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Foreign Direct Investment, Trade Finance and Global Value Chain Integration

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6.1 Overview

Foreign direct investment (FDI) and trade and supply chain finance (TF/SCF) constitute the structural architecture and operational lifeblood of global value chains (GVCs). They are the twin financial pillars upon which modern cross-border production and exchange rest. FDI enables firms to establish production networks across borders by financing the fixed capital and embedded know-how necessary for fragmentation of tasks and specialization across countries. In parallel, TF/SCF lubricates the continuous flow of inputs and outputs through working capital, guarantees and risk mitigation tools, ensuring that the GVC system functions smoothly. Without either form of capital, the contemporary map of global production would neither have taken shape nor be able to function.

This chapter explores the distinctive, yet deeply interrelated roles, of FDI and TF/SCF in enabling participation and upgrading in GVCs. Using newly harmonized datasets, we

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provide two central empirical contributions. First, we demonstrate how FDI reshapes production structures in host economies by altering the composition and sourcing of capital goods. Our analysis reveals that the presence of bilateral FDI correlates with greater convergence in capital input structures – particularly in sectors where imported capital plays a large role, highlighting the importance of capital-embodied technology transfers. However, this convergence is not observed for intermediate inputs, suggesting that the mechanisms of assimilation are rooted more in fixed investment than in recurring input substitution.

Second, we examine the extent to which TF/SCF mitigates operational frictions in cross-border trade, particularly for small- and medium-sized enterprises (SMEs) and lower-tier suppliers. By mapping TF/SCF coverage and cost disparities across countries, we document the sharp inequalities in access and affordability, particularly in emerging and frontier markets. Trade and FDI exhibit distinct financial geographies: trade is more sensitive to bilateral stock market development, while FDI flows respond more to private credit depth. Yet both remain highly distance-sensitive, and the centrality of countries in trade and investment networks is increasingly decoupled. This divergence underscores the importance of addressing not only the flow of goods and capital, but also the platforms and institutions that connect them.

Importantly, we show that the absence of adequate trade finance can prevent even FDI-rich countries from fully leveraging their export potential. When trade finance only covers transactions between multinationals and their affiliates, domestic suppliers are often excluded from meaningful participation. This creates a shallow form of integration, where local firms remain constrained by delayed receivables and working-capital bottlenecks. Conversely, trade finance in the absence of fixed investment may lock firms into low-value added roles, unable to climb the technological ladder.

Policy responses should therefore adopt a layered financial framework. Strategies must be tailored to firms' positions in the value chain and to the nature of their capital constraints, whether structural (investment-related) or operational (liquidity and risk-related). Examples such as Mexico's development bank and export credit agency Banco Nacional de Comercio Exterior (Bancomext) offer useful models, where trade finance instruments are bundled with investment support to build domestic supplier ecosystems. These integrated approaches are increasingly being digitized, linking commercial banks, development institutions, investors and firms on unified platforms to co-mobilize both fixed and working capital.

Ultimately, the complementarity of FDI and TF/SCF calls for integrated strategies. Liberalizing trade and attracting investment without deepening TF/SCF markets risks underutilization and exclusion; promoting TF/SCF without anchoring long-term investment undermines upgrading. Financial infrastructure that co-deploys long- and short-term capital, sequenced and synchronized, offers the most promising path to inclusive and resilient GVC integration.

The analysis that follows substantiates this dual-capital framework with new empirical evidence, tracing how the interaction between structural investment and operational liquidity shapes the depth and inclusiveness of global value chain participation. The chapter unfolds in two interconnected parts that together explain how finance underpins global value chain integration. Section 6.2 analyses the short-term liquidity mechanisms of TF/SCF that sustain day-to-day operations. Section 6.3 turns to the long-term investment dimension, FDI, that anchors production and transmits technology across borders. Read together, these two perspectives reveal a single financial continuum: FDI builds the productive base and TF/SCF keeps it in motion. Understanding this continuum is essential to designing policies for a more resilient and inclusive phase of re-globalization.

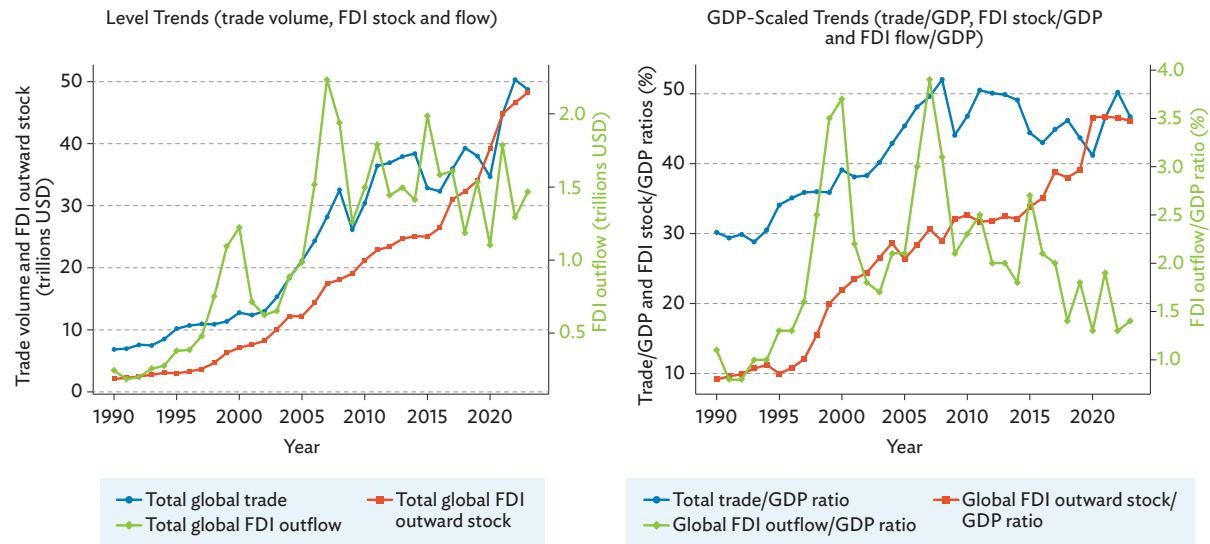
6.2 The Layered Financial Architecture of Global Value Chains

6.2.1 Globalization at a Crossroads

The historical arc of globalization has long been told as a story of accelerating integration – of trade volumes rising faster than gross domestic product (GDP), of capital moving fluidly across borders and of firms unbundling production across geographies. For much of the post-war period, and especially from the 1990s through the mid-2000s, this narrative was borne out in the data. As illustrated in Figure 6.1, both global trade and FDI surged in absolute terms, with trade volumes climbing above \$50 trillion and global outward FDI stocks exceeding \$45 trillion by 2023. During this same period, the globalization of economic activity outpaced overall growth, with trade-to-GDP and FDI-outflow-to-GDP ratios rising sharply through the early 2000s.

Yet since the Global Financial Crisis, momentum has slowed. Trade volumes and FDI stocks have continued to rise in absolute terms, but the intensity of cross-border integration – measured relative to global output – has plateaued. The right-hand panel of Figure 6.1 captures this inflection point with clarity. The global trade-to-GDP ratio, once the most emblematic indicator of globalization's progress, has remained relatively flat since 2008. FDI outflows as a share of GDP, after peaking in the early 2000s, have declined and stabilized at lower levels. The post-2008 era is thus not one of deglobalization per se, but rather of deceleration and structural maturation.

Figure 6.1: Global Trade and FDI Indicators (1990–2023)



Source: UNCTAD.

This duality continued growth in stock variables, but stagnation in flow raises important analytical and policy questions. The divergence is not merely statistical noise; it reflects a deeper transition in the organization of global production. Inflows of new FDI, especially greenfield investments, have slowed, while the existing multinational enterprise (MNE) networks built during earlier decades have continued to expand in value. The global FDI stock has grown smoothly and consistently, suggesting that retained earnings, reinvested profits and valuation gains on existing assets now dominate the evolution of global capital. This is especially evident in capital-intensive sectors where assets appreciate embedded know-how, scale economies and rising returns to technology.

Moreover, the slowdown in globalization is not limited to advanced economies. Emerging and developing economies, long viewed as the major beneficiaries of trade openness and cross-border investment, have also seen a moderation in their trade and FDI growth relative to GDP. The symmetry of the trend across income groups suggests that the observed deceleration is not driven solely by changes in the structure of demand in the Global North or by ageing populations in industrialized economies. Instead, it points to structural forces operating globally, ranging from rising geopolitical tensions and a reassessment of supply chain risks to the digitalization of services and a reconfiguration of economic geography in the post-COVID era.

At the same time, this evolution reveals an important shift in the binding constraints that determine who participates in globalization and how. If the early phase of GVC expansion was shaped by barriers to investment, such as fixed costs, institutional risk and knowledge diffusion then the present phase is increasingly defined by operational frictions: the liquidity gaps, counterparty risks and capital-access asymmetries that

prevent firms from remaining integrated in GVCs once the infrastructure is already in place.

On the financial side, one of the most significant and often underappreciated impediments to trade is the availability of trade and supply chain finance. In theory, once production structures have been established through FDI, firms should be well-positioned to leverage global demand. In practice, however, many firms – especially smaller suppliers in developing countries – face critical constraints in financing the working capital needed to participate in cross-border production. Payment cycles in GVCs can stretch over months, and firms that lack access to affordable short-term finance often find themselves excluded from higher-value linkages, even when demand exists and capacity is in place.

Against this backdrop of decelerating globalization, understanding the financial foundations of cross-border production becomes essential. This chapter therefore analyses globalization through a dual capital lens, showing how long-term investment (FDI) and short-term finance (TF/SCF) jointly sustain participation in global production networks. The first part examines how FDI establishes the structural foundations of production across borders, embedding technology, know-how and fixed capital. The second part turns to the liquidity architecture that keeps these networks operational, enabling firms to meet orders, manage risk and finance trade. Seen together, these mechanisms form a layered financial architecture of globalization, where investment and liquidity are complementary forces rather than separate domains. Understanding this interplay is essential to designing policies that promote a more resilient, inclusive and re-globalized world economy. The following section turns to the evidence on trade and supply chain finance, showing how liquidity constraints shape firm participation and, ultimately, the effectiveness of FDI-led integration.

6.2.2 Global Trade and Trade Finance

Having established how FDI provides the long-term foundation for global production, we now turn to the short-term financial mechanisms that keep those networks functioning. Even the most well-capitalized investment systems depend on day-to-day liquidity to move goods, process payments and manage risk. TF/SCF supply this liquidity layer, translating the structural capital of FDI into continuous cross-border production.

TF/SCF form the operational backbone of global value chains. They bridge the gap between production, shipment and payment, ensuring that firms of all sizes can exchange goods and services across borders. These instruments – including letters of credit, guarantees, credit insurance, and short-term working-capital loans – reduce counterparty risk and sustain liquidity along the supply chain. Without them, cross-border commerce would slow sharply, especially for small and medium-sized enterprises (SMEs) that depend on external finance to participate in trade.

The core functions of TF/SCF are risk mitigation and liquidity provision. Exporters seek payment assurance once goods leave their control, while importers require time to verify quality or resell before paying. Intermediate contracts reconcile these interests through structured payment mechanisms. Modern TF/SCF increasingly combines bank intermediation with insurance and fintech solutions that extend credit on the strength of invoices, purchase orders or buyer reputation rather than traditional collateral.

