participation in GVCs, (iii) building domestic productive capacity, (iv) providing a strong environmental, social and governance framework, and (v) synergizing trade and investment policies and institutions.

The starting point for strategy development is a clear understanding of the starting premise. Policymakers designing a GVC development

Table IV.16. GVC policy development: a tool for policymakers

Areas (see also table IV.11)	Key questions
<i>Embedding GVCs in development strategy</i>	
Position on GVC development paths (see also figure IV.36)	<ul style="list-style-type: none"> • What are the main exporting industries, and the main export products and services of the country? • Which industries are more export focused, or more focused on the domestic market? • What are the main import products and services of the country? • To what extent do imports consist of intermediate products or services? • To what extent do imports consist of raw materials? • Which industries require most imports of intermediates? • Which industries produce most export value added (exports minus imported content)? • To what extent do exports consist of the (non-processed) natural resources of the country? • How much value is added to the country's own natural resources before exports? • To what extent do exports consist of intermediate goods and services? • Which industries are more engaged in supplying intermediates exports rather than final goods? • Which third countries are most important in the country's GVC links, upstream and downstream? • Are most GVC trade links within the region or beyond?
GVC growth opportunities	<ul style="list-style-type: none"> • Which imported intermediates are produced through activities also present in-country? • What processing activities of exported natural resources could feasibly be carried in-country (before exports)? • What other value adding activities could be done on exported intermediates that currently occur in export markets? • What other industries (that do not yet feature in the country's exports) typically use the same value adding activities as the ones present? • What other activities could be developed in-country because their use of capital, technology and skills is similar to the ones present? • Which industries and activities provide the greatest marginal impact for each additional dollar of value added exports?
<i>Enabling participation in GVCs</i>	
Policy environment for trade and investment	<ul style="list-style-type: none"> • How would the country rate the general business climate and policy environment for investment? How does the policy environment compare against the UNCTAD IPFSD? • How easy is it to trade with the country? <ul style="list-style-type: none"> – Time to export and import – Cost to export and import – Procedures and documents to export and import • Are there any activities or plans concerning trade facilitation? • How easy is it to invest in the country? <ul style="list-style-type: none"> – Ease of establishment, access to industrial land – Treatment of investors and protection of intellectual property rights • Are there any activities or plans concerning business facilitation (e.g. UNCTAD's eRegulations programme)?
Infrastructure	<ul style="list-style-type: none"> • What are the main infrastructure bottlenecks for the growth of exports (physical infrastructure, utilities, telecom)? • What physical infrastructure bottlenecks hamper the development of productive capacity for exports at different links in the value chain: e.g. <ul style="list-style-type: none"> – At the border (international road links, ports) – Inland (road and rail links to regions) – Industrial facilities (industrial zones, business parks) – Logistics facilities (warehouses, refrigerated warehouses, etc.) • What infrastructure bottlenecks hamper imports?
<i>Building domestic productive capacity</i>	
Domestic productive capacity	<ul style="list-style-type: none"> • For each exporting industry, what are the primary value adding activities taking place in the country? • Which value adding activities contribute more to the GDP and employment contribution of exports? • Which value adding activities contribute most to the growth of exports? • Which value adding activities require most capital investment, technology and skills? • Which exporting industries and activities generate more value added for other domestic industries (spillovers)? • What are the main technology and skills bottlenecks for the growth of exports? • What investments are required to build the productive capacity needed to realize the opportunities identified? Where could the investment come from? • Does the country have a strategy for entrepreneurship development (e.g. UNCTAD's Entrepreneurship Policy Framework)?

/...

