

PART I

Chapter 1

Foreign Direct Investment and Global Value Chains

Key findings

- Foreign direct investment (FDI) has been the primary driver of global value chain (GVC) expansion in the past several decades. Mutually reinforcing dynamics occur between FDI and GVC participation. Trade with foreign markets could induce initial FDI from lead firms by lowering entry costs; lead firms tend to bring their suppliers with them, and a herd effect triggers more FDI inflows; and FDI stimulates further GVC entry and upgrading through spillovers and agglomeration effects.
- Firms' production and trade decisions are interdependent. The more recent industrial organization literature emphasizes firms' choices between domestic and foreign markets and between integration and outsourcing simultaneously in the context of heterogeneous, within-sector productivity, and further adds the role of ex ante network embeddedness in facilitating firms' entry into foreign markets.
- The geographic distribution of GVC and FDI is unequal: only three regions—East Asia and Pacific, Western Europe, and North America—are highly integrated into global production networks. Other regions rely largely on commodity exports; investment and trade ties within those regions are relatively sparse.
- Although countries take different paths, the growing importance of each country in the GVC network is often preceded by its increasing FDI linkages with the rest of the world.
- Countries have different comparative advantages and specialize in different sectors or segments of production. Almost all countries that have successfully upgraded their dominant archetypes of GVCs during the past three decades have benefited from strong FDI inflows in related sectors.

Global value chains: Definition, measurement, and archetypes

A global value chain (GVC) consists of a series of stages involved in producing a good or service, with each stage adding value and with at least two stages produced in different countries (World Bank 2020). There is no consensus on the definition of the term GVC—the concept encompasses a myriad of interactions between firms around the world through the flows of goods, services, people, funds, information, and knowledge. Table 1.1 lists the definitions of some of the most common measures of GVCs used in the literature and in this report.

Most GVC-related studies use aggregate trade data and intercountry input-output tables to depict the intercountry and interindustry flow of goods (Antràs 2020; Antràs et al. 2012, Antràs and Chor 2013; Hummels, Ishii, and Yi 2001; Johnson and Noguera 2012; Koopman, Wang, and Wei 2014). This macro-level approach is widely used to estimate the factor content of trade, value added exchange rates, international inflation spillovers, and business cycle synchronization. However, these aggregate data lack detailed information on intraindustry trade, leaving the true structure and complexity of GVCs obscured. This approach also relies on many strong assumptions to back out certain bilateral intermediate input trade flows that are not available in either customs data or national input-output tables.

A growing body of literature now tries to map GVCs by firm business records and customs or transaction-level data (Dedrick, Kraemer, and Linden 2011; Xing and Detert 2010). This micro-level approach accurately shows the structure of GVCs, but it is often limited to a small number of firms, and it cannot reflect the aggregate GVC participation of a country or industry. However, as customs data and transaction-level data have become increasingly available, recent research has shed new light on how multinational corporations (MNCs) organize their global production and sourcing (Alfaro et al. 2019; Bernard et al. 2018) and how domestic firms benefit from joining the supply networks of MNCs (Alfaro-Ureña, Manelici, and Vasquez 2019).

More notably, most existing studies on GVCs—using either macro- or microeconomic approaches—fail to consider their multidimensional nature. Current studies

TABLE 1.1 Definitions of global value chain measures

Backward GVC participation	Backward GVC participation involves importing foreign inputs to produce goods and services for export. It is measured as the foreign content of exports (foreign value added, or FVA).
Forward GVC participation	Forward GVC participation involves exporting goods and services that become inputs in the exports of other countries. It comprises transactions in which a country's exports are not consumed in the importing country but are instead reexported by that country as part of a good or service (indirect value added, or DVX) to a third country.
Total GVC participation	Total GVC participation is the sum of the foreign value added and the indirect value added in an export to a third country (FVA + DVX).
GVC intensity	GVC intensity is a country's total GVC participation as a share of its total trade. $GVC\ intensity = (FVA + DVX) / (exports + imports)$.

Source: World Bank summary based on Antràs 2020 and World Bank 2020.

Note: DVX = indirect value added (domestic value added in another country's exports); FVA = foreign value added; GVC = global value chain.

often dissect GVCs from only a trade perspective because trade data are most available, but GVCs involve the cross-border flows of all production factors: funds, goods, services, people, information, and knowledge. Firms, especially multinational firms, are the architects of GVCs through their unbundling, outsourcing, and offshoring production processes, which they undertake to balance risks and rewards.

GVC intensity—or the share of GVC trade in a country’s total trade—expanded rapidly in the 1990s as information and communication technologies (ICTs) dramatically reduced communication costs and stimulated multinational activities (Amador and Cabral 2016). This intensity dropped following the global financial crisis of 2007–09; it later recovered somewhat, but never to the precrisis level. More recently, GVC intensity (for both simple and complex GVCs) has been flat or even trending downward. The global fragmentation of production has also declined since 2011 (Timmer et al. 2016), mirroring a slowdown in foreign direct investment (FDI).

There are many explanations for the stagnation of GVCs, including the saturation of possibilities for unbundling production, increasing geopolitical risks and costs associated with trade and investment, increasing local capacity and local sourcing in some developing countries, automation-induced reshoring and nearshoring, and a global shift in demand away from goods toward services.

Measurement issues may also explain the recent stagnation of GVC intensity. Global flows of data, information, and people are intensifying; and the world is becoming more linked than ever. However, trade in services and information is still not fully captured in world input-output tables, resulting in low numbers for GVC intensity.

This report classifies GVCs into six archetypes (table 1.2). These archetypes provide a broad sectoral classification to frame the report’s analyses, with the caveat that the business activities involved in each archetype and sector are heterogeneous. To complement this analysis, the report also includes in-depth country case studies that give more nuanced pictures of specific GVCs.

TABLE 1.2 The six archetypes of global value chains

GVC archetypes	Sectors	Tradability	Labor intensity	Knowledge intensity
Commodities	Agriculture, fuel, minerals	High	Low	Low
Labor-intensive services	Wholesale and retail, transportation and storage, tourism, health and social services, personal services, leasing, other services	Low	High	Low
Labor-intensive goods	Textiles, apparel, toys, leather products	High	High	Low
Regional processing	Food and beverages, fabricated metal products, rubber and plastics, glass, cement and ceramics, furniture	Low	Low	Low
Knowledge-intensive services	Research and development, IT services, professional services, education	Low	Low	High
Knowledge-intensive goods	Automobiles, transportation equipment, computers and electronics, electrical machinery and equipment, chemicals and pharmaceuticals	High	Low	High

Source: World Bank adaptation of MGI 2019.

Note: GVC archetypes are in ascending order of average product complexity. “High” and “Low” are assigned based on average level across sectors in each archetype, which could mask huge variations across sectors. GVC = global value chain; IT = information technology.

Foreign direct investment and global value chains are mutually reinforcing

FDI has been the primary driver of GVC expansion in the past several decades. The emergence and evolution of GVCs have mirrored MNCs' investment and trade decisions as they have relocated their production activities worldwide. The surge in FDI after the 1990s reflects these decisions and accelerated the expansion of GVCs. In contrast, the past 10 years have witnessed a slowdown of GVC expansion, also in tandem with decreasing global FDI flows. However, despite this connection, theories and empirical studies on the relationship between FDI and GVCs have gained attention in the literature only in recent years. These theories show a mutually reinforcing dynamic between FDI and GVC participation.

Initial empirical research has established a series of stylized facts: only some firms export, exporters are more productive than nonexporters, and trade liberalization is accompanied by an increase in aggregate industrial productivity. Recent evidence has shown that global trade is concentrated in a few importing-exporting firms. These firms, many of which are MNCs, constitute 15 percent of all traders (World Bank 2020) yet account for about 80 percent of total trade (UNCTAD 2013).

Early trade theories did not establish a direct relationship between FDI and trade because factors of production were often assumed to be internationally immobile. However, some scholars did discuss whether FDI substitutes for or complements international trade. Mundell (1957) argues that the two are complete substitutes for each other under the identical production function assumption, which is characterized by the Heckscher-Ohlin-Samuelson theory of trade. Later, Schmitz and Helmerger (1970) and Purvis (1972) show that foreign investment may complement international trade if production functions vary between the two trading countries. Kojima (1975) further illustrates that FDI can improve productivity and expand production possibilities in the host country through the transfer of technology and managerial skills, therefore creating more trade. FDI can also substitute for trade if it shifts demand for a product in the same direction in the two countries. These early discussions were based on a model with two countries, two final goods, and two homogeneous factors of production. Although powerful in highlighting the differences in the two countries' factor endowments and the two products' factor intensities, that model was oversimplified and included many restrictive assumptions.

Since the 1980s, several prominent studies have modeled the firm behaviors that give rise to GVCs. These studies build on the industrial organization literature, such as Williamson (1985) and Grossman and Hart (1986). Grossman and Helpman (2002) formulate firms' choice between integration and outsourcing. Their model emphasizes the trade-off between the costs of running a large and less specialized organization and the costs arising from search friction, relationship-specific investment, and imperfect contracting. Helpman, Melitz, and Yeaple (2004) analyze firms' decisions on whether to serve foreign markets through arm's length trade or through investment. They focus on the trade-off between trade costs and the costs of investing in foreign markets and on within-sector productivity heterogeneity. Antràs and Helpman (2004) combine these two strands of modeling frameworks and study firms' choices

between domestic and foreign markets and between integration and outsourcing simultaneously in the context of heterogeneous within-sector productivity.

Among many theories on FDI and GVCs, Melitz (2003) and Helpman, Melitz, and Yeaple (2004) establish a microeconomic theoretical framework from an entry cost perspective to explore the factors determining firms' internationalization choices between FDI and trade. The framework concludes that the entry cost required for FDI is higher than that required for exporting. Thus, only the most productive firms would incur the former costs and engage in FDI; less productive firms would export, and the least productive firms would merely serve the domestic market. Many empirical studies have confirmed this finding (Kimura and Kiyota 2006; Lee 2010; Wagner 2006).

Recent studies extend this model by emphasizing the role of ex ante network embeddedness in facilitating firms' entry into foreign markets (Kimura and Kiyota 2006 [for Japan]; Koenig 2009; Kumar 2008 [for India]; Singh 2011). Bernard et al. (2018) further develop a theoretical framework that allows firms to have large market shares and to decide simultaneously on their sets of production locations, export markets, input sources, products to export, and inputs to import. Their model suggests that firms' importing, exporting, and production decisions are interdependent. Evidence from US firms and trade transaction data support the main predictions of their theory: MNCs (referred to as "global firms" in their paper) participate in GVCs more intensively than other firms and magnify the impact of underlying differences in firm characteristics, increasing their share of aggregate trade.

There are multiple mutually reinforcing dynamics between FDI and GVC participation:

- Trade could induce initial FDI from the lead firm by lowering its entry costs.
- Lower entry costs and high switching costs encourage the lead firm to bring its GVC partners into the host country as well, and a herd effect triggers subsequent FDI.
- FDI stimulates further GVC entry and upgrading in the host country through spillovers and agglomeration effects.

Trade could induce initial FDI by lowering entry costs into a market for foreign firms (Kathuria and Yatawara 2020). This possibility is most relevant for market-seeking FDI. Before a firm invests abroad, it must weigh the costs and benefits of entering a new market. Entry costs include sunk costs before entry, fixed entry costs, and variable entry costs. The sunk costs before entry consist of information acquisition, due diligence, regulatory research, costs of matching up with partners, and contracting costs, all of which cannot be recovered if the firm eventually decides not to enter. Fixed entry costs include building plants and buying equipment and vary by entry mode. If the firm starts operating in the foreign market, it will also bear variable costs such as material costs, labor costs, transportation costs, and tariffs. However, previous trade with firms in the destination country offers access to information, a peer support network, and experience-based trust, which can help reduce the fixed costs of entry.

Once a lead firm sets up affiliates in a host country, it often brings its suppliers to the same location (Baldwin and Venables 2010). This phenomenon is described as

“sticky buyer-seller relationships” in the GVC literature: high matching costs encourage relationship-specific investment, leading to high switching costs and a “lock-in” effect, especially in new markets (World Bank 2020). The initial wave of FDI inflow also generates a herd effect known as FDI clustering. Firms will learn from the behavior of other firms because a firm’s location decisions reflect the information that guided its choices. If enough firms favor a destination, other firms will be tempted to copy their moves to the same destination, even if they possess information that suggests they should move elsewhere.

Finally, the proximity of foreign firms will benefit domestic firms through various types of spillovers, which will stimulate domestic firms to enter into and upgrade in GVCs themselves. FDI spillovers can happen through direct linkages, indirect demonstration effects, supplier sharing, labor mobility, or resource reallocation. FDI spillovers will enable more domestic firms to enter GVCs, ultimately expanding GVC participation and upgrading in the host country.