1. What is Trade and Supply Chain Finance, and What Does It Do for Traders?

Trade and supply chain finance comprise the short-term, operational layer of GVC liquidity. They include payment mechanisms, open accounts, documentary collections and letters of credit, alongside guarantees, credit insurance and working capital loans explicitly linked to trade flows. Provided by commercial banks, insurers, export credit agencies, factoring firms and digital platforms, these instruments collectively bridge the time and risk gaps that characterize most cross-border transactions. Their common function is to ensure that exporters are paid, importers receive goods on time and production networks continue operating even when trust, timing or liquidity are uncertain.

Box 6.1: Trade Finance Instruments at a Glance

Trade finance instruments mitigate payment and delivery risks in cross-border trade. They differ in who carries the risk exporter, importer or intermediary and in how much liquidity they unlock for production and shipment.

- Instruments enabling cross-border payments
- Instruments guaranteeing payments
- Loans enabling imports, production and pre-export finance
- Mixed instruments with more than one of the above objectives

Payment methods

Payment methods include:

Least secure ↓ Most secure	1. Cash-in-advance payments, often practiced in developing countries, requires the importer to pay for goods well in advance of receiving them – sometimes by as much as a year. This provides the exporter with payment certainty but leaves the importer (the buyer) with the full risk of default and of non-delivery. In effect, a cash-in-advance payment is a free credit granted by the buyer to the seller. It is non-performance based in the sense that, other than the contract, the buyer does not have the guarantee, upon payment, that the goods will be delivered in the required quantity and quality.
	2. Letters of credit are the most widely used instrument within the category of documentary trade finance. In its simplest form, a letter of credit is a written commitment to pay and is typically issued by a bank on behalf of the buyer (importer) to the seller (exporter) or its bank. Letters of credit carry several obligations for the seller (delivery conditions, submission of documentation) and the buyer (notably the guarantee that if the buyer is unable to pay, the bank will cover the outstanding amount).
	3. Documentary collections refer to the handling of documents by banks according to instructions received, typically by an exporter or their bank, to obtain either direct payment or acceptance of deferred payment. This differs to a letter of credit in that the bank faces no liability in the case of payment default or non-conformity of final goods.

Box 6.1: continued

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| | <p>4. Open account payments usually indicate payments that occur following shipment or receipt of goods. While cash-in-advance payments provide full certainty to the exporter, open account payments provide certainty to the importer against any risk. In effect, an open account payment is a credit by the seller to the buyer. Similar to cash in advance, these payment arrangements are not bank intermediated but can be insured, where credit insurance is available. Otherwise, they leave the full risk of being borne by the exporter/seller. In academic literature, cash-in-advance and open account payments are sometimes referred to as “trade credit”.</p> |
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Payment Guarantees

In addition to payments, trade finance instruments guarantee future payments to the seller/exporter or the delivery of goods or services. Payment guarantees and stand-by letters of credit are where banks guarantee payment to the exporter on delivery of the goods. Letters of credit (depending on the type) can have dual roles of payment instruments and payment guarantees at the same time. Bid bonds and performance bonds fall into this category and help the recipient to mitigate counterparty risk in the delivery of goods or services.

Loans Related to the Production and Movement of Goods

Trade finance also includes working capital loans that are financing import, production, and/or export of cross-border goods, including: (i) pre-export finance, which finances expenditures before export deliveries take place; (ii) post-shipment/import finance to enable the importer to pay the exporter at a subsequent stage once the goods have been sold; and (iii) working capital loans related to a cross-border purchase order, which are lump sums borrowed to finance a firm's short-term needs and are more flexible ways to pre-finance imports and exports.

Supply Chain Finance

Supply chain finance (SCF) refers to financial techniques and structures mitigating the risk of operating in an open account payment environment. This includes risk mitigation practices to optimize the management of working capital locked in supply chain processes, explained in Box 6.3. Factoring, reverse factoring and anchor-based lending are part of these practices.

Trade finance is generally short term, covering transactions of less than one year – while longer-term financing for capital goods or infrastructure exports is classified by financial markets as export finance. Many trade finance instruments operate under internationally recognized legal standards, notably those set by the International Chamber of Commerce (ICC) for letters of credit and documentary collections.

Beyond traditional banking channels, trade credit may also be extended directly between trusted counterparties. In such cases, credit and political risk can be mitigated through insurance provided by export credit agencies and private insurers. Credit insurance has also expanded into the supply chain finance space, offering protection against payment default or insolvency and enabling firms to leverage receivables, purchase orders or invoices as collateral. These receivables-based instruments have become a key source of liquidity, especially for small suppliers.

Trade and supply chain finance systems together rely on a broad network of intermediaries – banks, insurers, export credit agencies and factoring firms – to manage the timing and risk asymmetries that define cross-border trade. Fundamentally, these mechanisms bridge the gap between when exporters seek payment for production and shipment and when importers can pay after receipt and verification of goods.

When trade finance facilities are limited or unaffordable, exporters must rely on their own working capital and face higher risks of non-payment, while importers may need to prepay and assume delivery risk. In extended value chains, these exposures can accumulate as firms often act simultaneously as buyers and sellers, creating large volumes of payables and receivables. Open-account terms – common in modern supply chains with payment lags of 60-120 days – shift financing burdens to suppliers. Supply chain finance solutions such as reverse factoring and buyer-anchored liquidity programmes help mitigate these imbalances by converting receivables into cash and reinforcing liquidity throughout the production network.

2. Data Issues and Estimated Market Size

All institutions and individuals acknowledge the absence of reliable, globally consistent statistics covering trade finance instruments. As the International Monetary Fund, or IMF (2003) observed, “data on trade credit is not readily available”, and the Bank for International Settlements, or BIS (2014) later confirmed that comprehensive global reporting still does not exist. Relying on the relatively basic distinction between bank-intermediated versus non-bank intermediate trade finance (including inter-company lending/credit). The BIS (2014) noted that while national banking statistics capture some of these flows, no systematic coverage exists at the global level. Some legally standardized instruments, such as letters of credit and documentary collections, are tracked through ICC and SWIFT systems. However, while most of these trade-related financial facilities and guarantees are identified and defined by national and international statistical manuals, such as the IMF’s sixth edition of the Balance of Payments Manual, or the BIS Guide on International Locational Banking Statistics, they are rarely consolidated into a single framework, leaving researchers dependent on fragmented institutional or private data.

By combining the limited data sources available, the BIS (2014) estimates annual bank-intermediated trade finance flows at \$6.5-8 trillion, roughly 35-40% of world merchandise trade at the time. Data on non-bank trade finance, including inter-company credit, factoring and reverse factoring remain far less transparent, though such channels are known to be significant. According to Berne Union statistics, cross-border short-term credit insurance coverage totalled about \$2-3 trillion, with roughly two-thirds linked to non-bank inter-company credit.

While these figures overlap – for instance, insured letters of credit appear in both sources – they jointly suggest that total trade finance activity already exceeded \$8 trillion a decade ago. Given subsequent growth in supply chain finance techniques and digital platforms and the relative decline of traditional letters of credit global trade finance flows are now likely above \$10 trillion annually, though precise measurement remains elusive due to fragmented reporting and evolving market structures.

Box 6.2: Sources of Trade Finance Data

Insured trade credit (Berne Union): Data reports on transactions supported by Berne Union members. Annual flows were estimated at \$3 trillion in 2023, most of which were short-term finance. Private insurers dominate the short-term segment, while export credit agencies have a larger share in the medium-to-long segment. Flows may overlap with other sources of data such as trade credit or letters of credit when they are insured or re-insured. This is also true for inter-company credit (supply chain finance) that is insured by a private or public insurer. See <https://www.berneunion.org/DataReports>.

Letters of credit (SWIFT): Reporting of letters of credit and documentary collections based on payment messages, including Category 4: flows for documentary collections, except the three least used cash letter messages, and Category 7: flows for commercial and standby letters of credit and guarantees. Annual flows are currently estimated at \$2.5 trillion. While information on SWIFT messaging is restricted, occasional reporting can be found in the ICC Global Surveys on Trade Finance, and the Financial Stability Board Correspondent Banking Data Report. See <https://iccwbo.org/news-publications/policies-reports/global-survey/> and <https://www.fsb.org/uploads/P040717-4.pdf>

Trade receivables (Eurostat): Available for only a few countries. See <https://data.ecb.europa.eu/>

Factoring and reverse factoring (Factoring Chains International, or FCI): Total factoring flows recorded by the FCI based on aggregate information collected from its members. Total factoring flows were estimated at \$3.8 trillion in 2023 while international factoring flows were estimated at \$754 billion. See <https://fci.nl/en/industry-statistics>

3. Literature on Trade Finance and International Trade

Productivity levels, the intensity of financial constraints and/or a firm's financial vulnerability might impact trade on the internal or external margins, or both (Chaney 2016; Manova 2013). The literature considered heterogeneity at many levels, across firms and sectors (Manova 2013); and lately across firms in countries at various levels of development, generally showing on the one hand a negative association between the higher cost, higher perception of risk and lower availability of trade finance, and on the other, exports especially to poorer and smaller economies (Demir, Michalski and Ors, 2017; Oefele, Schmidt-Eisenlohr and Yu, 2016; Niepmann and Schmidt-Eisenlohr, 2017; Paravisini et al., 2015).

Schmidt-Eisenlohr (2013) in investigating the underlying mechanisms between trade and financial conditions, studied firm contract payment choices. He found that both source and destination countries' legal and financial conditions affected trade flows through the type of trade finance obtained in these respective financial markets. In particular, the study found that the financing costs were proportional to the distance between the source and destination countries, which in turn significantly dampen trade: a percentage point increase in financing costs in a country was associated with 2% lower exports and 2.3% lower imports in that country.

Recent World Trade Organization (WTO)-International Finance Corporation (IFC) studies in West Africa and the transnational region of the Mekong showed that only 25% of goods trade was supported by trade finance. The share of bank-intermediated trade finance for the WTO-IFC target countries in West Africa is below the continental average of 40%, which is lower than the global average (AfDB 2020). In selective, fragmented trade finance markets, bank rejection rates for trade finance applications are high and tend to fall disproportionately on new clients and smaller firms. When selected, these firms face higher prices and collateral requirements.

Earlier literature showed that, while access to trade finance increased the probability of becoming an exporter, high cost of finance affected countries with a lower level of financial development and sectors with a higher level of financial vulnerability (Berman and Héricourt, 2010); hence a country's level of financial development affected firms' probability of becoming exporters. Firms with higher levels of financial vulnerability tended to depend on "lower" quality banks (Amiti and Weinstein, 2011).

Firm-level data from the World Bank Enterprise Surveys (WBES) show that 71% of the working capital needs of exporters in low- and middle-income countries (LMICs) are financed from internal funds and retained earnings while 18% (9%) are financed by bank and non-bank financial institutions (supplier credits). WBES data also shows that 40% of the total annual sales of exporters were paid post-delivery. In the absence of affordable trade finance, the lag between export financing and export earnings imposes severe liquidity constraints on firms (Contessi and De Nicola, 2013; Dornel et al., 2021).