Table IV.16. GVC policy development: a tool for policymakers (concluded)

TNC involvement	<ul style="list-style-type: none"> • What is the involvement of TNCs in the country's economy and in each industry? • What is the involvement of TNCs in producing exports? • How much of the country's imports are brought in by TNCs? • To what extent do TNC imports consist of raw materials? And of intermediate materials? • To what extent are TNC imports of intermediate materials used in production for the domestic market or for exports? • Is the imported content of exports higher for TNC exports than for exports by domestic firms? • To what extent do TNCs present in the country rely on intra-firm trade, upstream and downstream?
<i>Providing a strong environmental, social and governance framework</i>	
Regulation, public and private standards	<ul style="list-style-type: none"> • What are the main "headline" social and environmental issues for the industries and GVCs in which the country is primarily engaged? • What is the social and environmental record of TNCs/lead firms and country suppliers with regard to these headline issues? • How strong are environmental regulations? • Has the country signed and ratified international environmental treaties? • What percentage of companies is certified to ISO 14001? • How strong are social regulations? • Has the country signed and ratified all of the core labour conventions of the ILO? • Do workers have the right to organize and form independent trade unions? • What percentage of workers is covered by collective bargaining agreements? • How strong are occupational safety and health regulations? • Are adequate resources available for enforcement of occupational safety and health regulations, e.g. skilled inspectors for on-site visits? • How many companies (TNCs/lead firms and local suppliers) are certified to multi-stakeholder or sector-specific multi-stakeholder standards, such as the Marine Stewardship Council or Forest Stewardship Council standards? • Does the country have a national standard to certify third-party auditors engaged in social auditing? • Does the country have a mandatory national standard for sustainability reporting? If not, does the country have a voluntary standard and what percentage of companies report to it?
SME compliance support	<ul style="list-style-type: none"> • To what extent does the country engage in capacity-building for SMEs on social and environmental management? Public sector programmes? • To what extent do TNCs/lead firms offer capacity-building for SMEs on social and environmental management?
<i>Synergizing trade and investment policies and institutions</i>	
Trade policy	<ul style="list-style-type: none"> • What are the current import tariff levels for different goods and services? • What non-tariff barriers exist in the country that could discourage GVC activities? • Have any sectors been affected by trade remedies (e.g. anti-dumping, safeguards and countervailing duties); do they require re-evaluating export-oriented growth strategies? • Have any export promotion instruments been set up (e.g. export finance, credit guarantees)? • To what extent are the country's exports hindered by trade barriers and trade remedies in importing countries?
Investment policy	<ul style="list-style-type: none"> • What industries face foreign investment restrictions, and what role do these industries play in exporting and importing in GVCs? • Are there screening/review procedures set up for investments and in what industries? To what extent do they affect GVCs? • Are there any performance requirements in place and in what industries? Do they hamper trade in GVCs? • What incentives policies have been set up, including EPZs, that could benefit GVC operations?
International commitments and constraints	<ul style="list-style-type: none"> • Is the country a WTO member? • How many preferential trade agreements has the country signed, and with which partners? • How many IIAs has the country signed, and with which partners? • Does the country pursue regional integration? • What market access development preferences (e.g. GSP, EBA) is the country eligible for?
Trade and investment institutions	<ul style="list-style-type: none"> • To what extent do trade and investment authorities coordinate their activities? • Does the country have joint or separate trade and investment promotion organizations? Has the importance of coordination been assessed, on the basis of: <ul style="list-style-type: none"> – dependence on foreign capital, skills and technologies for the build-up of export capacities? – extent to which exports are driven by TNC foreign affiliates? – extent to which domestic exporters are engaged in NEMs, i.e. participating in GVCs? – import content of exports?

Source: UNCTAD.

strategy should have the clearest possible picture of where their economy stands in relation to each of the elements of the GVC Policy Framework outlined in this chapter, to inform their strategic positioning based on factor endowments, dynamic capabilities and broader development vision.