Numerous studies have empirically tested the relationship between FDI and GVC participation. Buelens and Tirpák (2017) use an augmented gravity model to demonstrate a positive association between bilateral FDI stock and both gross bilateral trade and the bilateral import content of exports. World Bank (2020) finds that FDI inflows play a strong role in the extent of backward GVC participation shares and levels, driven by GVC integration of the manufacturing sector. The lack of foreign-owned firms in manufacturing is an important reason for low backward GVC participation in Sub-Saharan Africa. Countries attracting FDI in manufacturing may also reduce their exports of raw agricultural goods and intermediate services embodied in exports of resource-intensive goods, thereby lowering their forward GVC participation (World Bank 2020). FDI not only contributes to countries’ GVC participation directly by integrating local firms into global production networks, but can also provide higher-quality inputs and services to local firms, generating widespread positive spillovers that expand host countries’ GVC participation indirectly (World Bank 2020). GVC participation in turn stimulates FDI flows. Martínez-Galán and Fontoura (2019) show that a country’s degree of GVC participation contributed positively to bilateral inward FDI stocks in the 2000s.

International production networks

Network analysis offers important new tools with which to consider the interrelationship between investment, trade, and GVCs in greater detail. Network analysis is a set of integrated techniques to depict relations among various actors to analyze the structure of these links (Chiesi 2001). It thus highlights relations *between* actors in addition to individual actors’ attributes. In a globally interconnected world, each actor’s own characteristics are only half the story because people, businesses, and countries are interdependent. GVCs are complex and multifaceted networks encompassing flows of people, capital, goods, services, information, and ideas. Thus, network analysis could fittingly depict the ties among these many players and how the players influence each other. Table 1.3 explains the basic concepts of network analysis used in this report.

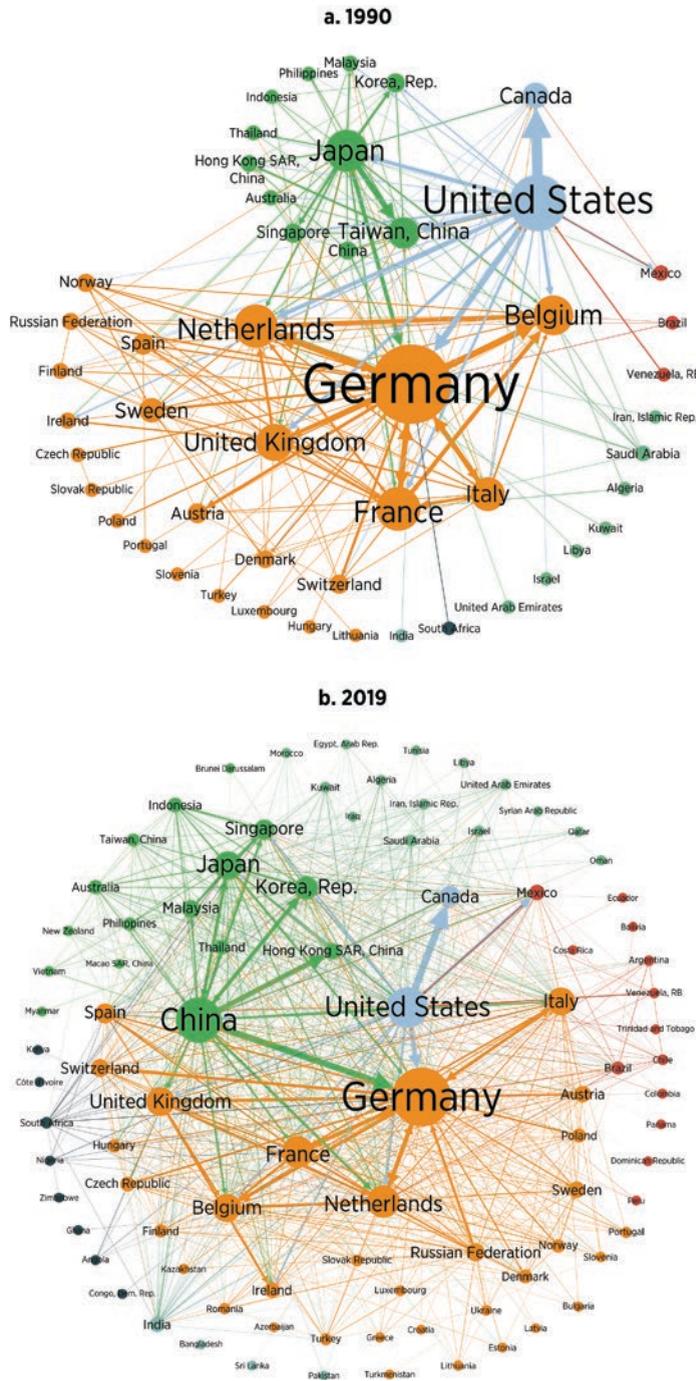
TABLE 1.3 Basic concepts of network analysis

Node	Each actor in a network is represented as a node. For example, a node can denote a person, a firm, a sector, or a country.
Directed and undirected relations	<ul style="list-style-type: none"> • Directed relations have a clear source and destination and thus a clear direction (for example, firm A sells to firm B). • Undirected relations are symmetric and do not have a direction (for example, firm A and firm B have the same owner).
Degree	<ul style="list-style-type: none"> • In-degree: The number of linkages that point to a given node as a destination, or the number of incoming interactions the node receives. • Out-degree: The number of linkages that go out from a given node as a source, or the number of outgoing interactions the node initiates. • Degree: The sum of a node's in-degree and out-degree. In unidirectional networks, the degree is the number of linkages each node is adjacent to.
Strength of a link	Values can be attached to linkages to represent an attribute of the link (for example, the strength of a relationship, the information capacity of a linkage, the distance between nodes, or the frequency of interaction between nodes).
Weighted degree	The degree of a node weighted by the strength of its linkages. This chapter uses weighted degree to measure a node's centrality to the network.
Average degree	The average number of linkages for each node.
Network diameter	The shortest distance between the two most distant nodes in the network.
Graph density	The number of existing relationships in a network relative to the maximum possible number of relationships. Dense networks indicate highly integrated markets with many transactions among different countries.
Average path length	The average length of the shortest paths between each pair of nodes.

Source: World Bank summary based on Wasserman and Faust 1994.

China's rise to prominence in the global production network may be the most noteworthy GVC trend of the past three decades. In 1990, Germany, the United States, and Japan were the three central nodes connecting cross-continent trade flows. China was a tiny dot with very low participation in GVCs, both backward and forward. However, by 2019 China had replaced Japan as the central node in Asia and replaced the United States as the second-largest GVC hub globally (figure 1.1). Although China has moved into knowledge-intensive manufacturing GVCs, textiles and apparel remain the second-largest source of value added in China's GVC participation. Germany remains the global leading player with the highest GVC participation. As the world's knowledge-intensive manufacturing powerhouse, Germany makes heavy use of many other countries' value added in its exports, especially electrical machinery, transportation equipment, and chemicals. The United States is the third-largest GVC hub in the world, and its GVC participation is dominated by forward linkages. The United States' value added is concentrated in machinery, transportation equipment, financial services, and pharmaceuticals. Western Europe, North America, and East Asia and Pacific are the three regions most integrated into GVCs, as shown by the density of their networks and their average node sizes. GVC participation is limited in Latin America and the Caribbean, South Asia, and Sub-Saharan Africa, especially in low-income countries.

FDI statistics are notoriously inconsistent because of varying statistical approaches and the existence of phantom FDI for tax avoidance purposes.¹ With or without adjusting for special purpose entities² (SPEs) and the ultimate recipients of investments, FDI

FIGURE 1.1 Global value chain participation network, 1990 and 2019

Source: World Bank calculations based on United Nations Conference on Trade and Development–Eora Global Value Chain database.

Note: These two panels are based on the country-to-country value added matrixes for 1990 and 2019, which include 189 economies and a “rest of the world” group. For each exporting economy, the matrixes show the value added contributed by all other economies in the world. In the two panels, each node stands for an economy, and the thickness of each link reflects the source economy’s value added in the destination economy’s exports. The panels display only linkages that are worth at least US\$500 million. Nodes are colored by World Bank region. The size of each node represents its weighted degree, which measures the corresponding economy’s centrality to global value chains. Data for 2019 are forecast on the basis of the International Monetary Fund World Economic Outlook database.

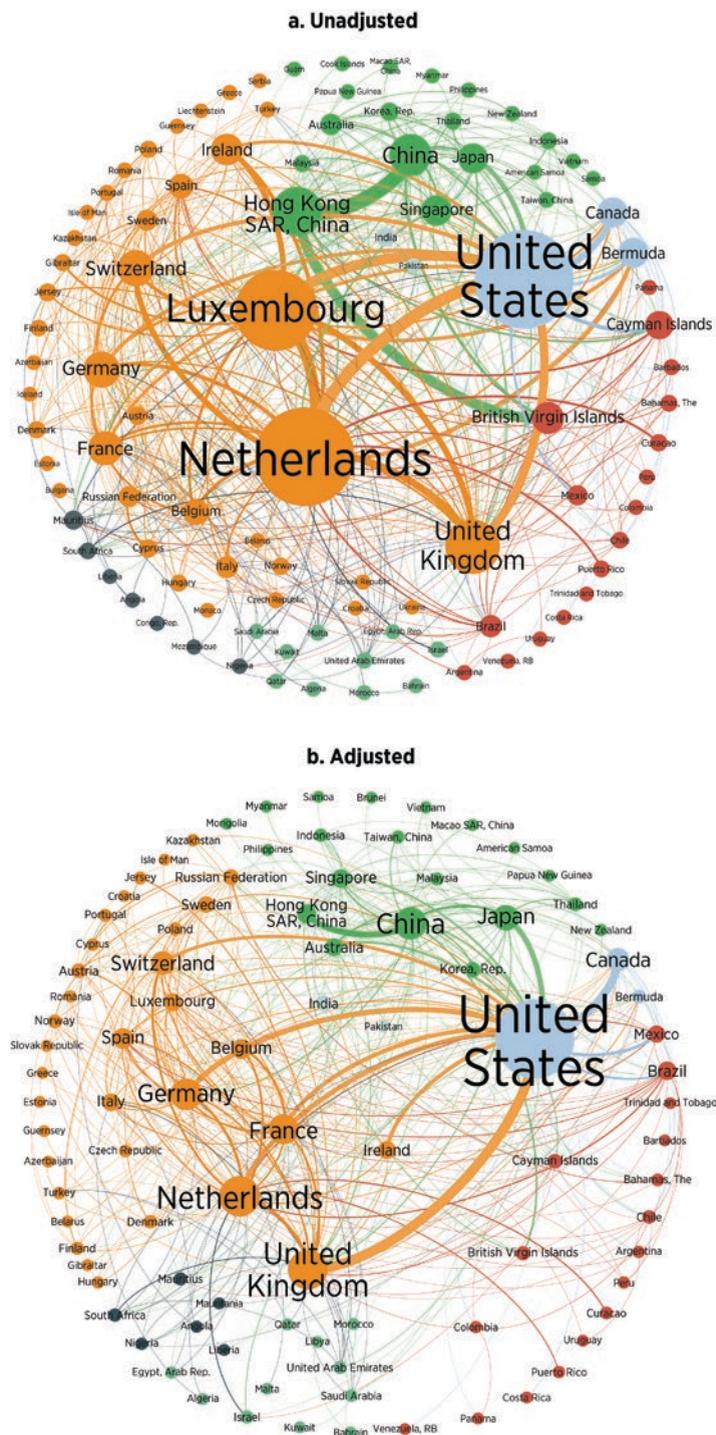
networks vary significantly. The unadjusted FDI stock network shows the Netherlands and Luxembourg as the first- and third-biggest nodes, respectively, which is disproportionate to their market size (figure 1.2). Major pass-through economies—such as Bermuda; the British Virgin Islands; the Cayman Islands; Hong Kong SAR, China; Ireland; Luxembourg; the Netherlands; and Singapore—host more than 85 percent of the world’s SPEs (Damgaard, Elkjaer, and Johannesen 2019). When the FDI network is adjusted for SPEs and the ultimate recipients of investments, Luxembourg and the Netherlands become much less central, and China, France, Germany, and the United Kingdom emerge as major nodes. Brazil, India, Israel, and South Africa also show up as the FDI hubs in their respective regions.