Studies based on customs data show that for middle-income countries such as Türkiye, Chile and Colombia, trade takes place to an increasing degree on open account, as trust develops between local suppliers and foreign buyers (Ahn et al., 2011; Demir and Javorcik, 2018). While this offers opportunities for supply chain finance arrangements, supply chain finance markets are non-existent or in their infancy in many low-income countries, thereby leaving significant gaps between local firms and FDI-firms benefiting from foreign buyers' support. Recently conducted bank surveys helped identify key supply and demand constraints to expanding trade and supply chain finance markets, from high collateral requirements used as offsets for weak contract enforcement, to limited financial literacy, lack of capacity and scale of local banks, absence of non-bank solutions, insufficient access to foreign currency and shortages of low-cost funding (Beck et al., 2023; IFC and WTO, 2022, 2023).

The unequal distribution of TF/SCF access across firms mirrors the broader asymmetries observed in FDI flows. Just as investment tends to cluster in established hubs, liquidity also concentrates among large, well-connected firms, leaving smaller suppliers financially marginalized. Understanding these asymmetries is essential to designing policies that connect both long-term and short-term layers of finance in a more inclusive way.

6.2.3 Trade Finance and Heterogeneity

1. Trade Finance Across Countries and Levels of Development

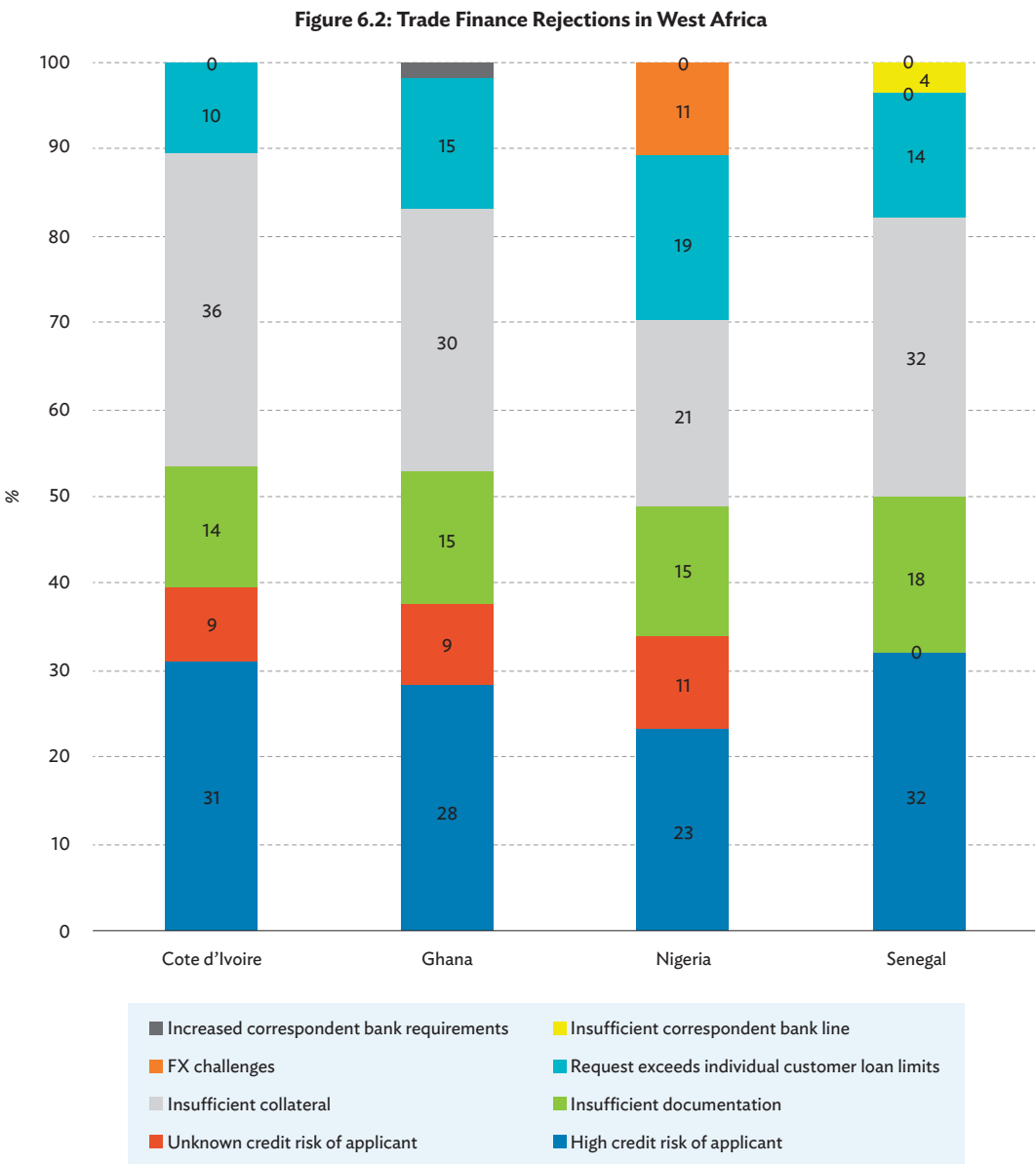
Building on the preceding discussion, this section examines how liquidity frictions translate into firm-level disparities. The distribution of trade finance access reflects the same concentration patterns seen in FDI, capital clusters around incumbents, while liquidity gaps persist for smaller and newer firms. Indeed, availability and cost vary greatly across countries and levels of development. The literature established

that, while access to trade finance increased the probability of becoming an exporter, high cost of finance affected countries with a lower level of financial development and for sectors with a high level of financial vulnerability (Berman and Héricourt, 2010); hence a country's level of financial development affected firms' probability of becoming exporters. Firms with higher levels of financial vulnerability tended to depend on "lower" quality banks (Amiti and Weinstein, 2011). Financially vulnerable industries were more sensitive to the cost of external capital than exports of less vulnerable industries, with such sensitivity growing during periods of financial crises (Chor and Manova, 2012). In general, the level of financial development in the host country is a key institutional characteristic that dampens the horizontal motive for FDI and favours vertical and export platform forms of multinational activity (Bilir et al., 2019).

According to the Asian Development Bank (ADB), global trade finance gaps in developing countries, a measure of rejections by banks of trade finance requests from exporters and importers, reached \$2.5 trillion in 2022, against \$1.4 trillion in 2018. Part of such rejections is justified on the grounds of lack of creditworthiness of firms, a motive that can also be found in developed countries; but part of rejections is also attributed to supply and demand factors which are more specific to developing countries, such as lack of collateral or lack of compliant (poorly documented) applications, lack or insufficient correspondent banking relations and lines of credit, insufficient access to foreign currency and lack of scale for local banks (which prevents them from financing higher value trade transactions), and shortages of low cost funding (Beck et al., 2023; IFC and WTO, 2022, 2023).

While statistics on rejection rates are not available for all countries, existing surveys indicate that rejections rates by banks for trade finance applications can be high in low-income regions, such as in West Africa (25% of the value of requests), against 12% for the continent as a whole (AfDB, 2020; IFC and WTO, 2023). There can be legitimate reasons for rejections, particularly if presented applications are risky or non-compliant. Besides, not all rejections translate into foregone trade – only 20-40%, according to existing literature and other surveys (Nyantakyi et al., 2022). However, blocked trade finance applications lead firms to look for less optimal solutions such as drawing on their own funds, borrowing through informal (and more expensive) channels, from their suppliers and micro-credit institutions (IFC and WTO, 2022).

As shown in Figure 6.2, lack of collateral and high perception of the applicant risk are at the top of the list of banks' motives for rejections in Africa. In international trade, though, the merchandise itself is used as collateral for trade finance. International business law makes it possible to seize and resell such merchandise in case of default. In low-income countries, further collateral is often sought by banks in doubt that legal enforcement mechanisms would not allow them to take ownership of the merchandise in case of default.



Source: IFC and WTO (2022).

High Prices and Self-Exclusion

Previous rejections of applications and high levels of selectivity prompt firms to simply refrain from applying to banks altogether. Self-exclusion may also be induced by higher prices than benchmarks in other emerging markets where financial markets are more developed or competitive.

As a result of high selectivity, self-exclusion and high prices, the share of trade supported by trade finance stood only at 8% in Mexico, 15% in Senegal, 20% in Nigeria and 20% in Viet Nam, and even significantly less so in Cambodia and in Lao People’s

Democratic Republic (PDR) (3%). These low shares can be compared to the average of the African continent (40%), which incorporates emerging markets such as Egypt, Morocco and South Africa, hosting some of the continent's largest banks. According to the BIS (2014) and WTO (2016), the share of trade supported by trade finance in developed countries would appear to be equal or superior to 60%.

Indeed, developed countries and advanced emerging markets can rely upon financial centres mobilizing sophisticated banks and instruments, such as supply chain finance, on a large scale. Considering that trade finance is typically a short-term and low risk type of financing, in advanced economies 90-day letters of credit and pre-shipment facilities are available at low prices, close to the inter-bank rate.

By contrast, trade finance prices can significantly exceed global emerging market benchmarks in low-income countries, even though the ICC's data on trade finance default does not single out Africa or any other emerging region as recording significantly higher financial delinquency on trade. However, several cumulative factors such as foreign exchange scarcity, lack of competition, high processing fees due to limited digitalization, and a high perception of risk towards new customers may explain the high price margins recorded in the IFC-WTO surveys.

The average charge for confirmed letters of credit was reported to be around 3.5% of the transaction value in Nigeria, 4% in Côte d'Ivoire and Senegal, and 3.5% in Cambodia and Viet Nam for the limited number of companies to which such facilities were available, compared with a 2% global average for emerging markets and 0.25-0.5% typically observed in advanced economies. Short-term working capital pre-shipment facilities were priced at 9% above the bank's refinancing rates in Côte d'Ivoire and Senegal, 12% in Nigeria. In Cambodia, average charges above the refinancing rate would not exceed 5% but could easily reach 7-8% for firms with lower credit rating.

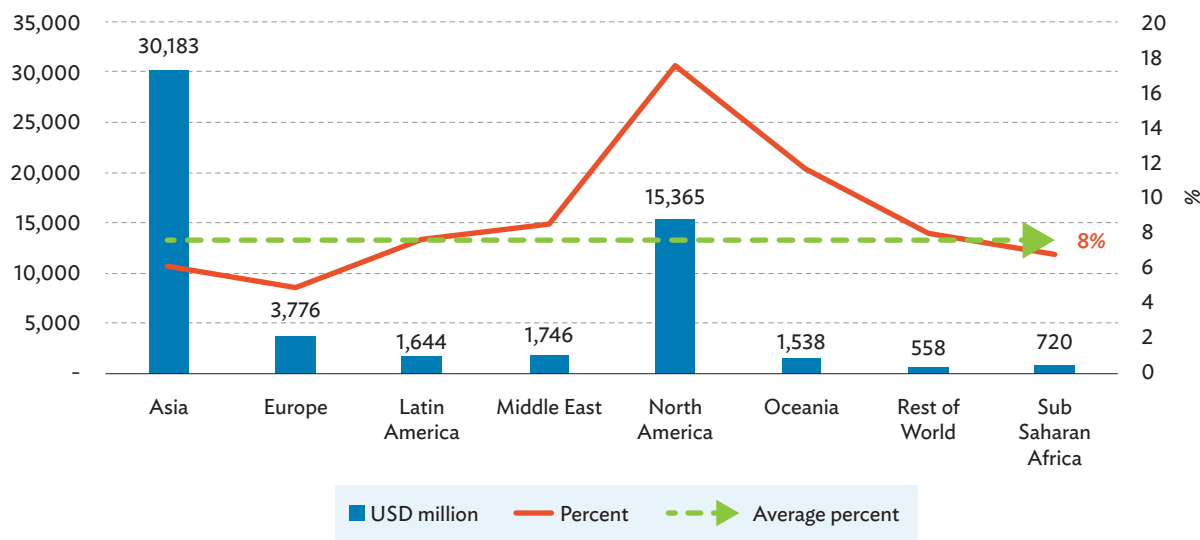
In such rationed markets, where the risk perception of lenders towards potential borrowers is high, limited available trade finance goes to well-established companies first, if not exclusively (IFC & WTO, 2022, 2023). In the regions (Economic Community of West African States, or Ecowas, and Mekong in particular), trade finance is concentrated, with too few banks directing too little finance towards a small group of well-established traders, contributing to "freezing" the existing product profile of traded goods. The reports concluded that more trade finance, at lower cost, could help achieve a more diversified trade mix for low-income countries and expand regional trade.