Table IV.16 provides a tool to help policymakers assess their economy's current positioning in GVCs, the opportunities for growth, the strengths and weaknesses in enabling factors and productive capabilities for GVC participation, the social, environmental and governance framework, and the trade and investment policy context. The table does so by asking a series of questions, the answers to which should paint a clearer picture of

GVC strengths, weaknesses, opportunities and threats. Some questions can be answered through empirical metrics, others can only be answered in a qualitative manner. The list is by no means exhaustive; it is meant only to guide the assessment process.

The tool can be read in concomitance with the earlier figure IV.36, which plots a GVC development path along the axes of increasing levels of technological sophistication on the one hand, and increasing levels of GVC participation and value creation on the other. Policymakers should aim to determine where their economy stands, where it can go and how it can get there.

Notes

- ¹ In reality the GVC structure is not necessarily characterized by a linear sequencing of value added activities ("snake" configuration): it can be structured around one or more assembly hubs with parts entering from different production sites ("spider" configuration). However, this difference, while important from a conceptual perspective, does not affect the analytical treatment of value added data and double counting effects. See Baldwin, R. and A. Venables (2010) "Spiders and snakes: offshoring and agglomeration in the global economy", *NBER Working Papers*, No. 16611, National Bureau of Economic Research, Inc.
- ² The Eora project, originally funded by the Australian Research Council, based at the University of Sydney and comprising an international team of researchers, developed the so-called "world multi-region input-output database" that is the basis for the generation of the value added trade estimates in the GVC Database discussed in this chapter. For details, see <http://www.worldmrio.com/>.
- ³ The UNCTAD-Eora GVC Database was launched earlier in 2013 in a WIR13 Preview Report available at http://unctad.org/en/PublicationsLibrary/diae2013d1_en.pdf.
- ⁴ Equating foreign value added with the double counting in global trade figures is a simplification. Some further double counting takes place within domestic value added, as exported value added can re-enter countries to be incorporated in further exports, and so forth. Such circular double counting can be significant in some countries and some industries, but is marginal in most.
- ⁵ These findings are consistent across all countries surveyed by the economic analysis over the recent years. See Bernard, A. B. et al. (2007) "Firms in International Trade", *NBER Working Papers* No. 13054, NBER, Inc. Also see Ottaviano, G. and T. Mayer (2007) "Happy few: the internationalisation of European firms. New facts based on firm-level evidence". Open Access publications from Sciences Po, hdl: 2441/10147, Sciences Po.
- ⁶ FDI stock in services is still more than 35 per cent of the total if only non-financial sector FDI is considered (although financial sector FDI is not only a value chain in its own right but also provides crucial services to other GVCs).
- ⁷ See Cooke, J. A. (2010) "From bean to cup: How Starbucks transformed its supply chain", *Supply Chain Quarterly*, Quarter 4.

- ⁸ Gereffi, G., J. Humphrey and T. Sturgeon (2005) "The governance of global value chains", *Review of International Political Economy*, 12: 78-104.
- ⁹ Horizontal diversification of a segment or subsegment of a value chain is also important but less well covered in the GVC literature. In the case of FDI, this commonly involves affiliates that replicate TNC segments in host economies (with no or little cross-segment vertical linkages), e.g. in manufacturing, extractive or services operations aimed at equivalent markets in host countries. Horizontal diversification can also be considered to apply to host country operations by lead TNCs which are essentially NEMs to other organizations.
- ¹⁰ Ivarsson, I. and C. G. Alvstam (2010) "Supplier Upgrading in the Home-furnishing Value Chain: An Empirical Study of IKEA's Sourcing in China and South East Asia", *World Development*, 38: 1575-87.
- ¹¹ Bair, J. and Gereffi, G. (2002) "NAFTA and the Apparel Commodity Chain: Corporate Strategies, Interfirm Networks, and Industrial Upgrading", in G. Gereffi, D. Spener, and J. Bair (eds.), *Free Trade and Uneven Development: The North American Apparel Industry after NAFTA*. (Philadelphia, Temple University Press: 23-50.)
- ¹² An Inter-Agency Working Group coordinated by UNCTAD supported the G-20 in *developing key indicators for measuring and maximizing the economic and employment impact of private sector investment in value chains*. Key indicators comprise (i) economic value added (with value added and gross fixed capital formation, exports, number of business entities, fiscal revenues), (ii) job creation (total employment, employment by category, wages), and (iii) sustainable development (social impact, environmental impact, development impact). For a full presentation, visit <http://unctad.org/en/Pages/DIAE/G-20/measuring-impact-of-investment.aspx>.
- ¹³ Variation in backward linkages was also highlighted in a recent study of 809 TNC affiliates across Eastern Europe (Croatia, Slovenia, Poland, Romania and the former East Germany) in manufacturing industries. About 48 per cent of inputs were bought from domestic suppliers (both foreign and locally owned). The highest share was found in East Germany and the lowest for Romania. The share of local suppliers was highest (55 per cent) in the medium- to low-tech industries.