Overall, countries’ adjusted FDI centrality is highly correlated with their GVC centrality (figure 1.3). A 1 percent increase in a countries’ adjusted FDI centrality is associated with a 0.87 percent increase in its GVC centrality. The positive correlation remains highly significant at the 0.10 percent level even when total population and gross domestic product (GDP) are controlled for.

Countries that maintain a relatively high share of manufacturing value added in GDP (usually more than 20 percent), such as China, Germany, major economies in the Association of Southeast Asian Nations, and some Eastern European countries, are more central in the GVC network than in the FDI network. These include advanced economies that specialize in knowledge-intensive manufacturing and innovative activities, such as Germany, Japan, the Republic of Korea, and many emerging markets that successfully joined labor-intensive manufacturing, as well as knowledge-intensive manufacturing GVCs, such as China, the Czech Republic, Malaysia, the Philippines, and the Slovak Republic. A few countries that rely heavily on commodity exports, such as Algeria, Kuwait, and República Bolivariana de Venezuela, are also more central in the GVC network than in the FDI network. These countries participate in GVCs primarily by supplying raw materials that are used in other countries’ exports, which does not require high levels of FDI.

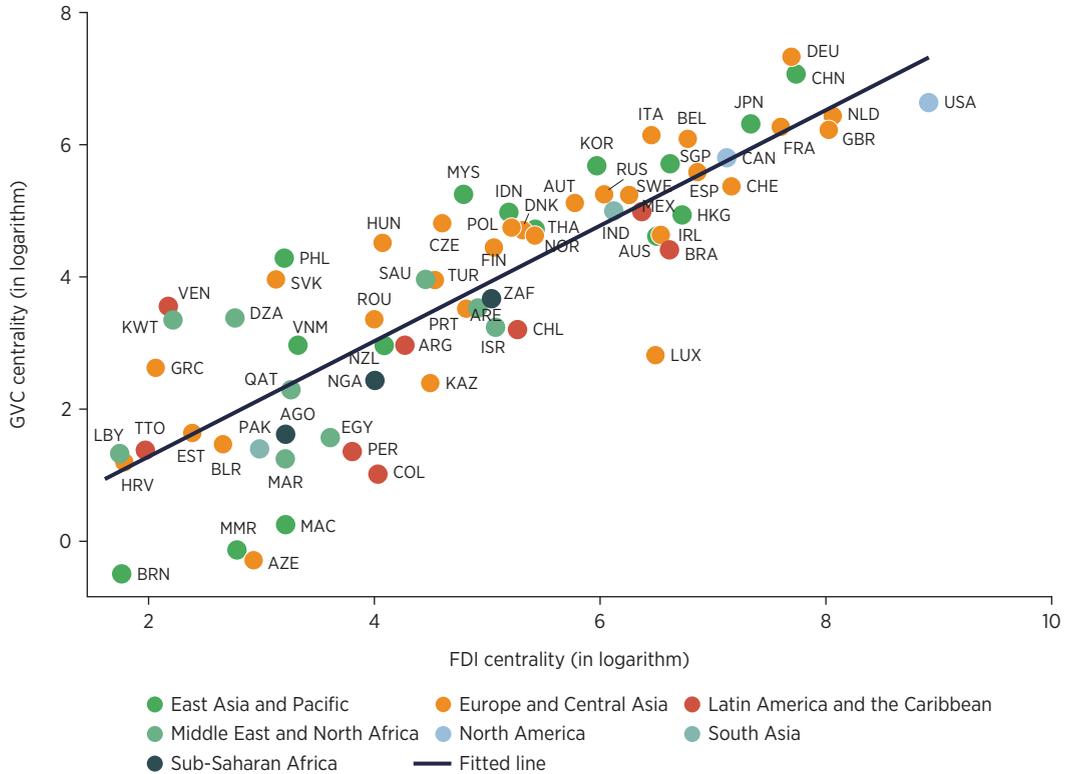
Countries that have low shares of manufacturing value added in GDP (typically less than 12 percent), such as Azerbaijan; Colombia; Luxembourg; Macao SAR, China; the Netherlands; the United Kingdom; and the United States, tend to be more central in the FDI network than in the GVC network. Advanced economies such as Luxembourg, the Netherlands, the United Kingdom, and the United States started deindustrialization several decades ago by outsourcing and offshoring manufacturing activities to cheaper locations; these countries now specialize in upstream innovative activities as well as financial services and other downstream services. Developing countries such as Azerbaijan, Colombia, the Arab Republic of Egypt, Myanmar, and Peru underperform in GVC participation relative to their FDI centrality because these economies have a weak manufacturing base while FDI inflows are concentrated in nonmanufacturing sectors. Many other developing countries are marginal nodes in both the FDI and the GVC networks.

For many countries, joining regional value chains is the stepping-stone to GVC participation, especially for developing countries in Europe and Central Asia, East Asia and Pacific, and North America. Regional value chains are subsets of GVCs. Neighboring countries and economies within the same region are often each other’s primary value chain and FDI sources and destinations. An analysis of the value chains

FIGURE 1.2 Global foreign direct investment stock network, 2017

Source: World Bank calculations based on International Monetary Fund bilateral foreign direct investment database, 2019.
 Note: These two panels are undirected networks. The size of each node represents the weighted degree of its corresponding economy (the total inward and outward foreign direct investment [FDI] stock into and from all other economies in the network). The thickness of the linkages represents the sum of the inward and outward FDI stocks between the two linked economies. Only bilateral linkages worth at least US\$5 billion are included in the network analysis. Nodes are colored by World Bank region.

FIGURE 1.3 High correlation between countries' foreign direct investment centrality and global value chain centrality, 2017



Source: World Bank calculations based on United Nations Conference on Trade and Development–Eora Global Value Chain database and International Monetary Fund bilateral foreign direct investment database.

Note: The x axis shows each country's weighted degree in the 2017 adjusted FDI network in natural logarithm. The y axis shows each country's weighted degree in the 2017 GVC network in natural logarithm. FDI = foreign direct investment; GVC = global value chain.

within each region reveals more nuanced dynamics. In the network analyses, higher average degree, average weighted degree and graph density, and lower average path length indicate more within-region connections.

The Europe and Central Asia region has by far the densest regional value chain and FDI network, followed by the East Asia and Pacific region. On average, each country in the Europe and Central Asia region has 37 inward and outward linkages in the regional trade network and 14 linkages in the regional FDI network, which is more than twice the level in East Asia and Pacific and much higher than the three other regions. This density occurs partly because there are more countries in the Europe and Central Asia region. East Asia and Pacific has the second-highest average degree and average weighted degree in both networks. Latin America and the Caribbean and the Middle East and North Africa have fewer regional value chains and FDI connections because of their limited intraregion specialization. The Middle East and North Africa region has relatively high graph density in the GVC network, but intraregion investment is much weaker. The Sub-Saharan Africa region is the least integrated into global networks, and it has the sparsest regional value chains and FDI networks (table 1.4).

TABLE 1.4 Statistics of regional value chain and foreign direct investment networks

Region	Regional value chain network, 2019				Adjusted FDI network, 2017			
	Average degree	Average weighted degree (US\$, billion)	Graph density	Average path length	Average degree	Average weighted degree (US\$, billion)	Graph density	Average path length
SSA	3.8	0.1	0.10	2.1	2.3	1.4	0.08	2.3
MENA	13.1	0.4	0.69	1.3	2.4	3.8	0.14	2.2
LAC	11.2	1.0	0.36	1.7	4.8	8.0	0.17	2.1
EAP	16.2	34.8	0.65	1.3	5.1	80.2	0.21	1.9
ECA	37.3	46.8	0.73	1.3	13.7	107.1	0.24	1.9

Source: World Bank calculations based on United Nations Conference on Trade and Development–Eora Global Value Chain database and International Monetary Fund bilateral FDI database.

Note: EAP = East Asia and Pacific; ECA = Europe and Central Asia; FDI = foreign direct investment; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = Sub-Saharan Africa.

The regional value chain network figures in this chapter use the United Nations Conference on Trade and Development (UNCTAD)–Eora country-to-country input-output table from 2019. A link from country A to country B indicates A’s value added in B’s exports. Only edges weighted at more than US\$1 million are displayed. The regional FDI networks use bilateral FDI positions data for 2017 from the International Monetary Fund. Only edges weighted at more than US\$1 billion are displayed. The size of each node represents the corresponding economy’s weighted degree, and the color represents the scale of the weighted degree.

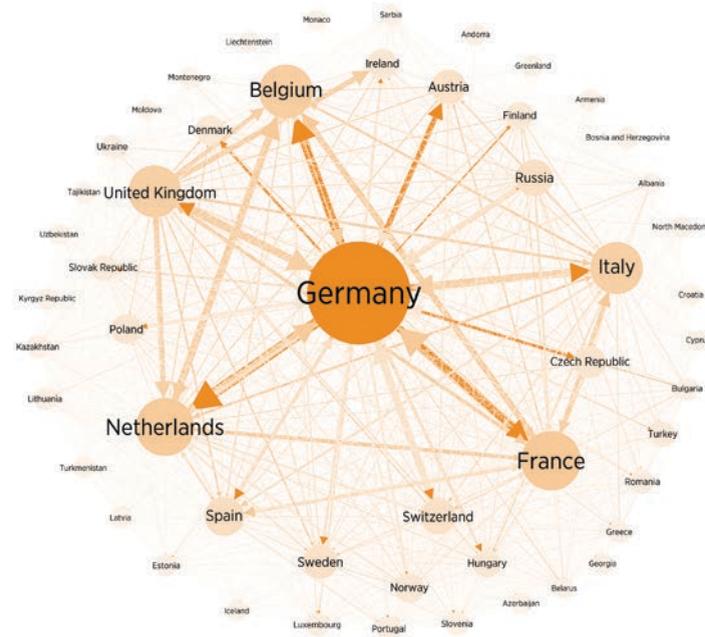
Europe and Central Asia’s regional value chain and FDI networks are very dense, with many sophisticated participants and the shortest average path length in the world (figure 1.4). Germany is the regional GVC hub, whereas the Netherlands is the FDI hub; they are surrounded by Belgium, France, the United Kingdom, and other countries. These countries are involved in knowledge-intensive manufacturing and knowledge-intensive services GVCs. Each country specializes in specific segments, and all are closely connected by trade and FDI given their complementary capabilities. Central and Eastern European countries are less connected than those of Western Europe—the former countries are mostly involved in regional processing and tourism GVCs, given their proximity to the consumer markets of the European Union (EU).

The East Asia and Pacific region is also highly integrated into regional value chains and FDI networks (figure 1.5). The region is home to about 30 percent of the world’s population, as of 2019, and it is becoming the world’s biggest consumer market. China is the regional hub, and it has strong trade and FDI linkages with Hong Kong SAR, China; Japan; Korea; Malaysia; Singapore; and Thailand. Most countries and economies that have upgraded from commodity or labor-intensive goods GVCs to knowledge-intensive goods or services GVCs come from East Asia and Pacific. Hong Kong SAR, China; Japan; Korea; Taiwan, China; and Singapore have successfully upgraded into advanced economies, and China, Malaysia, Thailand, and Vietnam are rising in global and regional networks.