Market selection and segmentation also affected countries well integrated into global value chains, such as Cambodia and Viet Nam. For example, in Viet Nam, international firms producing within the country could get supply chain finance support from global

banks abroad. Large, “first tier” local companies could obtain trade finance from local institutions, albeit at rather expensive rates. However, producers downstream in supply chain production rarely qualify for trade finance. Considering the high rejection rates for trade finance applications, the high costs for trade finance, and the low coverage of trade in recent WTO-IFC studies, counterfactual scenarios were carried out using the WTO global trade model.

It was calculated that raising trade coverage from 25% to only 40% in both the West African and Mekong regions, and reducing the cost of trade finance to advanced emerging economies’ benchmarks, would increase annual trade flows by 8% on average, as shown in the Figure 6.3. Roughly three-quarters of the gains would accrue from the potential increase in the share of trade, and about 20% from the reduction in the cost of trade loans. In both regions, intra-regional trade would be boosted significantly, supporting locally owned economic sectors or supply chains.

Figure 6.3: Increase of Exports and Imports By Trading Partner, USD Value and Percentage Growth



Source: IFC and WTO (2023).

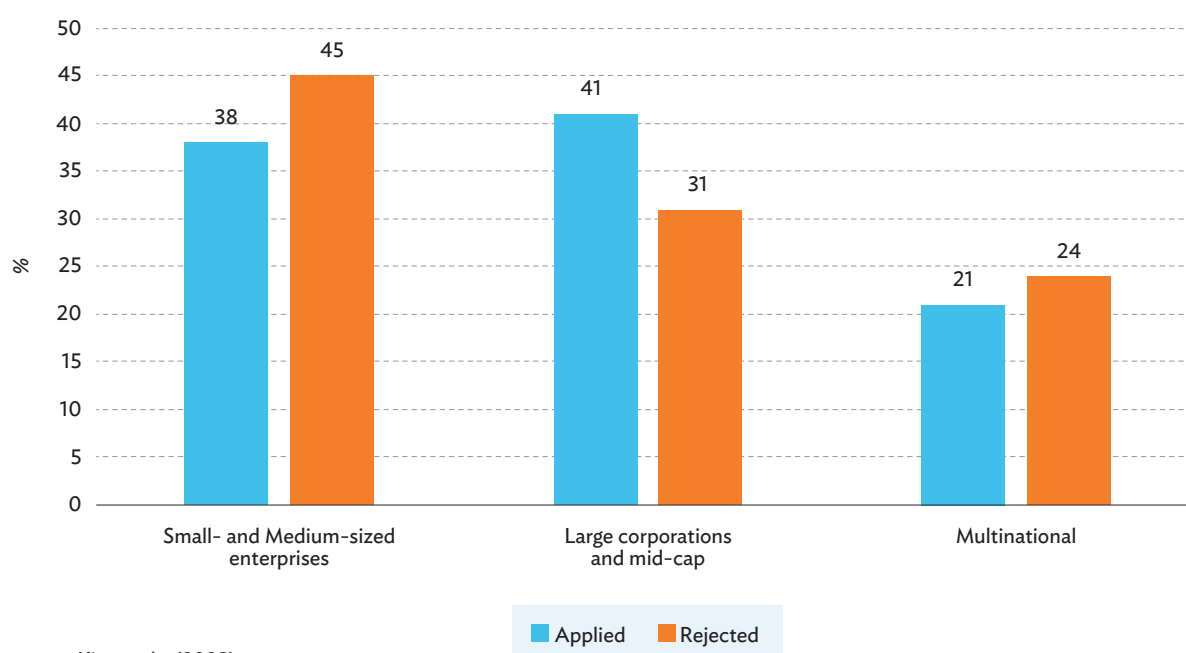
2. Firm Heterogeneity: SMEs Versus Large Companies

Access to trade and supply chain finance remains highly uneven across firms. As detailed in Chapter 2 (see Section 2.3), micro, small and medium-sized enterprises (MSMEs) face persistent structural barriers that limit their ability to obtain affordable financing. These include high collateral requirements, insufficient credit histories and

weak relationships with financial intermediaries. Even where aggregate trade finance volumes expand, access remains concentrated among a few large and well-connected firms, leaving smaller producers and new entrants underserved.

These asymmetries are evident across developing regions. In Africa and Southeast Asia alike, liquidity and risk-mitigation instruments are typically available only to top-tier firms or multinational suppliers, while domestic SMEs rely heavily on internal funds or informal credit. The concentration of intermediation within a narrow set of banks and anchor buyers constrains the diffusion of liquidity along supply chains, reinforcing segmentation within global and regional production networks.

Figure 6.4: Applications and Rejections by Firm Type



Source: Kim et al., (2023).

Differences in firms' risk profiles are often evidenced by the collateral requirements and approval time for trade finance applications. Banks in the survey said they frequently ask for additional collateral because shortcomings in local legal enforcement make them uncertain that they would be able to seize and resell merchandise. Foreign firms are likely to obtain better lending conditions in terms of collateral requirements while at the same time having their trade finance applications approved significantly faster.

In the IFC-WTO study on trade finance in West Africa, it was established that SMEs customarily pay higher interest rates than large corporates. In both West Africa and the Mekong region, large companies may be charged no more than 4-5% above the refinancing rates, while the corresponding premium for SMEs stands at 7-9%. The same goes for import financing.

Local companies, mostly SMEs, with their smaller balance sheets, are more likely to face onerous collateral requirements and often lack the financial sophistication to negotiate effectively with their financiers. As an illustration, over two-thirds of Ecowas respondents stated that SMEs and micro-enterprises face higher rejection rates than other categories of applicants, pointing to the fact that SMEs, including women-owned SMEs, are disproportionately affected by trade finance gaps, and more likely to be excluded from formal financing channels.

These patterns underscore a central insight of this chapter: structural capital without liquidity yields shallow integration, while liquidity without investment traps firms in low-value added roles. The following section explores how new financial instruments, such as supply chain finance platforms, can bridge this divide.

6.2.4 Supply Chain Finance

1. From Trade Finance to Supply Chain Finance

Having traced how liquidity asymmetries fragment participation, we now examine how supply chain finance innovations attempt to reconnect those missing links, turning financial architecture into an instrument of inclusion.

Supply chain finance represents an increasingly important evolution within the broader universe of trade finance, reflecting the structural transformation of global production from bilateral trade relationships to complex, multi-tiered value chains. While traditional trade finance instruments – such as letters of credit or documentary collections – focus on the risks and liquidity needs associated with cross-border transactions between exporters and importers, supply chain finance is concerned with the financial frictions that emerge within the production process itself (See Box 6.3). It operates further upstream, offering financing solutions that help firms manage their cash flows not only at the point of export, but throughout the entire chain of production, assembly and delivery.

At its core, supply chain finance seeks to improve working capital by unlocking liquidity tied up in receivables and payables. It enables suppliers – often smaller and less creditworthy firms – to receive early payment on their invoices at a discount, based on the stronger credit profile of the buyer, sometimes referred to as the “anchor firm”. This dynamic is especially important in open account transactions, where goods are delivered well before payment is due, a common practice in today’s global supply chains. Instruments such as factoring, reverse factoring (also known as confirmed payables finance), dynamic discounting and payables-backed loans all fall under the SCF umbrella. These tools help mitigate the risks associated with long payment cycles, which, if left unaddressed, can create liquidity bottlenecks that ripple through an entire value chain.

The relationship between TF and SCF is best understood as complementary rather than substitutive. Traditional trade finance ensures that goods can cross borders safely and efficiently, providing the necessary liquidity and risk of mitigation for export transactions. Supply chain finance, by contrast, ensures that the flow of intermediate goods, components and services feeding into those exports is not disrupted by financial constraints. In effect, TF supports the “front-end” of cross-border exchange, while SCF undergirds the “back-end” of production and delivery, particularly where input sourcing and assembly are fragmented across jurisdictions. Together, they form a financial infrastructure that mirrors the architecture of global production itself – layered, interdependent and highly sensitive to disruptions at any point in the chain.

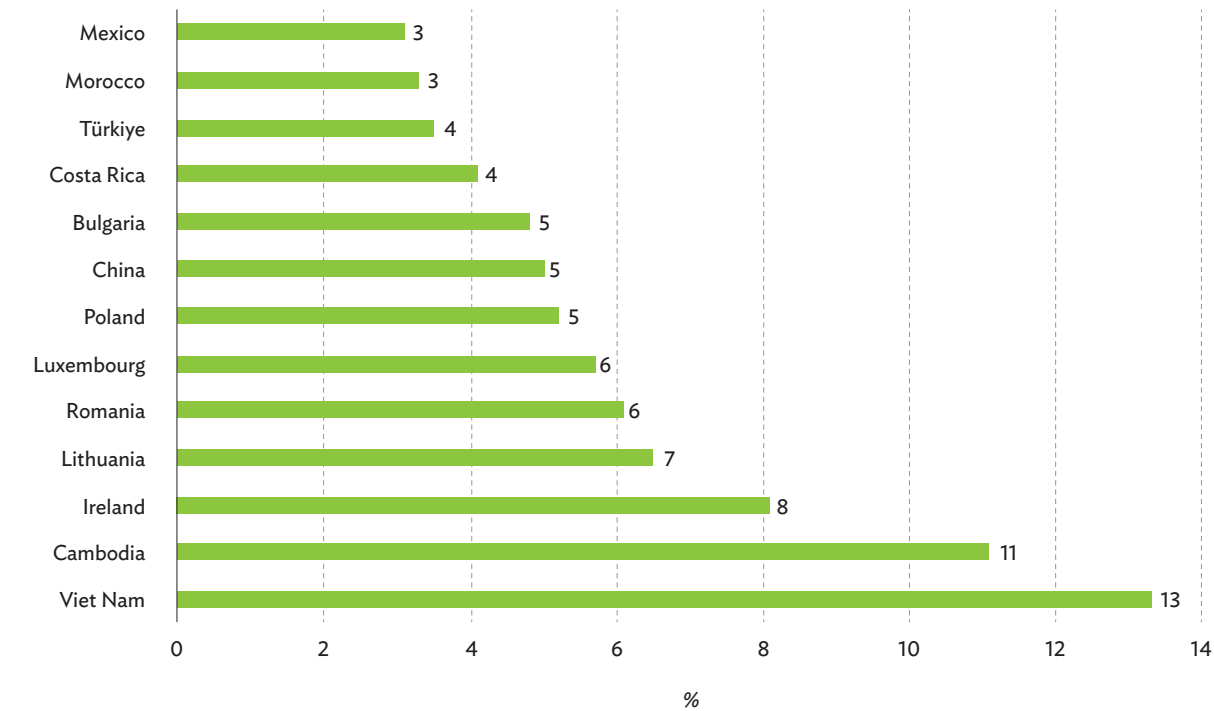
From a policy perspective, supply chain finance offers both a diagnostic lens and a lever for action. Its uptake, or absence, can serve as an indicator of how well financial systems are supporting deeper integration into GVCs, particularly at the lower tiers where suppliers are most vulnerable. Governments and development finance institutions have begun to take notice. Programmes such as Mexico’s Nacional Financiera (Nafin) platform, which offers reverse factoring solutions backed by public guarantees, demonstrate how public policy can catalyse SCF uptake and improve SME inclusion. In regions like West Africa and Southeast Asia, efforts by the WTO and IFC to map the landscape of supply chain finance, assess constraints and support new platforms are laying out the groundwork for more inclusive financial ecosystems. As global supply chains continue to evolve, SCF will remain a critical element of the financial toolkit – one that must be nurtured alongside traditional trade finance to ensure that the gains from globalization are more evenly shared.