- See Giroud, A., B. Jindra and P. Marek (2012) "Heterogeneous FDI in Transition Economies - A Novel Approach to Assess the Developmental Impact of Backward Linkages", *World Development*, 40:2206.
- ¹⁴ Rugraff, E. (2010) "Foreign direct investment and supplier-oriented upgrading in the Czech motor vehicle industry", *Regional Studies*, 44. This study showed that Czech-owned companies represent half of 173 first-tier suppliers in the automotive industry but account for only one fifth of the employees. Also see UNCTAD (2010) "Integrating Developing Countries' SMEs into Global Value Chains". It contains the example of the Colombian automobile industry, where 60 per cent of value added originates from car assembly which is performed by lead firms (TNC-led). By contrast, SMEs only account for less than 40 per cent of the total value.
- ¹⁵ Dedrick, J., K. L. Kraemer and G. Linden (2009) "Who profits from innovation in global value chains? A study of the iPod and notebook PCs", *Industrial and Corporate Change*, 19:81-116. The authors apply a product-level approach to identify the financial value embedded in products and show how it is distributed across multiple participants in the supply chain across borders, from design and branding to component manufacturing to assembly to distribution and sales.
- ¹⁶ For evidence on and examples of linkages in sub-Saharan Africa, see Morris, M., et al. (2012). "One thing leads to another - Commodities, linkages and industrial development", *Resources Policy*, 37:408-16.
- ¹⁷ See UNCTAD 1999. *Transfer Pricing: UNCTAD Series on Issues in International Investment Agreements*. Geneva and New York: United Nations.
- ¹⁸ Gourevitch, P., R. Bohn, and D. McKendrick (1997) *Who Is Us?: the Nationality of Production in the Hard Disk Drive Industry*, Report 97-01. La Jolla, CA: The Information Storage Industry Center, University of California. Available at <http://isic.ucsd.edu/papers/whoisus.shtml>.
- ¹⁹ Tejani, S. (2011) "The gender dimension of special economic zones", in *Special Economic Zones: Progress, Emerging Challenges, and Future Directions*. Washington D.C.: The World Bank; Braunstein, E. (2012) "Neoliberal Development Macroeconomics. A Consideration of its Gendered Employment Effects", *UNRISD Research Paper* 2012-1, Geneva: United Nations; Staritz, C. and J. G. Reis (2013) *Global Value Chains, Economic Upgrading, and Gender*. Case Studies of the horticulture, Tourism and Call Center Industries. Washington, D.C.: The World Bank.; Tejani, S. and W. Milberg (2010) *Global defeminization? Industrial upgrading, occupational segmentation and manufacturing employment in Middle-Income countries*. New York: Schwartz Centre for Economic Policy Analysis; Aguayo-Tellez, E. (2011) *The Impact of Trade Liberalization Policies and FDI on Gender Inequality: A Literature Review*. Washington, D.C.: World Bank.
- ²⁰ The few cross-country and cross-industry studies available in this area highlight notable differences in impact and find that (i) employment growth is not linked with comparable growth in real wages, and even in some case it is linked to declines in wages; (ii) upgrading in terms of real wages varies by country. Downgrading in terms of real wages is not uncommon. See, e.g., Milberg, W. and D. Winkler (2013) *Outsourcing Economics: Global Value Chains in Capitalist Development*. New York: Cambridge University Press; and Bernhardt, T. and W. Milberg (2011) "Does economic upgrading generate social upgrading? Insights from the Horticulture, Apparel, Mobile Phones and Tourism Sectors", *Capturing the Gains Working Paper*, No. 2011/07.
- ²¹ This is illustrated by the example of Chile's National Labour Skills Certification System. See Fernandez-Stark, K., S. Frederick and G. Gereffi (2011) "The apparel global value chain: economic upgrading and workforce development", *Center on Globalization, Governance & Competitiveness*, Duke University, November 2011.