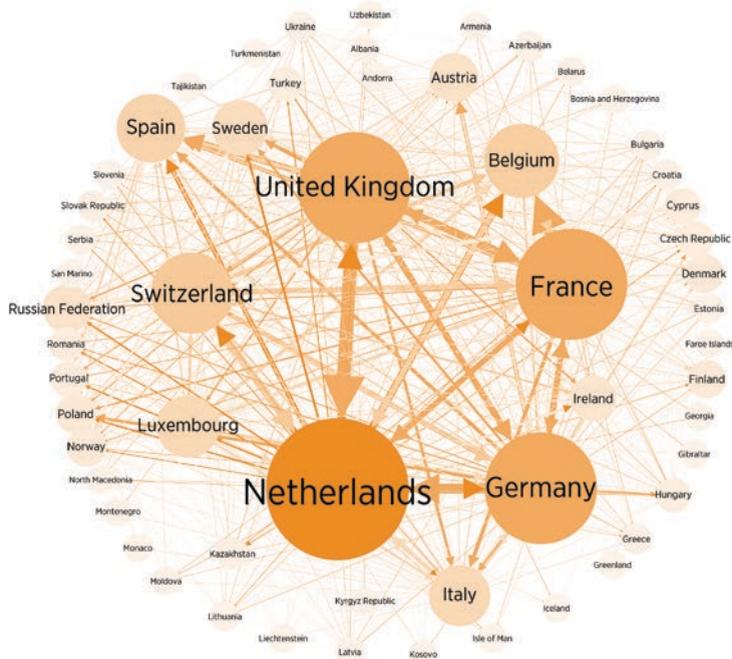
Brazil is the largest regional GVC and FDI hub in Latin America and the Caribbean, followed by Argentina, Chile, and Mexico (figure 1.6). Mexico is more integrated in

FIGURE 1.4 Regional value chain and foreign direct investment networks in Europe and Central Asia

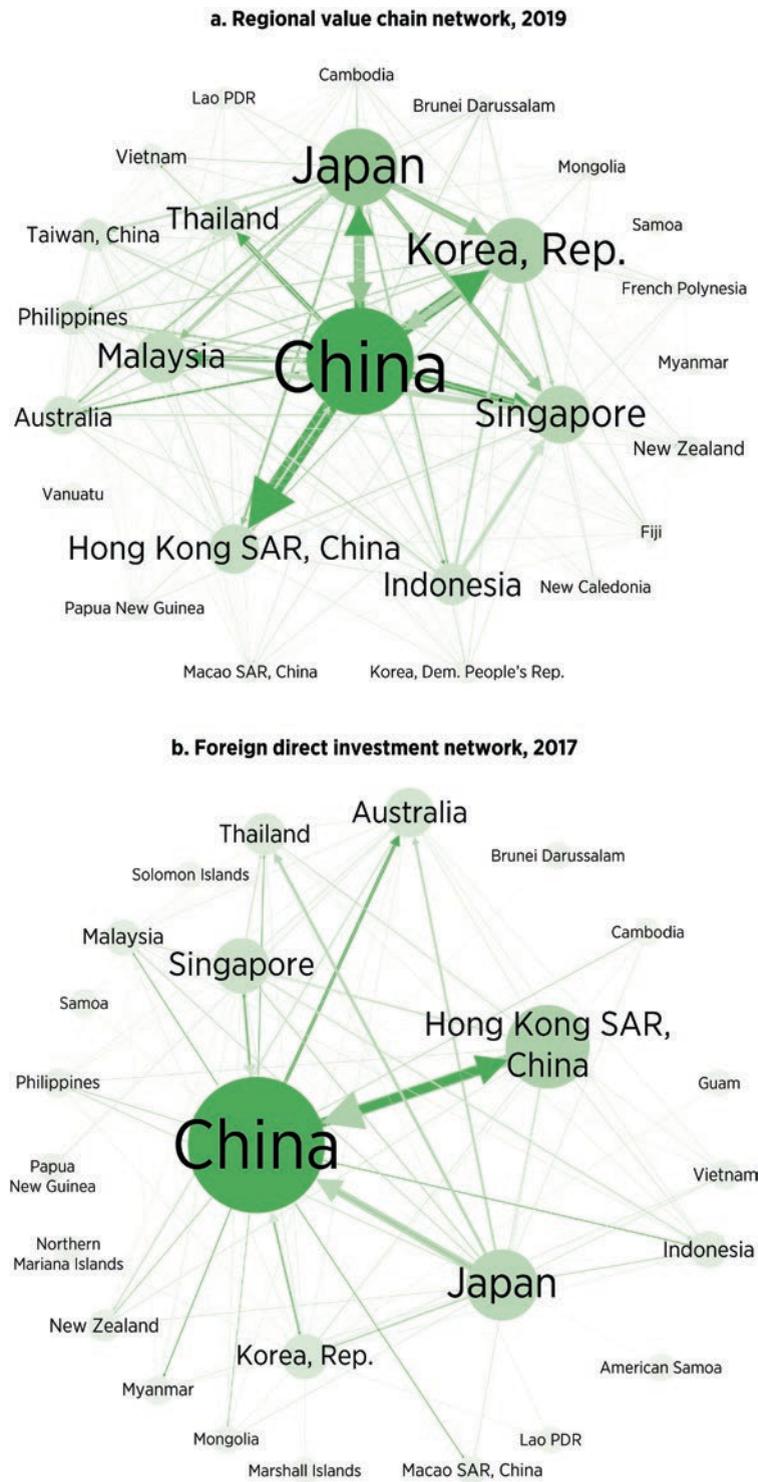
a. Regional value chain network, 2019



b. Foreign direct investment network, 2017

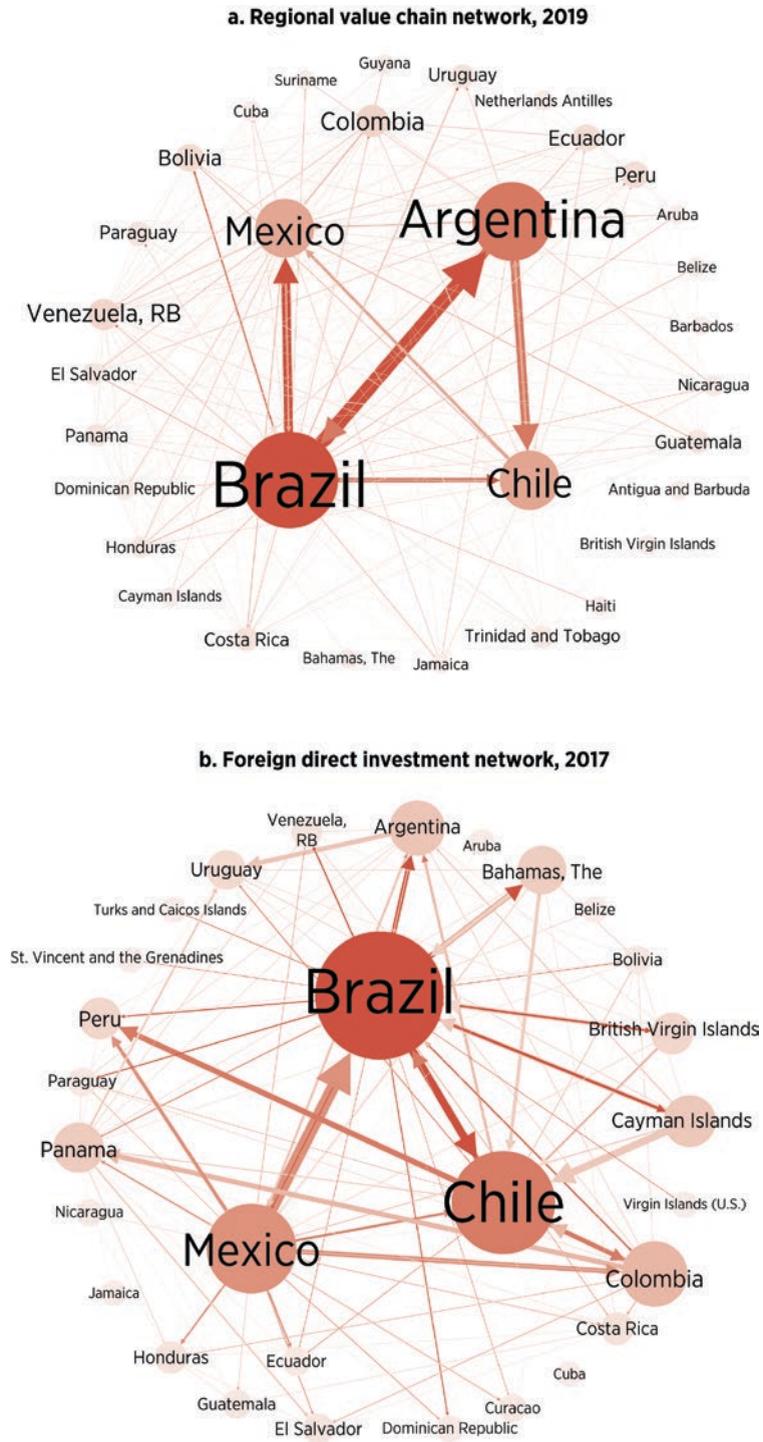


Source: World Bank calculations using United Nations Conference on Trade and Development–Eora Global Value Chain database and International Monetary Fund bilateral foreign direct investment database.

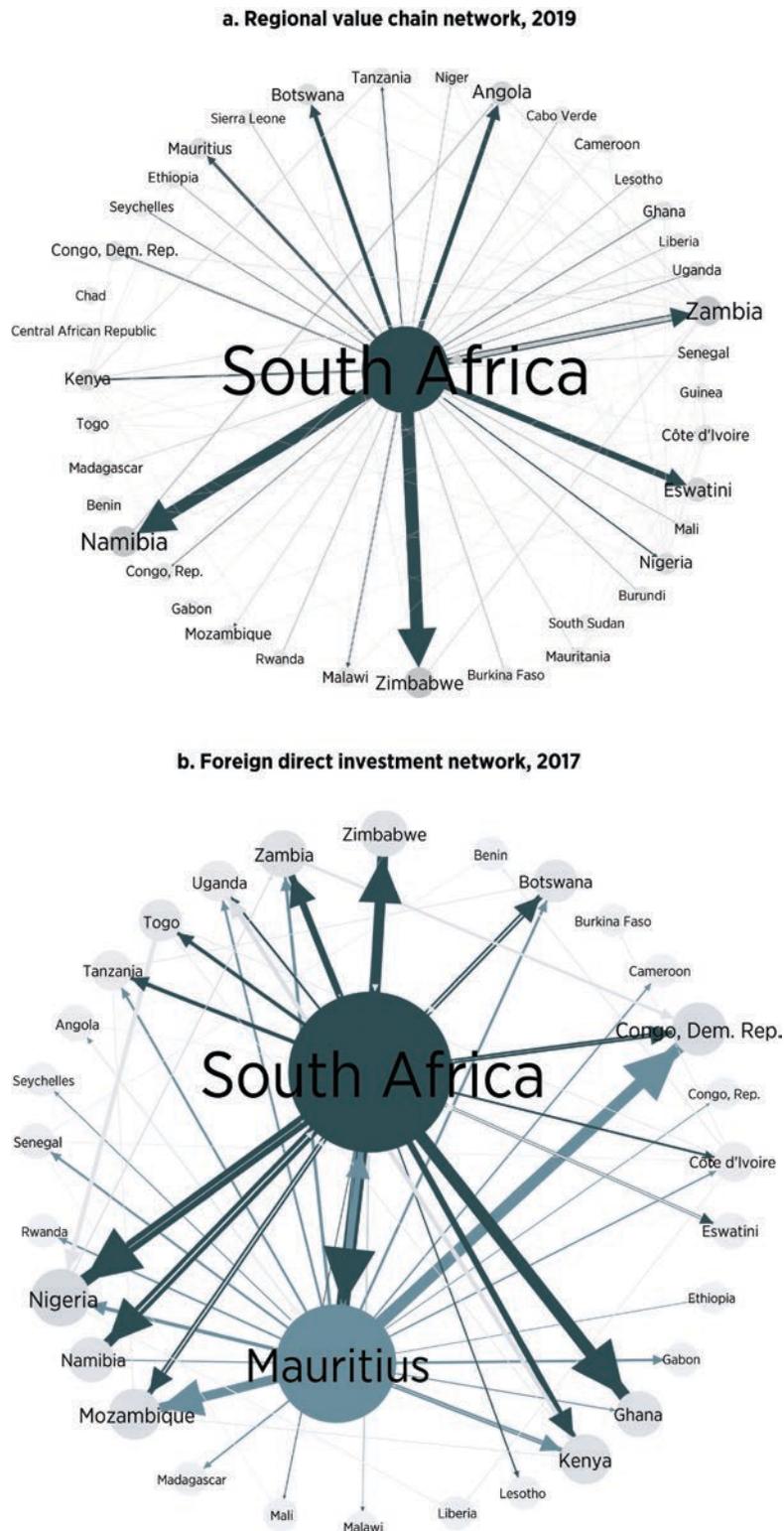
FIGURE 1.5 Regional value chain and foreign direct investment networks in East Asia and Pacific

Source: World Bank calculations using United Nations Conference on Trade and Development–Eora Global Value Chain database and International Monetary Fund bilateral foreign direct investment database.

FIGURE 1.6 Regional value chain and foreign direct investment networks in Latin America and the Caribbean



Source: World Bank calculations using United Nations Conference on Trade and Development–Eora Global Value Chain database and International Monetary Fund bilateral foreign direct investment database.

FIGURE 1.7 Regional value chain and foreign direct investment networks in Sub-Saharan Africa

Source: World Bank calculations using United Nations Conference on Trade and Development–Eora Global Value Chain database and International Monetary Fund bilateral foreign direct investment database.

the North America regional value chain. Most countries in Latin America and the Caribbean remain commodity exporters or engage in regional processing. Even the region's major GVC hubs, Argentina, Brazil, and Chile, obtain 40–50 percent of their value added in exports from regional processing. Mexico was the only country in the region specializing in knowledge-intensive goods GVCs in 1990, and Costa Rica is among the few countries in Latin America and the Caribbean that have transformed from commodity exporters into knowledge-intensive goods exporters.