2. The Rise of Supply Chain Finance

About half of global trade is supply chain trade (UIBE, 2023), a share that is on the rise (49% in 2022, up from 46 in 2011). Supply chain trade is prevalent in large manufacturing sectors such as electronics and electric generation, motor vehicles, aeronautics, textiles and clothing, and food processing. Many developing countries and emerging markets have increased their participation in supply chain production in recent years.

SCF covers a relatively wide variety of financial instruments, techniques and arrangements, ranging from receivable financing to buyer-backed financing, under which banks supply liquidity to suppliers on the back of the buyers’ credit rating (Box 6.3). The cross-border part of supply chain finance is the “tip of the iceberg” in a market where exported goods or components qualify as international SCF, and payment flows between domestic suppliers qualify as domestic supply chain finance. Notwithstanding this distinction, where domestic supply chain finance exists, the cross-border component would tend to expand as well. In Europe and North America, domestic SCF techniques such as factoring and reverse factoring have existed for decades in domestic trade (distribution, supermarket chains). Technology, improved

Figure 6.5: Selected Economies’ Average Annual Growth in GVC Participation, 2010-2020



Source: WTO (2023).

risk management and adequate legal frameworks convinced banks to internationalize their programmes, mainly for their clients operating overseas, mostly multinational companies.

Yet only few countries operate full indigenous supply chain finance platforms. With the gradual adoption of e-invoicing in Latin America, the factoring market developed since the turn of the millennium in Mexico, Brazil, Chile and Colombia. Rising supply chain production provided good grounds for the Mexican market to expand, with domestic segment SCF being now roughly four times as large as the international one (WTO-IFC, 2025). However, even in Mexico, international banks dominate the supply of such finance on local and international platforms, despite the existence of at least two local factoring platform (e-Factor Diez and Nafin’s).

Data from joint trade finance surveys conducted by the IFC and the WTO illustrate the limited (albeit growing) intake of international chain finance in emerging markets. In countries like Viet Nam and Cambodia, where many small firms have managed to tap into supply chains in sectors like textiles and consumer electronics despite operating primarily on a cash basis, shortages of supply chain finance are significant. Although more than 50% of these countries’ trade is supply chain related, only 0.5% of their trade is supported by SCF from local financial institutions. Local and international financial institutions in the most advanced emerging market in these surveys, Mexico, provided

\$12 billion in supply chain finance for cross-border operations in 2023, all programmes considered: anchor-based liquidity supplied through main buyers, factoring and reverse factoring generated either from local or international platforms. Yet, this relatively advanced market accounting for 18% of total trade and supply chain finance supplied in Mexico, supported only 1% of total Mexico's trade in that year. Some 90% of all SCF was provided by only three banks, with multinational corporations being the main clients (WTO-IFC, 2025). As the main buyers, their participation in these programmes may support tier-one or tier-two suppliers. However, "deep-tier" financing remains elusive.

It has been observed that a significant share of trade finance granted locally, when available, was provided in the form of expensive working capital lines or overdrafts, mostly as a substitute for lack of supply chain finance. Yet, this was far from being generalized. In Viet Nam, 70% of exporting SMEs in Viet Nam experienced difficulties accessing such working capital. In Mexico, 75% of MSMEs did not qualify for bank loans. In sectors such as textiles and clothing and electronics, the implication of local banks in securing buyer-seller financing arrangements was particularly low (WTO-IFC, 2023, 2025), with many small actors operating on suboptimal cash or informal arrangements.

By contrast, in developing countries supply chain finance is relatively common for local suppliers in the electronics, aeronautics, automotive and agri-food industries.

Access of firms to trade and supply chain finance is, to a large extent, a factor in the overall level of financial inclusion. In Mexico, the WTO and IFC found that, on average, only 25% of importers and exporters had access to bank loans, with significant firm heterogeneity (41% for large firms, 8% for micro-enterprises). Despite the progress in digital banking, many traders remained without any access to financing, let alone trade and supply chain finance, which appeared in this context as a "premium product" mostly available to large firms (WTO-IFC, 2025).

For the majority of MSMEs – securing SCF from local banks is a significant challenge even when local platform exists. Companies must be identifiable as right holders; high costs may apply to them in the form of higher discount rates on invoices and higher interest rates for buyer's backed liquidity. Without fintech assistance, the assessment of credit risk proves to be difficult.

Yet, the benefit of increasing supply chain finance in developing economies is substantial. WTO research (Auboin et al., 2016) showed that a 10% increase in the use of international factoring can boost countries' trade by 1%. Recent firm-level data from China shows strong positive association between firm's export related notes receivables and export earnings (Liu et al., 2024). In this way, SCF innovations extend the logic of FDI: they embed finance directly into production networks, creating a continuum between structural investment and operational liquidity.

Box 6.3: Definition of Supply Chain Finance from the Global Supply Chain Finance Forum

In 2016, a group of senior trade bankers and lawyers worked at establishing a standard but broad definition of supply chain finance, under the aegis of several professional organizations such as the Bankers Association for Finance and Trade, the Euro Banking Association, Factors Chain International, the International Chamber of Commerce and the International Trade and Forfeiting Association.

The Global Supply Chain Finance Forum (GSCFF) defined SCF as the “use of financing and risk mitigation practices and techniques to optimize the management of the working capital and liquidity invested in supply chain processes and transactions” (GSCFF, 2016, p. 24). The forum further highlighted that “SCF is typically applied to open account trade and is triggered by supply chain events”, further noting that the “visibility of underlying trade flows by the finance provider(s) is a necessary component of such financing arrangements which can be enabled by a technology platform”.

The Forum argued that SCF is an evolving set of practices using or combining a variety of techniques. Buyers and sellers in these transactions work with finance providers to raise finance using SCF techniques that are at varying levels of novelty – at one extreme using cutting edge techniques and at the other using variants of traditional trade finance. The techniques are often hybrid, additionally employing other financial and physical supply chain services. Finance providers offer their services in the context of the financial requirements triggered by purchase orders, invoices, receivables, other claims and related pre-shipment and post-shipment processes along the supply chain. Such techniques include, inter alia, receivable and invoice finance (factoring and reverse factoring), financing against purchase orders, pre- and post-shipment lending, insured inter-company credit and generally working capital arrangements obtained by participants in the supply chain on the back of the good credit rating of large buyers.

In this sense, SCF can be seen as a general portfolio of financing and risk mitigation techniques and practices supporting the trade and financial flows along the supply and distribution chains, domestically as well as internationally. It is important to note that supply chain finance does not only involve the international part of the transaction, but most often domestic value addition and distribution.

Source: GSCFF (2016).

6.2.5 Access to Finance and Trade Opportunities: A Quantitative View

Building on the preceding discussion of how financial mechanisms – such as trade credit, factoring and supply chain finance – embed liquidity into production networks, it is important to assess the scale and structure of these effects systematically. While qualitative evidence highlights the growing integration of finance and trade, the magnitude of this relationship remains an empirical question. How much do well-developed financial systems enhance trade and investment flows? Do countries with more compatible financial architectures participate more deeply in global value chains? To address these questions, the following analysis turns to a quantitative framework that links macro-financial indicators with trade and FDI outcomes across economies.

Building on the earlier discussion of trade finance as a layered system of constraints, this section draws on a bilateral gravity framework to estimate how financial compatibility between countries affects the intensity of their trade and FDI relationships. The empirical approach is grounded in a well-established tradition in international economics: controlling for economic size and geographic distance, we examine how bilateral trade and investment flows respond to differences in financial system development and depth.

The analysis uses cross-sectional data in 2019 covering 114 countries, resulting in a stable panel of 982 country pairs. Trade data is sourced from the Centre d'Études Prospectives et d'Informations Internationales (CEPII)'s Base pour l'Analyse du

Commerce International (BACI) database, which provides harmonized information on bilateral merchandise flows. FDI stock data comes from the World Bank's Bilateral FDI dataset (WBG-HBFDI), which captures the cumulative value of cross-border investment positions. To measure financial development, we draw on the World Bank's Global Financial Development Database (GFDD), focusing on standardized indicators of private credit and stock market capitalization. These variables serve as proxies for the depth of the banking sector and the sophistication of capital markets, respectively. All financial indicators are constructed as bilateral interactions – multiplying origin and destination values – to capture the idea that financial compatibility is a joint property of both economies. A more detailed breakdown of the data construction and modelling approach is provided in Part II of this report, which focuses on FDI's role in GVC development.

Table 6.1: Gravity Estimation of Trade and FDI in 2019									
Gravity Model Results 2019: Standardized Bilateral Financial Variables									
	Trade Models			FDI Stock Models			FDI Flow Models		
	(1) Basic	(2) +Bilat PC	(3) +Bilat SM	(4) Basic	(5) +Bilat PC	(6) +Bilat SM	(7) Basic	(8) +Bilat PC	(9) +Bilat SM
Log Distance	-0.979*** (0.034)	-0.979*** (0.037)	-1.014*** (0.048)	-1.089*** (0.056)	-1.153*** (0.064)	-1.100*** (0.079)	-1.006*** (0.077)	-0.979*** (0.087)	-1.135*** (0.107)
Bilateral Private Credit (OxD)(std.)		0.104 (0.093)			0.277* (0.158)			0.521** (0.224)	
Bilateral Stock Market (OxD)(std.)			0.302*** (0.050)			0.047 (0.131)			-0.242** (0.123)
Observations	944	793	392	944	793	392	704	592	313
R-squared	0.920	0.915	0.930	0.786	0.794	0.777	0.702	0.717	0.719
Fixed Effects	Origin+Destination								

Note: 2019 cross-section. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Coefficients for bilateral private credit (OxD) and bilateral stock market (OxD) are standardized. They represent the effect of a one standard deviation increase in each bilateral financial variable. For example, a coefficient of 0.302 implies that a one standard deviation increase in bilateral stock-market development raises trade by 30.2%.

Source: CEPII BACI, World Bank Bilateral FDI (WBG-HBFDI), World Bank GFDD.