- ²² As an example, in Costa Rica, the Instituto Nacional de Aprendizaje offered 25,000 scholarships in 2007 for English-language training, while the Asociación Costarricense de Profesionales de Turismo provides members with access to Mandarin Chinese, French and Italian classes. See Christian, M., K. Fernandez-Stark, G. Ahmed and G. Gereffi (2011) "The Tourism Global Value Chain: Economic Upgrading and Workforce Development", in *Skills for Upgrading: Workforce Development and Global Value Chains in Developing Countries*, Durham: Duke University, Center on Globalization, Governance and Competitiveness.
- ²³ Bair, J. and G. Gereffi (2003) "Upgrading, uneven development, and jobs in the North American apparel industry", *Global Networks*, 3:143-69; Barrientos, S., G. Gereffi and A. Rossi (2012) "Economic and social upgrading in global production networks: A new paradigm for a changing world", *International Labour Review*, 150:319-40. See also Barrientos, S., G. Gereffi and A. Rossi (2011) "Labour Chains: Analysing the Role of Labour Contractors in Global Production Networks", *International Labour Review*, Volume 150, Issue 3-4, pages 319-340, December 2011.
- ²⁴ Henderson, J., P. Dicken, M. Hess, N. Coe and H. W. Yeung (2002) "Global production networks and the analysis of economic development", *Review of International Political Economy*, 9:436-64; also Rugraff (ibid.).
- ²⁵ Trade in intermediate goods is more volatile than trade in either capital or consumption goods, suggesting that recessions and economic crises affect material, parts and component shipments more than final goods (see Sturgeon, T. J. and O. Memedovic (2011) "Mapping Global Value Chains: Intermediate Goods Trade and Structural Change in the World Economy". Vienna: UNIDO). With regard to the effect of economic crises, in the clothing industry, as a result of the 2008 crisis it is estimated that millions of jobs were lost globally because of slower demand in Europe and the United States. The number of job losses amounted to between 11 and 15 million in the first quarter of 2010, with the highest losses experienced in China (10 million), India (1 million), Pakistan (200,000), Indonesia (100,000), Mexico (80,000), Cambodia (75,000) and Viet Nam (30,000). See Staritz, C. (2011) "Making the Cut? Low-Income Countries and the Global Clothing Value Chain in a Post-Quota and Post-Crisis World". Washington, D. C.: The World Bank.
- ²⁶ Arnold, C. E. (2010) "Where the Low Road and the High Road Meet: Flexible Employment in Global Value Chains", *Journal of Contemporary Asia*, 40:612. The study notes that larger producers use sub-contractors to mediate the instability of international contracts, passing on uncertainty to smaller firms and their workforces.
- ²⁷ Haakonsson, S. J. (2009) "Learning by importing in global value chains: upgrading and South-South strategies in the Ugandan pharmaceutical industry", *Development Southern Africa*, 26:499-516.
- ²⁸ Gereffi, G. and O. Memedovic (2003) "The Global Apparel Value Chain: What prospects for upgrading by developing countries?". Vienna, Austria: UNIDO.
- ²⁹ UNCTAD (2010) "Integrating Developing Countries' SMEs into Global Value Chains".
- ³⁰ Dunning, J. and S. Lundan (2008) *Multinational Enterprises and the Global Economy*, Second Edition. Cheltenham: Edward Elgar Publishing Ltd.; Cantwell, J. and R. Mudambi (2005) "MNE competence-creating subsidiary mandates", *Strategic Management Journal*, 26 (12): 1109-1128; for a review of vertical spillovers, see Havranek, T. and Z. Irsova (2011) "Estimating vertical spillovers from FDI: Why results vary and what the true effect is", *Journal of International Economics*, 85(2): 234-244.
- ³¹ Ivarsson, I. and C. G. Alvstam (2009) "Local Technology Linkages and Supplier Upgrading in Global Value Chains: The Case of Swedish Engineering TNCs in Emerging Markets", *Competition and Change*, 13:368-88; Ivarsson, I. and C. G. Alvstam, 2010 (ibid.). Furthermore, a study of 1,385 firms in Thailand shows that the presence of global buyers in the local market reduces behavioural uncertainty and increases the