South Africa is the prominent central node in Sub-Saharan Africa's regional value chains, and connections between other countries are very sparse (figure 1.7). For many countries in this region, such as Burundi, the Central African Republic, Eritrea, São Tomé and Príncipe, and Sierra Leone, the only way to participate in GVCs is through South Africa. Countries in Sub-Saharan Africa generally participate in commodities or labor-intensive services GVCs. The dominant GVC archetypes in the region remained almost the same from 1990 to 2015, with very few exceptions. Ethiopia moved from commodities to labor-intensive services, but the Democratic Republic of Congo and Uganda moved in the opposite direction. The region's FDI network looks slightly different in 2015, with Mauritius as a major FDI investor and recipient. Once an economy known for sugar plantations, textiles, and tourism, Mauritius has transformed into a middle-income country and the financial hub of the continent. However, its exorbitantly high FDI figures suggest round-tripping at a large scale.³

Recent research shows more complex value chains often have stronger regional linkages. Although GVCs expanded both globally and regionally in the past three decades, different trends emerged across regions. Value chains in East Asia and Pacific and Europe and Central Asia are more focused on trade within the region, even though GVC integration in other regions has been mostly global and is continuing in that direction (World Bank 2020). Global policy coordination has become even more important as multilateralism has been challenged on several fronts. Maintaining an open system, solidifying trust among countries, and ensuring shared benefits from FDI and GVC participation are key to ensuring sustainable economic growth and shared prosperity in the future.

Hyperspecialization

Countries have different comparative advantages and specialize in different sectors and segments of production. This section uses trade and GVC participation data to illustrate selected value chains in the six archetypes to identify the key players in those value chains.⁴ Global GVC and FDI hubs are almost always present as top exporters in at least one of the archetypes. Top exporting countries already show some specialization: the Russian Federation and some Middle Eastern countries are top oil exporters; Bangladesh, China, India, and Vietnam have clear comparative advantages in labor-intensive goods; and Germany, Japan, and the United States specialize in knowledge-intensive goods and knowledge-intensive services.

To illustrate specialization, table 1.5 lists the top five exporters with the highest revealed comparative advantage for sample sectors in each archetype. Kuwait, Brunei Darussalam, Azerbaijan, the Republic of Congo, and the United Arab Emirates rely

TABLE 1.5 Key players in the six archetypes of global value chains, 2019

GVC archetype	Commodities or sectors used for illustration	Top five exporters	Top five countries with highest RCA
Commodities	Mineral fuels and oils (HS2 code: 27)	Russian Federation, United States, Saudi Arabia, Canada, Iraq	Kuwait, Brunei Darussalam, Azerbaijan, Republic of Congo, United Arab Emirates
Labor-intensive services	Transportation, hotels, tourism, and restaurants	China, United States, Germany, Japan, United Kingdom	Bermuda, Cayman Islands, Aruba, Georgia, Botswana
Labor-intensive goods	Textiles and clothing (HS2 code: 50–63)	China, Bangladesh, Vietnam, Germany, Italy	Pakistan, Cambodia, Benin, El Salvador, Mauritius
Regional processing	Food and beverage products (HS2 code: 16–24)	Germany, United States, Netherlands, France, China	Malawi, Cabo Verde, Seychelles, Belize, Côte d'Ivoire
Knowledge-intensive services	Professional services, computer and IT services, R&D	United States, Germany, Japan, United Kingdom, France	United States, Japan, Germany, France, United Kingdom
Knowledge-intensive goods	Transportation equipment (HS2 code: 86–89)	Germany, United States, Japan, Mexico, France	Slovak Republic, Japan, Czech Republic, Germany, France

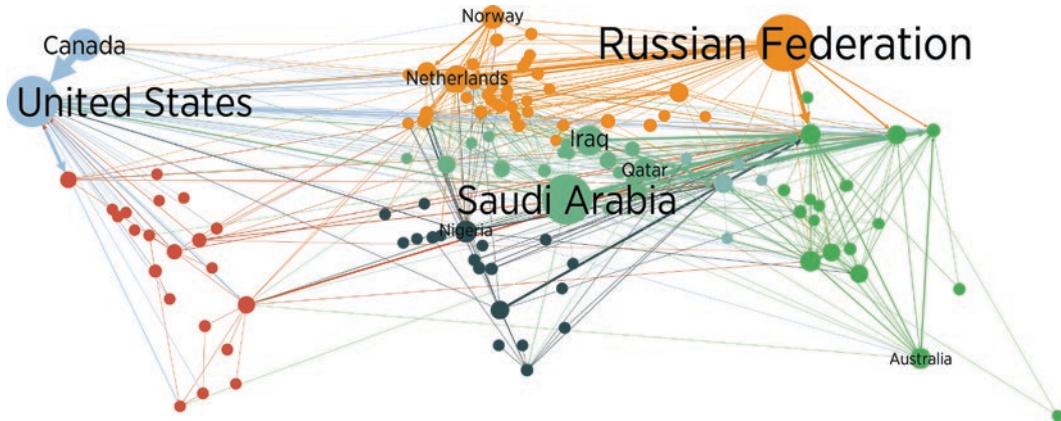
Sources: United Nations Comtrade; United Nations Conference on Trade and Development–Eora Global Value Chain database; and World Bank calculations.

Note: This table shows the top five exporters and top five countries with the highest RCA in selected products across the six GVC archetypes in 2019 (or 2015 for services). GVC = global value chain; HS2 = 2-digit Harmonized System codes; IT = information technology; RCA = revealed comparative advantage; R&D = research and development.

heavily on fuel exports, which make up more than 80 percent of total goods exports in these countries. Tourism accounted for more than 20 percent of total value added in exports in Bermuda, Cayman Islands, Aruba, Georgia, and Botswana in 2015. Pakistan, Cambodia, Benin, El Salvador, and Mauritius saw more than 30 percent of their goods exports from textiles and clothing. Malawi and several Sub-Saharan African countries are highly dependent on food exports; a few Eastern European countries specialize in transport equipment, including the Slovak Republic and the Czech Republic. All five countries with the highest revealed comparative advantage in information technology (IT) services, professional services, and research and development (R&D) are advanced economies.

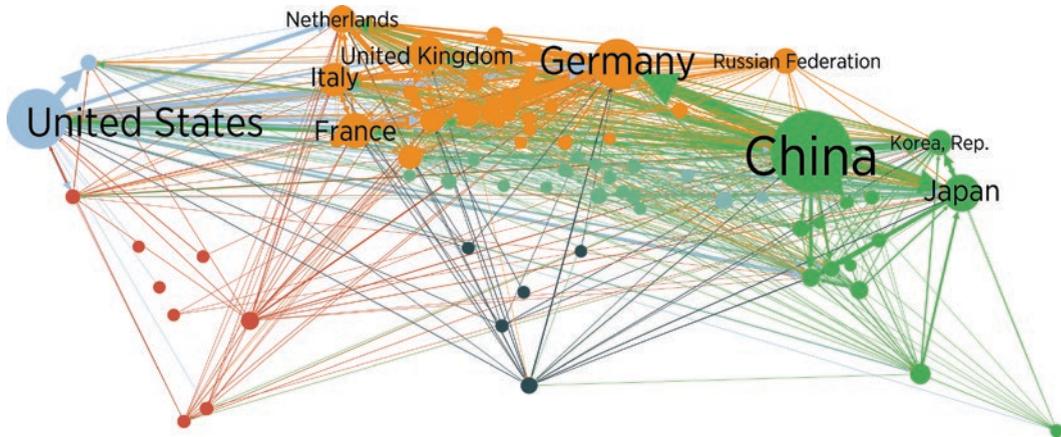
Russia, the United States, and Saudi Arabia were the top three oil exporters in 2019 (figure 1.8). Russia serves primarily the European and Asian markets; Saudi Arabia's top export destination is Asia; and the United States exports mainly to Latin America. The United States' shale oil technology has made great strides in recent years, transforming the global oil market. Other Middle Eastern countries also have a strong presence in the oil value chain, and a few Sub-Saharan African countries, such as Nigeria, Angola, and Gabon, are also major oil exporters.

Most oil exporters, regardless of income level, have yet to diversify their export portfolios and are heavily reliant on oil rents. For example, oil exports made up an average of 84 percent of total merchandise exports in Organization of the Petroleum Exporting Countries from 2014 to 2018. These countries are vulnerable to oil price fluctuations and tend to suffer from the "resource curse." The resource curse is the observation that countries endowed with rich natural resources can struggle to make effective use of these resources and often end up poorer and have less economic growth than countries with fewer natural resources. It is crucial for oil exporters to spread the benefits of oil wealth among their population and to invest in other industries so that they can have more balanced and stable growth.

FIGURE 1.8 Commodity trade network: Mineral fuels and oils, 2018

Source: United Nations Comtrade database, 2019.

Note: Figure uses Harmonized System (HS) code 27 for mineral fuels and oils. Only linkages worth at least US\$500 million are included. The top 10 exporters are labeled.

FIGURE 1.9 Labor-intensive services trade network: Transportation, hotels, tourism, and restaurants, 2015

Source: Data from the Eora sector-to-country matrix, 2015.

Note: Each source node represents the origin of the value added in the selected sector; each destination node represents the country exporting that added value. Only linkages worth at least US\$50 million are included.

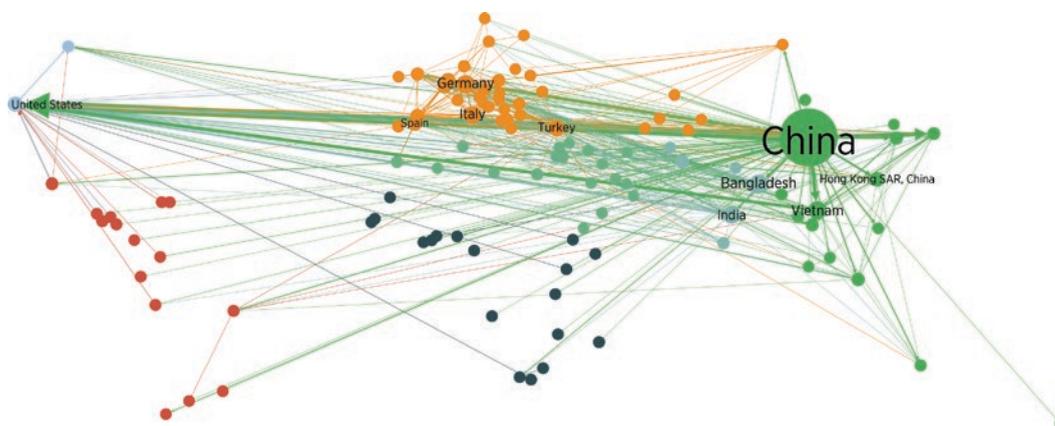
Global tourism has surged since the 1950s, consistently outpacing global GDP growth. Intraregional trade dominates the transportation and tourism value chains (figure 1.9). According to the United Nations World Tourism Organization, four-fifths of tourists travel within their own region. Tourism connections among EU countries are very dense because the region is highly integrated and people can move freely across borders within the EU. With a population of more than 1.4 billion and growing demand for international travel, China accounts for a large share of global tourism GDP. The United States is the second-largest source country for travel and tourism, and its close ties with Europe make the Europe and Central Asia region its top destination.

As disposable income rose rapidly in developing countries and the world's appetite for travel grew, the global tourism industry was flourishing before the COVID-19 (coronavirus) crisis. China's international departures reached almost 150 million in 2018, about 40 percent higher than Germany's 108 million. Tourism was also playing an increasingly large role in the global economy. Travel and tourism generated 10.3 percent of global GDP in 2019 and employed 330 million people.⁵ Tourism is the main pillar of the economy in many small island states and Oceanian countries. However, overreliance on tourism increases economic vulnerability, as the catastrophic impact of the COVID-19 outbreak on the industry showed in 2020.

The global textile and apparel value chain is largely centered around China (figure 1.10). Some apparel manufacturers have left China for lower-cost places, including Bangladesh, Ethiopia, and Vietnam. However, most firms that have exited China physically are still entangled in its supply networks. As a result, China actually increased its share of textile exports from 2008 to 2019. Chinese fabrics are produced by highly automated processes and then shipped to Bangladesh, Vietnam, and other countries for labor-intensive cutting and sewing. These countries also import sewing machines, zippers, fasteners, and labels from China before the finished clothing is exported to the United States and Europe. Most textile and apparel exports from China do not carry Chinese brands because many of the big Chinese exporting firms are original equipment manufacturers for global brands. However, as the quality of their products improves, some Chinese producers are aiming to make their own brands more appealing to final consumers worldwide and are moving into new segments of the clothing value chain, such as design and marketing.