Table 6.1 presents the gravity estimation results. As expected, distance remains a powerful barrier to cross-border economic activities. Across all models, the distance elasticity for trade hovers around -1, consistent with the historical benchmark. FDI flows and stocks exhibit even greater sensitivity, underscoring the importance of spatial frictions and information asymmetries in investment decisions, even in a digitally connected global economy.

More revealing, however, are the results that emerge once bilateral financial development is introduced. On the trade side, the depth of capital markets emerges as a strong and statistically significant facilitator of international commerce. When both countries in a trading pair have well-developed stock markets, their bilateral

trade flows increase substantially. This relationship holds even after accounting for country fixed effects, suggesting that the effect is not merely a function of individual country size or geography, but a deeper complementarity in financial infrastructure. In short, when firms on both sides of the border can access equity markets, they are better equipped to manage liquidity, extend supplier credit and navigate payment risks, thereby reducing the frictions associated with cross-border transactions.

In contrast, banking sector depth plays a more muted role in explaining trade flows. Although private credit is positively associated with trade, the relationship lacks statistical significance once other controls are included. This suggests that capital markets, not banks, are the more decisive channel for enabling arms-length trade, particularly in environments where working capital and trade credit need to be mobilized quickly across borders.

The story shifts meaningfully when turning to foreign direct investment. Here, bilateral banking depth exerts a stronger influence, particularly in the case of FDI flows, where deeper joint credit markets are associated with significantly larger investment volumes. This is consistent with the idea that banks play a more active role in funding new cross-border ventures and facilitating the movement of capital through syndicated loans or acquisition financing. Stock market development, by contrast, shows no significant effect on FDI stocks and a negative relationship with FDI flows. One possible interpretation is that capital market development and FDI serve, to some extent, as substitutes: when equity financing is readily available, firms may be less reliant on multinational structures to achieve international scale.

Taken together, the results point to a clear distinction between the financing architectures that underpin trade and those that underpin investment. Capital markets facilitate trade by lowering transaction costs and enabling decentralized credit relationships, while bank-based systems are more directly linked to the flows of capital that support the expansion of multinational firms. This divergence helps explain why trade and FDI do not always move in tandem and why strengthening both market-based and bank-based financial systems may be necessary to fully unlock the benefits of global integration.

These findings reinforce a central theme of this report: access to finance – particularly well-matched finance across borders – is a foundational determinant of GVC participation. Capital-scarce economies cannot rely on investment alone to integrate into global production networks. Without the financial infrastructure to support trade, local suppliers – especially SMEs – remain excluded from the opportunities created by globalization. A resilient and inclusive financial system is thus not merely a macroeconomic asset, but a key enabler of sustained, broad-based trade-led growth.

6.3 Foreign Direct Investment as a Catalyst for Global Value Chain Assimilation

The second part of this chapter turns from liquidity to structure, from the short-term financing mechanisms that keep production moving to the long-term capital that anchors it. FDI represents the structural layer of the GVC financial system, embedding technology, managerial know-how and fixed assets that shape where and how production takes place. In contrast to the working capital finance examined in Part I, which determines which firms can stay operationally connected, FDI defines how deeply economies are integrated and how effectively they can upgrade within global production networks. Together, these two forms of capital – structural and operational – constitute the unified financial architecture of reglobalization: liquidity keeps the system in motion, and investment gives it direction and durability.

6.3.1 Foreign Direct Investment and Trade: Literature Review

FDI has long been recognized as one of the central mechanisms shaping globalization. It is not only a vehicle for moving capital across borders, but also a primary channel through which technology, management know-how and organizational practices spread. More than simply financing multinational expansion, FDI has become a structural force that organizes trade patterns, shapes the geography of GVCs, and increasingly determines which countries and firms capture the gains from international integration (Helpman, 1984; Antràs and Helpman, 2004).

The theoretical understanding of FDI has evolved considerably over time. Early work in the 1960s and 1970s emphasized that FDI could not be explained by frictionless models of capital flows. Instead, it reflected firm-specific advantages – such as proprietary technologies, brands and organizational capacity – that encouraged companies to internalize production across borders rather than rely solely on contracts or licensing (Hymer 1976; Vernon 1966; Kindleberger 1969). This thinking crystallized in John Dunning’s “eclectic paradigm”, which highlighted three necessary conditions for investment abroad: ownership advantages, location benefits and the efficiency gains from internalization (Dunning, 1977; Dunning, 1981). These insights remain relevant today, particularly in explaining why multinationals continue to expand in contexts where financial markets are incomplete or legal enforcement weak (Buckley and Casson, 1976; Williamson, 1985).

A long-standing debate in the literature centres on whether FDI and trade are substitutes or complements. Horizontal FDI (HFDI), where firms replicate operations abroad to serve local markets, was initially seen as a substitute for trade – especially in high-tariff environments (Markusen, 1984; Brainard, 1997). In contrast, vertical FDI (VFDI), where firms locate different stages of production across countries to reduce costs, typically complements trade by generating cross-border flows of intermediate goods (Helpman, 1984).

Subsequent theoretical advances have moved beyond this dichotomy. The knowledge-capital model developed by Markusen (1995, 2002) integrates both horizontal and vertical motives, while Helpman, Melitz and Yeaple (2004) introduce firm-level heterogeneity into the analysis, showing that only the most productive firms engage in FDI. Their framework also underscores the importance of market frictions and firm matching in determining internationalization strategies. Empirical studies largely support the view that FDI and trade are more often complements than substitutes. Lipsey and Weiss (1981, 1984) found that US affiliates abroad both import inputs from their parent firms and boost exports to third countries. More recently, Tintelnot (2017) and Antràs and Chor (2013) demonstrate that firms use FDI strategically to manage complex supply chains, often investing in a single country to export regionally or to optimize access to multiple markets. These patterns are amplified in the context of deep trade agreements, which reduce entry costs and harmonize regulations (Tintelnot, 2017).

From a development perspective, the literature highlights both opportunities and risks. On the one hand, FDI can generate productivity spillovers to local suppliers and labour markets, particularly when strong backward linkages are present (Javorcik, 2004; Alfaro et al., 2004). Meta-studies confirm that such spillovers are real but conditional on host country characteristics such as human capital, infrastructure and institutional quality (Havranek and Irsova, 2011). More recent work using transaction-level data reveals long-term benefits for domestic firms that become part of MNE supply chains, including sustained productivity gains and access to new buyers (Alfaro et al., 2022; Carballo et al., 2023).

At the same time, FDI flows are increasingly shaped by geopolitical realignments and strategic concerns. Since the war in Ukraine, investment patterns have become more clustered along political and security lines, with countries prioritizing resilience and “friend-shoring” over pure efficiency (Gopinath et al., 2025). Connector countries with ties to multiple blocs are emerging as key investment hubs (Gopinath et al., 2025), suggesting a reconfiguration of the global FDI network.

These empirical insights have been greatly enhanced by advances in data. The World Bank’s Harmonized Bilateral FDI (WBG-HBFDI) database provides detailed bilateral FDI stock data across more than 250 economies, while firm-level sources like Orbis Cross-border Investment Database enable real-time tracking of multinational strategies (Steenbergen et al., 2022; Bureau van Dijk (Moody’s Analytics), n.d.). These tools are critical for understanding the micro-dynamics of FDI and for designing policy frameworks that can unlock its developmental potential. We further build on these data resources in Part II of this chapter, where we analyse network-level features of global FDI and trace their implications for GVC participation.

6.3.2 Data Sources

Understanding the evolving role of FDI in global trade requires empirical tools that can meaningfully capture how capital flows map onto production and trade structures across countries and sectors. Our analysis builds on a set of harmonized and complementary data sources that, when combined, enable us to track FDI patterns, production linkages and trade relationships across time and geography with considerable granularity.

At the centre of our dataset is the WBG-HBFDI database, a comprehensive, cleaned and policy-relevant resource that consolidates bilateral FDI positions and flows for more than 250 reporting and partner economies. Developed by Steenbergen et al. (2022), the WBG-HBFDI addresses long-standing issues in global FDI data – such as inconsistency in definitions, directionality mismatches and mirror asymmetries – by applying a rigorous, multi-source harmonization process. The dataset integrates official data from four principal repositories: the IMF's Coordinated Direct Investment Survey (CDIS), the Organisation for Economic Co-operation and Development's (OECD) International Direct Investment Statistics, United Nations Conference on Trade and Development's (UNCTAD) bilateral FDI matrix, and China's Ministry of Commerce statistical bulletins. To reconcile discrepancies and maximize coverage, the World Bank team applies a multi-step algorithm that prioritizes host-reported OECD data, then leverages mirror statistics and secondary sources to fill gaps. For each country-pair-year observation, the dataset includes metadata on the underlying source, coverage quality, use of estimation or inference, and whether the value is directly reported or derived. Special flags also identify tax haven jurisdictions and transactions involving special purpose entities (SPEs), allowing researchers to explicitly test the sensitivity of results to the presence of so-called “phantom FDI”.

We draw on two key files from the WBG-HBFDI suite. The first is the aggregate bilateral dataset, which reports inward and outward FDI flows and stocks between all available country pairs from 2001 to 2021. This dataset forms the empirical backbone of our gravity analyses in Part I and the network-based exploration of FDI-GVC linkages in Part II. The second is the sectoral disaggregated file, which breaks down FDI stocks across 24 sectors based on International Standard Industrial Classification of All Economic Activities (ISIC) Rev.4 classifications. Importantly, this sectoral coverage is constructed using a combination of direct reporting and mirror imputation. While only 42 countries report sector-specific FDI stocks – including major source countries such as the US, Japan, South Korea, Canada, Singapore and Brazil – the mirror methodology enables estimation of sectoral exposure in a broader set of developing countries. Together, these two datasets comprise more than 1.5 million observations and offer the richest publicly available mapping of bilateral capital relationships over the past two decades.

In addition to FDI data, we incorporate production and input-output linkages from the World Input-Output Tables (WIOT) 2016 (World Input-Output Database, or WIOD, 2016), which are part of the broader WIOD project. WIOT provides annual supply-use matrices for 43 economies (plus a rest-of-world aggregate), covering 56 sectors from 2001 to 2014. This data enables us to trace sector-specific flows of intermediate goods, final demand and gross output, and to construct measures of forward and backward linkages along value chains. We complement WIOT with the bilateral capital supply-use dataset developed by Ding (2023), which imputes bilateral capital service flows – including both tangible assets like machinery and intangible inputs like research and development (R&D) – based on a calibrated neoclassical growth framework. Importantly, we extend Ding’s original cross-section to a panel format, thereby generating annual bilateral capital-use estimates at the country-sector level.

To match investment patterns with trade flows, we merge these datasets with disaggregated merchandise trade data from CEPII’s BACI database (HS02 classification). BACI reconciles UN Comtrade records using mirror data and cross-declarations, producing consistent bilateral trade values and quantities for roughly 5,000 six-digit products and over 200 countries. We aggregate these flows to the country-pair-year level to align them with the structure of the FDI datasets, ensuring consistent partner definitions and temporal coverage.

All variables are retained in current US dollars, and we preserve negative FDI entries where they reflect disinvestment or position reversals. Data integration is performed using International Organization for Standardization’s three-digit ISO3 country codes, and all sectoral mappings follow the ISIC Rev.4 concordance. Where discrepancies or missing values exist – for instance, in sectoral totals for countries such as South Korea – we use cumulative flows or interpolation subject to consistency checks.