- likelihood of success in the selection of partners, leading to knowledge-intensive value chain agreements (Saliola, F. and A. Zanfei (2009) "Multinational firms, global value chains and the organization of knowledge transfer", *Research Policy*, 38:369).
- ³² Zanfei, A. (2012) "Effects, Not Externalities", *The European Journal of Development Research*, 24:8-14; Pietrobelli, C. and R. Rabelotti (ibid.); Kaplinsky, R. (2010) *The role of standards in global value chains*. Washington, D.C.: The World Bank; Narula, R. and N. Driffeld (2012) "Does FDI Cause Development? The Ambiguity of the Evidence and Why it Matters", *The European Journal of Development Research*, 24:1-7.
- ³³ Bell, M. and M. Albu (1999) "Knowledge Systems and Technological Dynamism in Industrial Clusters in Developing Countries", *World Development* 27.9: 1715-34.
- ³⁴ Sturgeon, T. J. and J. Lee (2004) *Industry Co-Evolution: A Comparison of Taiwan and North America's Electronics Contract Manufacturers*. ITEC Research Paper Series 04-03, Kyoto: Doshisha University. Available at http://itec.doshisha-u.jp/03_publication/01_workingpaper/2004/ITECRPS0403.pdf.
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- ³⁷ Humphrey, J. (2003) "Globalisation and Supply Chain Networks: The Auto Industry in Brazil and India", *Global Networks* 3.2: 121-41.
- ³⁸ ILO (2013) Presentation on the World Day for Safety and Health at Work, 28 April. <http://www.ilo.org>.
- ³⁹ UNCTAD (2012) "Corporate Social Responsibility in Global Value Chains", p. 8.
- ⁴⁰ UNCTAD (2013), "Corporate Social Responsibility: a Value Chain Specific Approach", forthcoming.
- ⁴¹ Humphrey, J. and H. Schmitz (2002) "How does insertion in global value chains affect upgrading in industrial clusters?", *Regional Studies*, 36:1017-27; Gereffi, G., et al., 2001 (ibid.).
- ⁴² Christian, M. et al. (2011) (ibid.).
- ⁴³ This is well illustrated by the two Mexican footwear clusters of Guadalajara and León. They operate in chains dominated by United States buyers as well as in the domestic market. While United States buyers control design and product development for products sold in the United States market, local buyers and producers co-operate and share competences domestically for provision of products within the Mexican market (Giuliani, E. et al., 2005 (ibid.)).
- ⁴⁴ In the Brazilian furniture and footwear industries, producers operating in multiple chains (as opposed to those solely exporting) have a higher propensity to engage in functional upgrading (as well as product and process upgrading) – because they use the domestic or regional markets to learn how to design and market their products, before exporting them under their own brands and designs to the United States market (Navas-Alemán, L., 2011 (ibid.)).
- ⁴⁵ Fessehaie, J. (2012) "What determines the breadth and depth of Zambia's backward linkages to copper mining? The role of public policy and value chain dynamics", *Resources Policy*, 37:443-51.
- ⁴⁶ Kaplinsky, R. et al., 2011 (ibid.); van Dijk, M. P. and J. Trienekens (2012) *Global Value Chains - Linking Local Producers from Developing Countries to International Markets*. Amsterdam University Press, p. 210.
- ⁴⁷ Giuliani, E. et al., 2005 (ibid.).
- ⁴⁸ Humphrey, J. and H. Schmitz, 2002 (ibid.); Giuliani, E. et al., 2005 (ibid.).