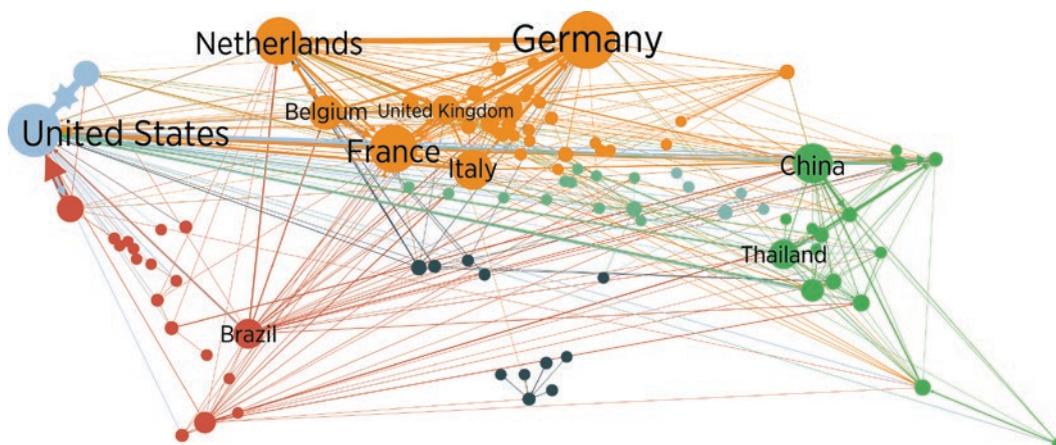
Europe and Central Asia, North America, and East Asia and Pacific are the three top sources and destinations for prepared food exports (figure 1.11). Germany became the largest food exporter in 2019; its food exports range from chocolates, baked goods, and cheese to pork, wine, and other produce. The United States was the second-largest food exporter, and it is the world's largest corn producer and among the largest producers of oats, tomatoes, soybeans, and spices. The Netherlands is another major

FIGURE 1.10 Labor-intensive goods trade network: Textiles and clothing, 2019



Source: United Nations Comtrade database, 2019.

Note: Figure uses Harmonized System (HS) code 50-63 for textiles and clothing. Only linkages worth at least US\$200 million are included. The top 10 exporters are labeled.

FIGURE 1.11 Regional processing trade network: Food and beverage products, 2018

Source: United Nations Comtrade database, 2019.

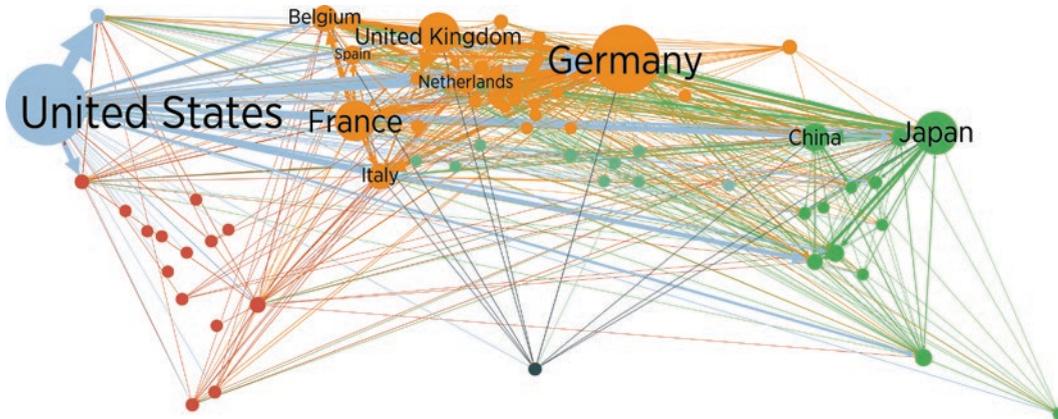
Note: Figure uses Harmonized System (HS) code 16–24 for food and beverage products. Only linkages worth at least US\$200 million are included. The top 10 exporters are labeled.

food exporter, with dairy, eggs, meat, and vegetables making up the bulk of Dutch food exports. France is the world's largest wine-exporting country by value; its wine exports exceeded US\$11 billion in 2018, far ahead of its nearest rival, Italy.

Many developing countries are highly involved in the food and beverage value chain, but they are often involved only as agricultural commodity exporters. Brazil is the largest producer of sugarcane, oranges, and coffee; and it is also among the top-ranked producers of corn, soybeans, chicken, beef, and various fruits. Indonesia exports about half of the world's supply of palm oil, and Thailand contributes a third of global rice exports. Coffee and tea are many African countries' main exports. Africa accounted for 20 percent of global tea exports in 2015–17, and Kenya is by far its leading tea exporter (and the third-largest tea exporter in the world). The global food and beverage industry is projected to grow steadily over the next few decades, with an increasing focus on quality, traceability, sustainability, and convenience. This growth will create new opportunities for developing countries to expand and upgrade their food production and their ability to add value.

The United States is the dominant player in many knowledge-intensive services value chains, ranging from ICT services and R&D to all sorts of professional services (figure 1.12). Of the top 100 digital MNCs by sales or operating revenues, 67 are US firms, 23 are European, and 4 are Japanese (UNCTAD 2017). The ICT sector has led the way in technological breakthroughs over the past several decades and is anticipated to bring about the next industrial revolution. ICTs have become highly integrated with a large share of economic activities, and they are profoundly transforming the ways people live and work. Some ICT services are altering the distribution of value within existing GVCs: many manufactured products embody them, and they account for a significant share of those products' value. For example, the design of the iPhone and the operating system it runs on are worth much more than the iPhone's hardware. Other ICT services have created new industries and new stages of

FIGURE 1.12 Knowledge-intensive services trade network: Professional services, computer and information technology services, and research and development, 2015



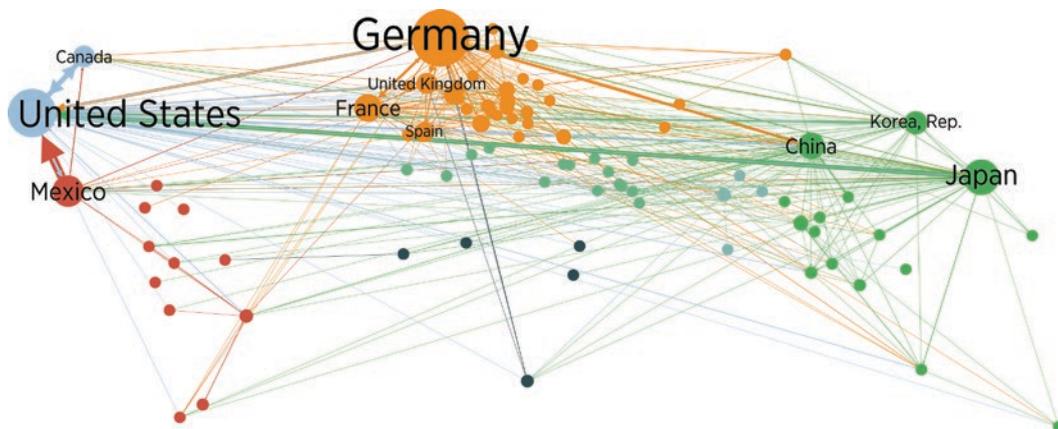
Source: Data from the Eora sector-to-country matrix, 2015.

Note: Each source node represents the origin of the value added in the selected sector; each destination node represents the country exporting that added value. Only linkages worth at least US\$50 million are included. The top 10 exporters are labeled.

production in GVCs. In the data-driven global economy, talent, data, and algorithms have become key ingredients for success. Although competition for these ingredients is intense, companies can also expand their value creation through collaborative ecosystems built around ICTs (Frederick, Bamber, and Cho 2018).

Famous for its car brands, Germany has solidified its leading position in the transportation equipment value chain over the past several decades (figure 1.13). The United States was the largest car manufacturer in the world until recently; Chrysler, Ford, and General Motors are known as the “Big Three” US automakers and are among the largest global auto exporters. Japan is the world’s second-largest auto exporter; its automotive industry took off in the 1970s and overtook that of the United States after the 1980s. Japan and Germany are also among the biggest rail equipment exporters. Japan launched the first class of bullet trains in 1964 and has continuously advanced its rail technology. It boasts some of the most important train manufacturers in the world, including Hitachi, Kawasaki, and Mitsubishi. Germany also plays a central role in international rail markets; Siemens and other German firms are known for their innovative capacity and intelligent traffic systems. The United States has the largest aerospace sector in the world, and it is the main supplier of both military and civilian aerospace hardware to the rest of the world.

Mexico emerged as the fourth-largest auto exporter and a major aerospace parts exporter by attracting FDI. Unlike Germany, Japan, and the United States, Mexico does not have its own world-famous car brands; instead, it developed its automotive industry by attracting foreign firms such as Chrysler, Ford, General Motors, and Volkswagen. Mexico’s aerospace exports also surged in recent years by virtue of a large influx of FDI into its aerospace sector. Aerospace exports from Mexico reached US\$8.4 billion in 2019, a 17 percent increase over the previous year, and FDI in the industry is estimated to have reached US\$13 billion in 2019, of which 75 percent will originate in North America and the rest in Europe (TECMA Communications 2019).

FIGURE 1.13 Knowledge-intensive goods trade network: Transportation equipment, 2019

Source: United Nations Comtrade database, 2019.

Note: Figure uses Harmonized System (HS) code 86–89 for transportation equipment. Only linkages worth at least US\$500 million are included. The top 10 exporters are labeled.

Leveraging foreign direct investment to upgrade into new global value chain archetypes

Over the past three decades, some countries have upgraded into new dominant archetypes of GVCs (table 1.6). Using sector-level value added data from the UNCTAD-Eora Global Value Chain database, this report maps each country to a dominant GVC archetype. The most remarkable examples of countries' upgrading journeys include those of Costa Rica, which transformed from a commodity exporter in 1990 to a knowledge-intensive goods exporter in 2015, and China, which moved from labor-intensive goods to knowledge-intensive goods during the same period. Other changes over that period include Guatemala and Indonesia upgrading from commodities to regional processing and Albania and Papua New Guinea joining labor-intensive services GVCs. However, a few other countries, such as Azerbaijan, the Democratic Republic of Congo, Iraq, and the Kyrgyz Republic, formerly specialized in labor-intensive services but have downgraded to become heavily reliant on commodity exports.

Overall, most countries have maintained their dominant GVC archetype over the past three decades, and labor-intensive services have been the biggest source of value added in many countries' exports. Transportation, hotels and restaurants, entertainment, and personal services make up the bulk of these countries' value added in exports, especially for small African, Caribbean, and Pacific countries.

Almost all countries that have upgraded into new archetypes have benefited from strong FDI inflows in related sectors. Below are four noteworthy examples of how developing countries have joined, or upgraded their roles in, GVCs with the help of FDI. China's and Costa Rica's transformations started a few decades ago, whereas Ethiopia's and Vietnam's cases are more recent. Additional examples can be found in part II of this report.

TABLE 1.6 Economies that changed their dominant global value chain archetype, 1990–2015

Dominant GVC archetype, 1990	Dominant GVC archetype, 2015	Economies
Upgraded		
Commodities	Regional processing	Guatemala, Indonesia
Commodities	Labor-intensive services	Albania, Papua New Guinea
Commodities	Knowledge-intensive goods	Costa Rica
Labor-intensive services	Labor-intensive goods	Cambodia, El Salvador
Labor-intensive services	Knowledge-intensive goods	Philippines, Singapore
Labor-intensive goods	Knowledge-intensive goods	China; Hong Kong SAR, China
Downgraded		
Regional processing	Commodities	Bolivia, Kenya, Lao PDR, Paraguay
Labor-intensive services	Commodities	Azerbaijan; Congo, Dem. Rep.; Iraq; Kyrgyz Republic; Mongolia; Trinidad and Tobago; Uganda

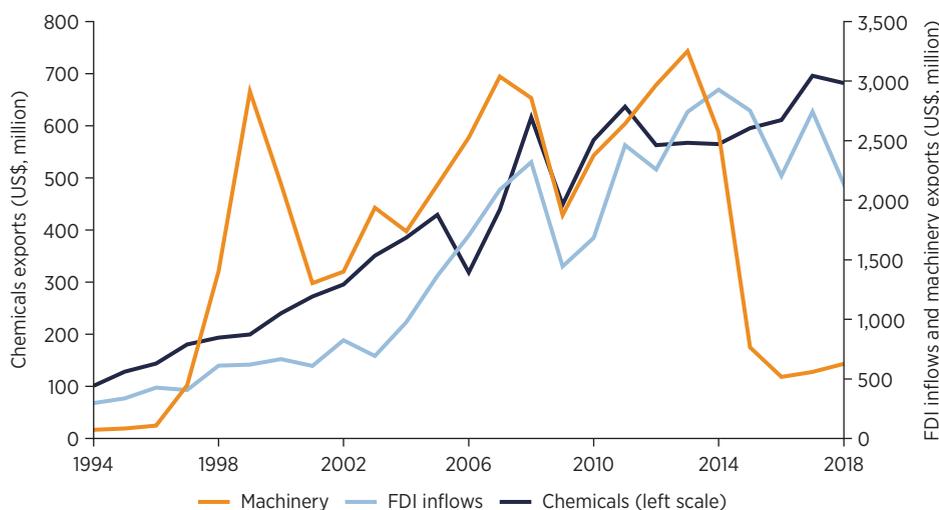
Source: World Bank calculations based on the United Nations Conference on Trade and Development–Eora Global Value Chain database as revised by the *World Development Report 2020* team.