The resulting panel allows us to trace the evolution of bilateral capital relationships, sectoral investment patterns, trade flows and GVC integration over the past two decades. It also supports multiple levels of analysis from cross-sectional regressions and panel estimations to network-based mapping of production and investment linkages. The depth, consistency and metadata richness of the WBG-HBFDI database enables us to explore not only headline investment trends but also the institutional and structural underpinnings of modern global production.

The abovementioned data serve as the foundation for the analysis in both Part I and Part II of this report. While Part I focuses on the joint role of trade finance and financial development in shaping trade outcomes, Part II turns to FDI as a structural force behind global production networks. Our analysis leverages the WBG-HBFDI data alongside WIOT and BACI to examine how multinational firms deploy capital across borders, how these patterns align with trade and value chain configurations, and how they evolve in response to policy and market shifts.

A more detailed discussion of our methodology, sample construction, and sensitivity checks, particularly with respect to tax havens and phantom flows, can be found in Appendix A. The next section turns to a more conceptual review of FDI's role in organizing global production and enabling GVC assimilation.

6.3.3 Network Analysis: The Trade-Investment Ghostbusting

The relationship between FDI and trade has long stood at the centre of globalization narratives. Yet as financial structures have become more complex, the links between productive capital and real economic flows have grown harder to trace. The question is no longer just how much FDI exists, but what kind of FDI and through what mechanisms it shapes GVC participation.

To explore this, we take a fresh look at the network architecture of global investment using an adaptation of the Richmond (2019) centrality measure originally developed for trade networks. Our version captures a country's FDI centrality by weighing both the scale of its bilateral FDI ties and the systemic importance of its partners, using data from the World Bank's WBG-HBFDI database (see Appendix for technical details). The goal is to see how central economies are in the global investment network, and whether this centrality still mirrors that of trade.

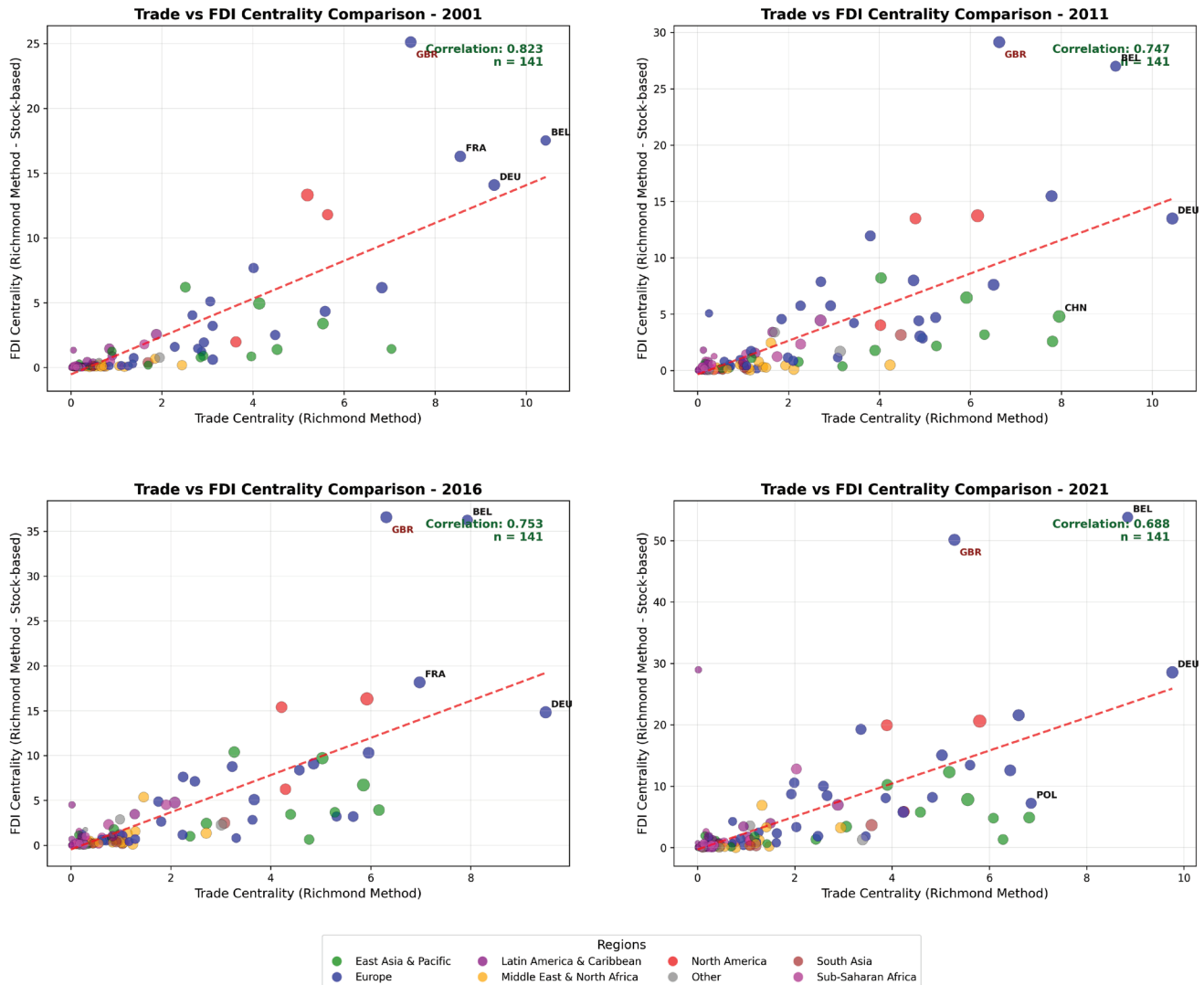
The results, visualized in Figure 6.6, tell a remarkably coherent story. When we limit the analysis to a stable panel of 141 non-haven economies, the correlation between trade centrality and FDI centrality is both high and persistent over time. In 2001, the correlation stands at 0.823, and while it softens slightly by 2021, it remains solid at 0.688. Countries that are highly central in the global trade network – like Germany, France, the United Kingdom (UK) and Belgium – are also central in the global investment network. The relationship is intuitive: nations that serve as key hubs in goods trade are also where long-term capital relationships cluster, reflecting the tight complementarity between production and investment in real-economy GVCs.

But this coherence disappears when we reintroduce the full sample of 163 countries, including offshore financial centres and jurisdictions heavily involved in tax-optimized investment structures. As shown in Figure 6.7, the correlation between trade and FDI centrality weakens sharply: from 0.759 in 2001 to just 0.278 in 2021. Instead of a close alignment between production and capital, the network becomes increasingly distorted by a few jurisdictions whose FDI centrality far exceeds their role in trade. Notably, countries such as Luxembourg, Bermuda and Ireland appear as outsized nodes in the FDI network yet barely register in trade flows. These are not hubs of production, but rather platforms for financial intermediation, legal structuring and tax optimization.

This divergence is further highlighted in Figure 6.8, which traces how the topology of the FDI network changes over time. In 2001, the network is relatively balanced, with traditional industrial economies forming the backbone of investment relationships. But

Figure 6.6: Trade vs. FDI Centrality – Excluding Tax Havens

Trade vs. FDI Centrality (Richmond Method - STOCK-BASED) - Excluding Tax Havens
 Stable Panel: 141 Countries (Bubble size $\propto$ GDP) - Colored by Region



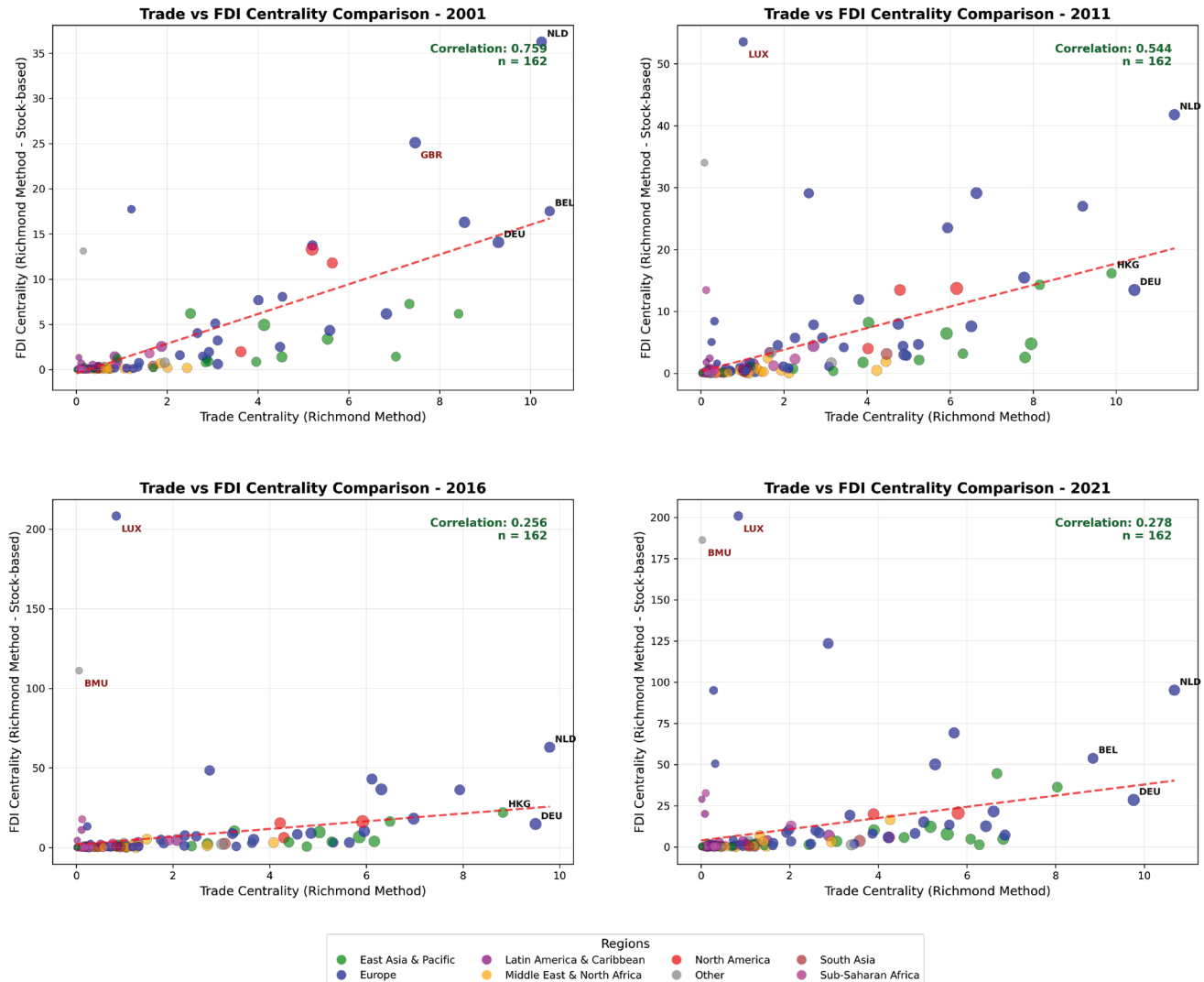
Source: World Bank's WBG-HBFDI database.

by 2011, and more so by 2021, offshore centres dominate the global map. Luxembourg (LUX), Bermuda (BMU) and Ireland (IRL) become central not because of their industrial base, but due to the rise of SPEs and pass-through investment vehicles, as documented in studies such as Damgaard, Elkjaer, and Johannesen (2019) and Garcia-Bernardo et al. (2017). These structures allow multinationals to reroute capital flows through low-tax jurisdictions, inflating the recorded stock of FDI without corresponding changes in physical assets, employment or trade.