- ⁴⁹ Hanlin, R. and C. Hanlin (2012) "The view from below: 'lock-in' and local procurement in the African gold mining sector", *Resources Policy*, 37:468-74.
- ⁵⁰ Humphrey, J. and H. Schmitz, 2002 (ibid.) suggest that in the case of garment production, local producers will not face obstacles when moving from assembly of imported inputs to increased local production and sources. However, a move up to design and sale of own branded merchandise is less likely to be facilitated by global buyers.
- ⁵¹ Bernhardt, T. and W. Milberg, 2011 (ibid.); Whittaker, D. H., T. Zhu, T. J. Sturgeon, M. H. Tsai and T. Okita (2010) "Compressed development", *Studies in Comparative International Development*, 45:439-67.; Barrientos, S. et al., 2008 (ibid.); Milberg, W. and D. Winkler, 2011 (ibid.); Rossi, A. (2011) "Economic and social upgrading in global production networks: the case of the garment industry in Morocco", Doctoral thesis, University of Sussex.
- ⁵² Fernandez-Stark, K. et al., 2011 (ibid.).
- ⁵³ Baldwin, R. (2011) "Trade And Industrialisation After Globalisation's 2nd Unbundling: How Building And Joining A Supply Chain Are Different And Why It Matters", *NBER Working Papers*, No. 17716. This paper was one of the first to make the argument that GVCs have transformed the nature of industrialisation and called for more research.
- ⁵⁴ Based on W. Milberg, X. Jiang, and G. Gereffi (forthcoming), *Industrial Policy in the Era of Vertically Specialized Industrialization*.
- ⁵⁵ See www.asycuda.org.
- ⁵⁶ UNCTAD (2009) "Non-tariff measures: Evidence from Selected Developing Countries and Future Research Agenda". On the potential impact of automated processes, see also UNCTAD's 2011 Information Economy Report "ICTs as an Enabler for Private Sector Development".
- ⁵⁷ See UNCTAD's Investment Policy Framework for Sustainable Development (IPFSD) for a complete discussion. Available at <http://investmentpolicyhub.unctad.org>.
- ⁵⁸ See www.eRegulations.org.
- ⁵⁹ See van Dijk M. and J. Trienekens, 2012 (ibid.).
- ⁶⁰ See UNCTAD (2012) "Report of the Multi-year Expert Meeting on International Cooperation: South-South Cooperation and Regional Integration" on its fourth session (Geneva, 24-25 October). Available at http://unctad.org/meetings/en/SessionalDocuments/ciimem2d12_en.pdf.
- ⁶¹ Gereffi, G. (2009), "Chains for Change: Third Max Havelaar Lectures", Rotterdam School of Management, p. 52. Available at <http://www.maxhavelaarlecture.org>.
- ⁶² Available at <http://unctad.org/en/Pages/DIAE/Entrepreneurship>.
- ⁶³ See UNCTAD (2011) "Promoting standards for responsible investment in value chains", September. Available at www.unctad.org/csr.
- ⁶⁴ Gereffi, G. et al., (2009) (ibid.).
- ⁶⁵ Milberg, W. and M. Amengual (2008) "Economic development and working conditions in export processing zones: A survey of trends". Geneva: ILO.
- ⁶⁶ UNCTAD (2013) "Transforming Export Processing Zones into Centres for Excellence for Sustainable Development" forthcoming. This research was focused on government run industrial parks, even when these are termed differently in different markets (e.g. 'special economic zones', etc.). To evaluate the role of sustainable development services within EPZs a sample of 100 EPZs from around the world was