Note: “Dominant GVC archetype” refers to the archetype that has the highest share in an economy’s total value added to exports in the specified year. GVC = global value chain; PDR = People’s Democratic Republic; SAR = special administrative region.

Costa Rica

FDI has profoundly changed Costa Rica’s export specialization and has significantly propelled its integration into GVCs. Despite the small size of Costa Rica’s economy, the country has successfully transformed its export composition from primary products to high-tech manufacturing and value added service industries thanks to a robust inflow of FDI over the past decades. In the early 1980s, Costa Rica was exporting undifferentiated and unprocessed agricultural products such as coffee, bananas, and sugar. The Costa Rican government decided to adopt an export-oriented growth strategy, including trade liberalization and the promotion of export-led FDI, to create employment, diversify exports, and boost the country’s productivity. Generous investment incentives and proactive investment promotion were key factors that attracted lead firms into Costa Rica. Following the arrival of the world-leading technology company Intel in the late 1990s, more and more MNCs started to invest and set up shop in Costa Rica, gradually diversifying and upgrading the country’s production base and exports. The country’s FDI volume grew from US\$340 million in 1995 to more than US\$2.9 billion in 2014 (figure 1.14).

More recently, foreign companies have upgraded their operations in Costa Rica toward more knowledge-intensive activities, including software design and R&D. Along with this trend, the Costa Rican government has shifted toward a more selective approach to attracting FDI, focusing on companies that operate in knowledge-intensive sectors such as knowledge-processing services, medical devices and the life sciences, and clean technologies. In general, FDI has been a key factor in the transformation of Costa Rica’s economy, and it has been pivotal to diversifying the country’s exports, boosting economic growth, and generating skilled jobs.

FIGURE 1.14 Costa Rica's foreign direct investment inflows and export growth, 1994–2018

Source: World Bank calculations based on data from United Nations Conference on Trade and Development and United Nations Comtrade database.

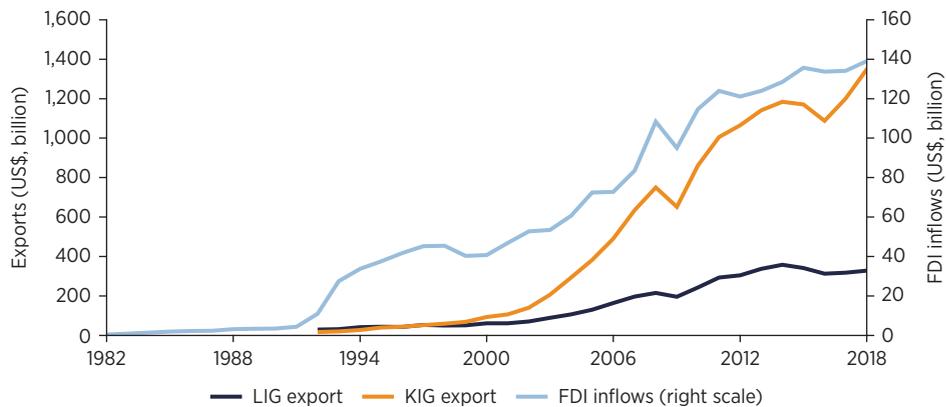
Note: FDI = foreign direct investment.

China

FDI has played a critical role in China's economic transformation and enduring growth. China's FDI inflows followed three main stages: the FDI spurt in the 1990s that jump-started China's export growth; the wave of FDI in the 2000s that further accelerated China's economic transformation; and more diverse FDI inflows since 2010 that have increasingly focused on knowledge-intensive goods and services.

China's "Reform and Opening Up" policy began in 1978, but until the 1990s FDI inflows into China remained negligible. In the spring of 1992, Deng Xiaoping delivered his famous speech on deepening reforms and opening up by attracting foreign investment. The Chinese government subsequently made a series of major policy reforms to improve the country's investment climate, with a focus on attracting FDI in infrastructure and manufacturing that would boost exports. China saw a large influx of FDI immediately in 1992: close to 50,000 new foreign enterprises were established in the country, and the actual use of foreign capital reached US\$11 billion, a 150 percent jump from the previous year (China, MOFCOM 2019). FDI continued to surge in the following years as more and more MNCs accelerated their investment in China. As of 2001, about 400 of the world's 500 largest MNCs had entered China. Most of these firms, including Ericsson, General Motors, Motorola, Nokia, Siemens, and Volkswagen, are in capital- and technology-intensive industries. The advanced technologies, knowledge, equipment, and products brought by foreign firms greatly accelerated domestic firms' development. From 1992 to 2000, China's textile and footwear exports more than doubled, and the country's knowledge-intensive goods exports increased by more than 400 percent (figure 1.15).

Upon its accession to the World Trade Organization in 2001, China's internationalization reached a new level. The Chinese government proactively sought to attract

FIGURE 1.15 China's foreign direct investment inflows and export growth, 1982–2018

Source: World Bank calculations based on data from United Nations Conference on Trade and Development and United Nations Comtrade database.

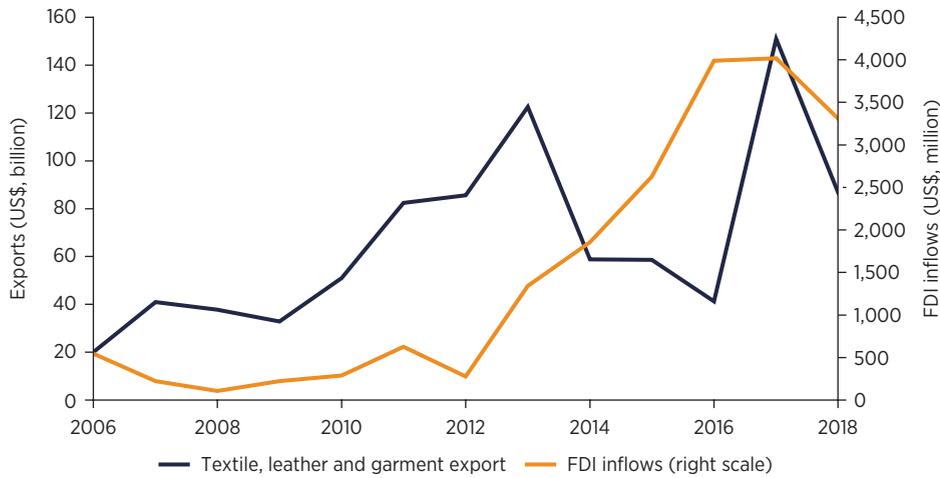
Note: FDI = foreign direct investment; KIG = knowledge-intensive goods; LIG = labor-intensive goods.

high-quality FDI to align with the transformation of the domestic economy. From 2001 to 2007, China opened 100 of the country's 160 services sectors and revised its laws and regulations to create an encouraging business environment for MNCs. Sole proprietorship became MNCs' most popular mode of entry into the country.⁶ China also promoted FDI in its central and western regions to narrow regional gaps in economic development. From 2001 to 2010, China's knowledge-intensive goods exports jumped by 700 percent, and the country became the world's second-largest GVC hub.

Global FDI flows into China have slowed since the global financial crisis of 2007–09, but China has stepped up its efforts to attract and retain FDI and to maximize the development benefits it brings. These efforts revolve around three goals: continuing to reduce FDI entry restrictions, promoting investment facilitation, and creating a transparent and predictable business environment (China, MOFCOM 2019). Despite the stagnation of worldwide FDI flows, China remains one of the world's top investment destinations. Its FDI inflows increased steadily from US\$115 billion in 2010 to US\$140 billion in 2018. In the meantime, China's knowledge-intensive goods exports continued to expand rapidly, from US\$860 billion in 2010 to US\$1,350 billion in 2018.

Ethiopia

Over the past decade, Ethiopia has emerged as one of the largest foreign investment hubs in Africa. The expansion of the country's textile and garment sector since 2006 is an illustration of how a surge of inward FDI has transformed the country's domestic economy. Ethiopia's garment sector has been expanding at an annual rate of more than 50 percent, and it currently hosts about 65 international investment projects. Although Ethiopia's first textile factories can be traced back to the mid-1940s, the sector took off only after this rise in FDI inflows. From 2009 to 2017, Ethiopia's total apparel exports to the rest of the world grew from about US\$33 million to more than US\$151 million, roughly coinciding with an increase in FDI from about US\$220 million to US\$4 billion (figure 1.16).

FIGURE 1.16 Ethiopia's foreign direct investment inflows and export growth, 2006–18

Source: World Bank calculations based on data from United Nations Conference on Trade and Development and United Nations Comtrade.

Note: FDI = foreign direct investment.

The significant flow of foreign investment into Ethiopia's textile and garment sector has occurred alongside the government's state-driven industrialization strategy for attracting FDI. In the early 2000s, the Ethiopian government planned to rely on domestic investment to spur textile and garment production for export. At that time, the country's inward FDI was very small and came only from individual investors. However, the government soon realized the limited effectiveness of local investment and shifted its industrialization strategy toward attracting and harnessing foreign investment. To provide incentives to prospective foreign investors, the government has implemented a series of policies since 2012, including removing sectoral restrictions on FDI and exempting foreign investors from customs duties and income taxes. The arrival of Turkish textile giants in 2008 was an important milestone because they not only established factories and created thousands of jobs locally but also started to move Ethiopia into GVCs by attracting additional investors. Facilitated by the government's efforts to improve Ethiopia's infrastructure and establish specialized industrial parks, a significant number of transnational garment manufacturers, mostly from Asia (particularly Bangladesh, China, and India), arrived after 2013 to cluster in those parks and invest in production bases (Balchin and Calabrese 2019). Some Western brands, such as PVH, also began to source from Ethiopia in the mid- to late 2010s.

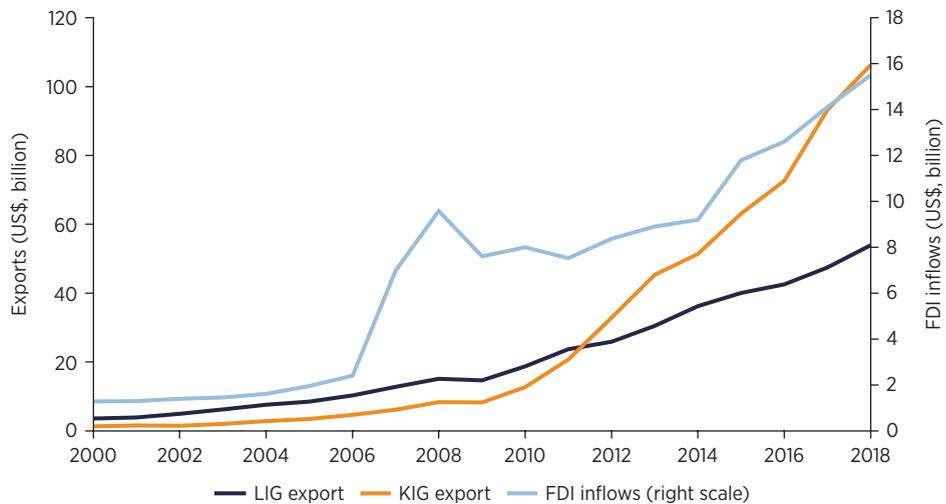
The Ethiopian government continues to work toward its vision of building the country into the manufacturing powerhouse of Africa, and it aims for Ethiopia's textile and garment exports to reach US\$300 billion by 2025. Though the evidence that it has spurred backward linkages and local ownership currently remains relatively weak, the textile and garment sector in Ethiopia has already achieved noticeable growth in a short period, and the country has great potential to become the next global garment manufacturing hub.

Vietnam

Vietnam's is another success story of achieving rapid growth by taking advantage of FDI. Since passage of the Law on Foreign Investment in 1987 during the period of Doi Moi (Renovation) reforms, the Vietnamese government has made great efforts to harness FDI to boost economic growth and to transform the country into one of the world's most favorable destinations for foreign investment. Over the past 30 years, FDI from 160 countries, mostly from East Asia, has poured into 68 provinces and cities in Vietnam. These investments have occurred in a wide range of high-tech industries, such as telecommunications, oil and gas, electronics, chemicals, steel, automobile and motorbike manufacturing, and IT, as well as in some traditional manufacturing sectors, such as garments and textiles, footwear, and agricultural product processing (figure 1.17). By the end of 2016, more than 20,000 projects were in operation with total registered capital of more than US\$290 billion (Hanh et al. 2017). Foreign-invested projects are estimated to account for about a quarter of Vietnam's total socioeconomic capital and about two-thirds of the country's total exports (Hanh et al. 2017).

FDI has played an indispensable role in Vietnam's integration into GVCs by increasing domestic competition, providing incentives for innovation and technology transfer, promoting production efficiency, and developing supporting industries (Focus Economics 2018). In recent years, the government has also increased its efforts to enforce the connection between FDI and domestic businesses to keep pace with technological advances in manufacturing production around the globe. Local firms have been encouraged to innovate and enhance their technologies and management practices to supply MNCs and to perform competitively in the international market.

FIGURE 1.17 Vietnam's foreign direct investment inflows and export growth, 2000-18



Source: World Bank calculations based on data from United Nations Conference on Trade and Development and United Nations Comtrade.

Note: FDI = foreign direct investment; KIG = knowledge-intensive goods; LIG = labor-intensive goods.

Notes

1. Bilateral FDI data between home and host countries often exhibit large discrepancies. The statistical methodology for measuring FDI also varies vastly across countries. One methodology is the fair market valuation approach, which adds up the market value of all the foreign equity of listed enterprises in the country. However, this value is subject to stock market fluctuations and does not include any unlisted FDI equity, which can amount to 22–156 percent of the host country's gross domestic product (GDP) (Damgaard and Elkjaer 2014). The most common FDI valuation method—own funds at book value—promotes cross-country comparability but hugely distorts FDI assets and liabilities by measuring them at outdated historical cost and often fails to capture the growing importance of intangibles (Lipsey 2010). More important, FDI statistics do not always reflect real economic activity. Nearly 40 percent of global FDI flows in 2017 was funneled to special purpose entities and offshore financial centers for tax purposes, obscuring the true “brick and mortar” investments that have real economic impacts on host countries (Damgaard, Elkjaer, and Johannesen 2019). Moreover, modern MNCs have increasingly complex ownership structures: an investment often travels through a chain of entities before reaching its final recipient. Tracing the initial investor and the ultimate destination and use of funds has become extremely difficult.
2. An SPE is a separate legal entity created by an organization. The SPE is a distinct company with its own assets and liabilities as well as its own legal status. SPEs are usually created for a specific objective, often to isolate financial risk.
3. Round-tripping refers to the channeling of domestic funds through offshore centers and then back to the local economy in the form of FDI (Aykut, Sanghi, and Kosmidou 2017).
4. For goods-producing GVCs (commodities, labor-intensive goods, regional processing, and knowledge-intensive goods), this section uses bilateral trade data from the United Nations Comtrade database because those data are more up to date and more granular. However, export data do not reflect real value added captured by these countries and hence may not always reflect countries' true positions in GVCs.
5. Based on 2020 data from the World Travel and Tourism Council (<https://wttc.org/>).
6. “China and the WTO” (http://www.xinhuanet.com/2018-06/28/c_1123050189.htm).

References

- Alfaro, L., D. Chor, P. Antràs, and P. Conconi. 2019. “Internalizing Global Value Chains: A Firm-Level Analysis.” *Journal of Political Economy* 127 (2): 508–59.
- Alfaro-Ureña, A., I. Manelici, and J. P. Vasquez. 2019. “The Effects of Joining Multinational Supply Chains: New Evidence from Firm-to-Firm Linkages.” Working Paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3376129.
- Amador, J., and S. Cabral. 2016. “Global Value Chains: A Survey of Drivers and Measures.” *Journal of Economic Surveys* 30 (2): 278–301.
- Antràs, P. 2020. “Conceptual Aspects of Global Value Chains.” Background paper, *World Development Report 2020: Trading for Development in the Age of Global Value Chains*, World Bank, Washington, DC.
- Antràs, P., and D. Chor. 2013. “Organizing the Global Value Chain.” *Econometrica* 81 (6): 2127–204.
- Antràs, P., D. Chor, T. Fally, and R. Hillberry. 2012. “Measuring the Upstreamness of Production and Trade Flows.” *American Economic Review* 102 (3): 412–16.
- Antràs, P., and E. Helpman. 2004. “Global Sourcing.” *Journal of Political Economy* 112 (3): 552–80.
- Aykut, D., A. Sanghi, and G. Kosmidou. 2017. “What to Do When Foreign Direct Investment Is Not Direct or Foreign: FDI Round Tripping.” Policy Research Working Paper 8046, World Bank, Washington, DC.

- Balchin, Neil, and Linda Calabrese. 2019. "Comparative Country Study of the Development of Textile and Garment Sectors: Lessons for Tanzania." Overseas Development Institute, London.
- Baldwin, R., and A. J. Venables. 2010. "Relocating the Value Chain: Off-Shoring and Agglomeration in the Global Economy." CEPR Discussion Paper 8163, Center for Economic Policy Research, London.
- Bernard, A. B., J. B. Jensen, S. J. Redding, and P. K. Schott. 2018. "Global Firms." *Journal of Economic Literature* 56 (2): 565–619.
- Buelens, C., and M. Tirpák. 2017. "Reading the Footprints: How Foreign Investors Shape Countries' Participation in Global Value Chains." *Comparative Economic Studies* 59 (4): 561–84.
- Chiesi A. M. 2001. "Network Analysis." In *International Encyclopedia of the Social & Behavioral Sciences*, edited by Neil J. Smelser and Paul B. Baltes, 10499–502. Oxford, U.K.: Elsevier Science Ltd.
- China, MOFCOM (Ministry of Commerce). 2019. "History of China's FDI Utilization." Ministry of Commerce of the People's Republic of China, Beijing. <http://history.mofcom.gov.cn/?specialthree=ggkfzqdlywzgz>.
- Damgaard, J., and T. Elkjaer. 2014. "Foreign Direct Investment and the External Wealth of Nations: How Important Is Valuation?" *Review of Income and Wealth* 60 (2): 245–60.
- Damgaard, J., T. Elkjaer, and N. Johannesen. 2019. *What Is Real and What Is Not in the Global FDI Network?* Washington, DC: International Monetary Fund.
- Dedrick, J., K. L. Kraemer, and G. Linden. 2011. "The Distribution of Value in the Mobile Phone Supply Chain." *Telecommunications Policy* 35 (6): 505–21.
- Focus Economics. 2018. "The Role of FDI in Vietnam's Socio-economic Development." *Focus Economics* (blog), January 3, 2018. <https://www.focus-economics.com/blog/the-role-of-fdi-in-vietnams-socio-economic-development>.
- Frederick, S., P. Bamber, and J. Cho. 2018. "The Digital Economy, Global Value Chains and Asia." Joint report, Duke University Global Value Chains Center and Korea Institute for Industrial Economics & Trade. <https://gvcc.duke.edu/wp-content/uploads/DigitalEconomyGVCsAsia2018.pdf>.
- Grossman, G. M., and E. Helpman. 2002. "Integration versus Outsourcing in Industry Equilibrium." *Quarterly Journal of Economics* 117 (1): 85–120.
- Grossman, S. J., and O. D. Hart. 1986. "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration." *Journal of Political Economy* 94 (4): 691–719.
- Hanh, N. P., D. V. Hung, N. T. Hoat, and D. T. T. Trang. 2017. "Improving Quality of Foreign Direct Investment Attraction in Vietnam." *International Journal of Quality Innovation* 3 (1).
- Helpman, E., M. J. Melitz, and S. R. Yeaple. 2004. "Export versus FDI with Heterogeneous Firms." *American Economic Review* 94 (1): 300–16.
- 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.
- Johnson, R. C., and G. Noguera. 2012. "Proximity and Production Fragmentation." *American Economic Review* 102 (3): 407–11.
- Kathuria, S., and R. A. Yatawara. 2020. *Regional Investment Pioneers in South Asia: The Payoff of Knowing Your Neighbors*. Washington, DC: World Bank Group.
- Kimura, F., and K. Kiyota. 2006. "Exports, FDI, and Productivity: Dynamic Evidence from Japanese Firms." *Review of World Economics* 142 (4): 695–719.
- Koenig, P. 2009. "Agglomeration and the Export Decisions of French Firms." *Journal of Urban Economics* 66 (3): 186–95.
- Kojima, K. 1975. "International Trade and Foreign Investment: Substitutes or Complements." *Hitotsubashi Journal of Economics* 16 (1): 1–12.
- Koopman, R., Z. Wang, and S. J. Wei. 2014. "Tracing Value-Added and Double Counting in Gross Exports." *American Economic Review* 104 (2): 459–94.
- Kumar, N. 2008. "Internationalization of Indian Enterprises: Patterns, Strategies, Ownership Advantages, and Implications." *Asian Economic Policy Review* 3 (2): 242–61.

- Lee, H. 2010. "The Destination of Outward FDI and the Performance of South Korean Multinationals." *Emerging Markets Finance and Trade* 46 (3): 59–66.
- Lipsey, R. E. 2010. "Measuring the Location of Production in a World of Intangible Productive Assets, FDI, and Intrafirm Trade." *Review of Income and Wealth* 56 (S1): S99–S110.
- Martínez-Galán, E., and M. P. Fontoura. 2019. "Global Value Chains and Inward Foreign Direct Investment in the 2000s." *World Economy* 42 (1): 175–96.
- Melitz, M. J. 2003. "The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity." *Econometrica* 71 (6): 1695–725.
- MGI (McKinsey Global Institute). 2019. "Globalization in Transition: The Future of Trade and Value Chains." Report, McKinsey & Company. <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Innovation/Globalization%20in%20transition%20The%20future%20of%20trade%20and%20value%20chains/MGI-Globalization%20in%20transition-The-future-of-trade-and-value-chains-Full-report.pdf>.
- Mundell, R. A. 1957. "International Trade and Factor Mobility." *American Economic Review* 47 (3): 321–35.
- Purvis, D. D. 1972. "Technology, Trade and Factor Mobility." *Economic Journal* 82 (327): 991–99.
- Schmitz, A., and P. Helmsberger. 1970. "Factor Mobility and International Trade: The Case of Complementarity." *American Economic Review* 60 (4): 761–67.
- Singh, N. 2011. "Emerging Economy Multinationals: The Role of Business Groups." *Economics, Management, and Financial Markets* 6 (1): 142–81.
- TECMA Communications. 2019. "The Aerospace Industry in Mexico in 2019: An Overview." *Made in Mexico* (blog), August 18, 2019. (<https://www.madeinmexicoinc.com/the-aerospace-industry-in-mexico-in-2019/>).
- Timmer, M., B. Los, R. Stehrer, and G. de Vries. 2016. "An Anatomy of the Global Trade Slowdown Based on the WIOD 2016 Release." GGDC Research Memorandum GD-162, Groningen Growth and Development Centre, University of Groningen.
- UNCTAD (United Nations Conference on Trade and Development). 2013. *World Investment Report 2013: Global Value Chains: Investment and Trade for Development*. Geneva: United Nations.
- UNCTAD (United Nations Conference on Trade and Development). 2017. *World Investment Report 2017: Investment and the Digital Economy*. Geneva: United Nations.
- Wagner, Joachim. 2006. "Exports, Foreign Direct Investment, and Productivity: Evidence from German Firm Level Data." *Applied Economics Letters* 13 (6): 347–49.
- Wasserman, S., and K. Faust. 1994. *Social Network Analysis: Methods and Applications*. Structural Analysis in the Social Sciences, Vol. 8. Cambridge, U.K.: Cambridge University Press.
- Williamson, Oliver E. 1985. *The Economic Institutions of Capitalism*. New York: Simon and Schuster.
- World Bank. 2018. *Global Investment Competitiveness Report 2017/2018: Foreign Investor Perspectives and Policy Implications*. Washington, DC: World Bank.
- World Bank. 2020. *World Development Report 2020: Trading for Development in the Age of Global Value Chains*. Washington, DC: World Bank.
- Xing, Y., and N. C. Detert. 2010. "How the iPhone Widens the United States Trade Deficit with the People's Republic of China." ADBI Working Paper 257, Asian Development Bank Institute, Tokyo.