surveyed. Following an initial focus on developing countries of the G20 the research was broadened to search for best practices from additional countries around the world.

⁶⁷ Classified as contingent trade-protective measures in UNCTAD's 2012 Classification of NTMs, available at www.unctad.org.

Box IV.2

- ^a This variable is related to an active literature on measuring vertical specialization, with the first indicator calculated being the value of imported inputs in the overall (gross) exports of a country. The refinement to this indicator of vertical specialization corrects for the fact that the value of (gross) imports used by country A to produce exports (as retrieved from "standard" I-O tables) in reality might incorporate the domestic value added of country A that has been used as an input by country B, from which country A then sources, allowing instead only for the foreign value added of country B to enter in the calculation of country A's inputs nets out this effect. See Hummels, D., J. Ishii and K.-M. Yi (2001) "The nature and growth of vertical specialization in world trade", *Journal of International Economics* 54(1): 75–96; and Johnson, R.C. and G. Noguera (2012) "Accounting for intermediates: Production sharing and trade in value-added", *Journal of International Economics* 86(2), 224–236.
- ^b This indicator was first introduced in Koopman, R., W. Powers, Z. Wang and S.-J. Wei (2011) "Give credit to where credit is due: tracing value added in global production chains", *NBER Working Papers Series*, No. 16426, September 2010, revised September 2011.
- ^c See Fally, T. (2011) "On the Fragmentation of Production in the US", University of Colorado-Boulder, July.

Box IV.3

- ^a Estimates are based on data from the United States Bureau of Economic Affairs ("U.S. Affiliates of Foreign Companies

and U.S. Multinational Companies", 2012); China Ministry of Commerce; OECD; IDE-JETRO. Data for Europe from Altomonte, C., F. Di Mauro, G. Ottaviano, A. Rungi, and V. Vicard (2012) "Global Value Chains during the Great Trade Collapse: A Bullwhip Effect?", *ECB Working Paper Series*, No. 1412.

Box IV.4

- ^a As constructed by Altomonte, C. and A. Rungi (2013) "Business Groups as Hierarchies of Firms: Determinants of Vertical Integration and Performance", Working Papers 2013.33, Fondazione Eni Enrico Mattei. This dataset uses a definition of control as established in international standards for multinational corporations, where control is assumed if (directly or indirectly, e.g. via another controlled affiliate) the parent exceeds the majority (50.01 per cent) of voting rights (i.e. majority ownership) of the affiliate and can thus be considered as the Ultimate Beneficial Owner.
- ^b Altomonte, C. et al., 2012 (ibid.)

Box IV.5

- ^a See Engel, B. (2011) "10 best practices you should be doing now", *Supply Chain Quarterly*, Quarter 1. Perez, D. (2013) "Supply chain strategies: Which one hits the mark?", *Supply Chain Quarterly*, Quarter 1.
- ^b See Cooke, J. A. (2012) "From many to one: IBM's unified supply chain", *Supply Chain Quarterly*, Quarter 4.

Box IV.8

- ^a See Reuters, "Factbox: Major U.S. Tax Court transfer pricing cases", 17 June 2012. Available at <http://www.reuters.com> (accessed 10 January 2013).
- ^b See http://www.tax-news.com/news/IndianTribunal_Reaches_Key_Transfer_Pricing_Decision (accessed on 25 May 2013).

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