What emerges, then, is a two-layered investment network. The first is a real economy layer, where trade and FDI move together, production follows investment and centrality reflects actual economic influence. The second is a financial structuring layer, where

Figure 6.7: Trade vs. FDI Centrality – Full Sample

Trade vs. FDI Centrality (Richmond Method - STOCK-BASED)
Stable Panel: 163 Countries (Bubble size $\propto$ GDP) - Colored by Region

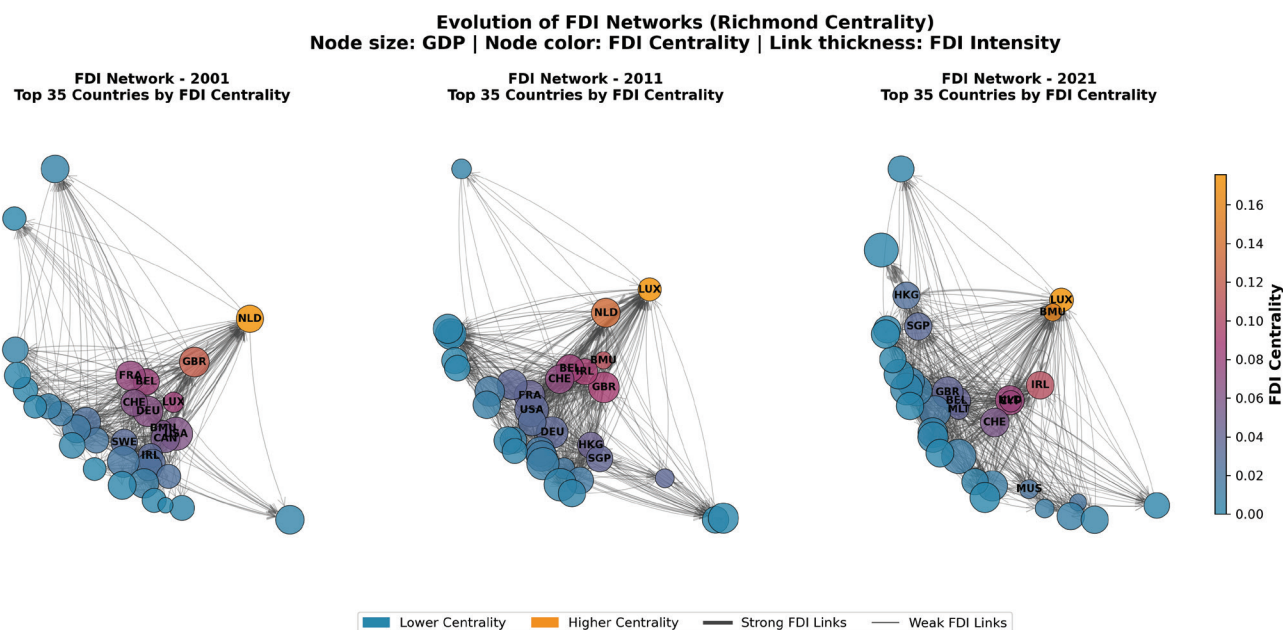


Source: World Bank's WBG-HBFDI database.

capital is mobile for tax, regulatory or legal reasons, often with limited connection to local economic activity.

Our methodological approach makes this distinction clear. By leveraging the haven/SPE flags in the WBG-HBFDI dataset, we construct a “de-havened” version of the FDI network that filters out these financial hubs. This enables us to identify the productive core of the global investment system – where FDI actually embeds production, builds supplier linkages and supports GVC integration. At the same time, we do not discard the full network. Rather, we view the two versions as complementary lenses: one focused on real capital formation, the other on the balance sheet dynamics that increasingly shape how investment is booked and reported.

Figure 6.8: Evolution of FDI Network Centrality – Top 35 Economies, 2001-2021



Source: World Bank's WBG-HBFDI database.

These results also help reconcile the earlier findings in the report. Recall from Part I that trade finance plays a crucial role in enabling firm participation in GVCs. That insight aligns closely with the observed relationship between trade and de-havened FDI centrality: countries with deeper financial ecosystems and more efficient access to working capital tend to be central in both. Conversely, in the full network, this relationship breaks down, because tax havens are central in capital but peripheral in goods.

From a policy perspective, the implications are twofold. First, analysts and international institutions should routinely report FDI statistics both with and without tax havens, and wherever possible, use “ultimate investing country” adjustments to reallocate pass-through flows to their source. Second, for countries aiming to deepen their participation in GVCs, attracting FDI should not be seen in isolation. The same institutional factors that support trade – such as reliable contract enforcement, export credit insurance and trade financing infrastructure – also enhance the productivity and embeddedness of FDI.

In short, once the noise of financial engineering is filtered out, the underlying story remains clear and intuitive: trade and FDI continue to move together, and countries that are central in one are often central in the other. It is this real economy layer of globalization that policymakers must engage with – and it is this layer that we continue to examine in the sections that follow. Box 6.4 offers a comprehensive overview of the different types of offshore financial centres.

Box 6.4: Understanding ‘Conduit’ and ‘Sink’ FDI: The Hidden Architecture of Global Capital Flows

Not all FDI is created equally. While conventional FDI reflects real economic activity – such as building factories, establishing subsidiaries or acquiring productive assets – a substantial and growing share of recorded cross-border investment is better understood as “phantom” capital, routed through a handful of financial centres for tax optimization and regulatory arbitrage. Understanding this distinction is essential for interpreting global FDI patterns and for designing policies that target genuine economic integration.

Work by Damgaard, Elkjaer, and Johannesen (2019) introduces a powerful framework for identifying the true structure of international capital flows by classifying countries into two roles within the FDI ecosystem: conduit and sink jurisdictions.

- Conduit economies act as intermediaries through which investment is routed, typically for legal or tax-related reasons. These countries – such as the Netherlands, Luxembourg and Ireland – host a disproportionate share of pass-through FDI that originates elsewhere but is funnelled through their financial and legal systems en route to its final destination. Conduit jurisdictions often offer favourable bilateral tax treaties, investor protections and advanced financial infrastructure that facilitate these routing strategies. The scale is enormous: in some cases, more than 90% of the FDI stock recorded in a conduit economy reflects financial flows with little to no local economic footprint.
- Sink economies, on the other hand, are where investment flows effectively come to rest. These jurisdictions absorb large volumes of capital, but much of it is ultimately disconnected from productive activity. Often characterized by low or zero corporate taxation, limited transparency and strong confidentiality laws, sink jurisdictions such as the British Virgin Islands, Bermuda and the Cayman Islands attract FDI for holding purposes, shielding the underlying assets from tax authorities and other forms of oversight. In sink economies, real investment activity is often minimal despite headline FDI figures being extremely large.

This dual structure of conduit and sink FDI has profound implications for global statistics. It helps explain why certain countries appear extraordinarily central in FDI networks despite playing only a marginal role in global trade. Moreover, it contributes to the observed divergence between trade and FDI centrality over time, especially in recent decades, as financial engineering has become more central to multinational tax strategies.

Recognizing these dynamics is not just a technical matter of data interpretation. It directly affects how we assess which countries are truly integrated into global value chains, where investment is supporting productive upgrading and where capital is simply being routed for accounting purposes. Policymakers and researchers increasingly emphasize the need to separate “real” FDI, associated with tangible assets and jobs, from “phantom” FDI that distorts global statistics and complicates efforts to design evidence-based trade and investment policies.

6.3.4 Foreign Direct Investment and Global Value Chain Integration: An Econometric Analysis

We conduct a deeper investigation into the trade-FDI nexus by correlating FDI with measures of GVC participation. If FDI were purely driven by financial arbitrage opportunities and entailed simply a transfer of asset ownership, we would expect neither the production process nor trade integration (e.g., the set of buyers and sellers) to change. On the other hand, if FDI involves financing real investments in new capital goods or transfers in technology and capital, much of the production process could change, including the types of inputs used and the sources of inputs, as well as the mix of buyers.

To measure such changes in the production process, we draw on the capital-augmented world input-output table in Ding (2023). This dataset includes information on country-sector-level spending on intermediate inputs as well as capital services, differentiated by country and sector of origin. Both intermediates and capital can be sourced from different upstream sectors and origin countries. The key contribution of this dataset is that it links up the country and sector that supplies the goods and services purchased as investment with the country and sector that uses the flow services of capital over time.

We use this dataset to construct shares of spending out of each downstream country-sector (n, j) on different types of inputs (k) from different countries (i) in each year between 2001 and 2014. Formally:

$$\beta_{njik,t}^M = \frac{\pi_{nik,t} M_{njik,t}}{X_{nj,t}}, \quad \beta_{njik,t}^K = \frac{\pi_{nik,t} r_{njik,t} K_{njik,t}}{X_{nj,t}}$$

Here, $M_{njik,t}$ is the value of purchased intermediate inputs from sector k used in country n , sector j ; $\pi_{nik,t}$ is the import share of expenditures country n makes on sector k from country i ; $X_{nj,t}$ is gross output; and $r_{njik,t} K_{njik,t}$ are imputed user costs of capital. The coefficients $\beta_{njik,t}^M$ and $\beta_{njik,t}^K$ represent cost-side exposure to inputs provided by sector k from country i , and satisfy:

$$\sum_{i,k} \beta_{njik,t}^M + \beta_{njik,t}^K = 1 - \beta_{nj,t}^L,$$

where $\beta_{nj,t}^L$ is the labor share in country n , sector j .

We measure changes in the production process using the cosine similarity in expenditure shares between the same sector in two countries, n and m . We investigate whether changes in FDI increase, decrease or leave unchanged the similarity in production expenditure shares between host and source countries. Table 6.2 reports estimates from the following regression:

$$Sim_{nmjt}(\beta_{njik}^K, \beta_{mjik}^K) = \gamma_1 \log FDI_{nmt} + \gamma_2 \log FDI_{nmt} \times Z_{njt} + FE_{njt} + FE_{mjt} + FE_{nmj} + \epsilon_{nmjt},$$

where $Sim_{nmjt}(\cdot)$ is the cosine similarity of expenditure shares on capital over the supplier dimension (i, k) for a pair of producers in sector j from two different economies n and m . FDI_{nmt} measures the outward stock of FDI from m to n , and Z_{njt} is a set of time-varying host-country-sector characteristics, such as capital intensity, import intensity or imported capital intensity. $FE_{njt} + FE_{mjt} + FE_{nmj}$ describes a stringent trio of triadic fixed effects (leaving only the dimension unabsorbed).

We focus primarily on similarity in capital expenditure shares because capital is typically associated with know-how and suited to a particular production process. If there is technology transfer, a likely consequence is that foreign multinational production in a host country begins to resemble production at home in terms of both the types and proportions of capital inputs used and where these inputs are sourced.

Our focus on capital is also motivated by Ding (2023), who finds that there is more unexplained heterogeneity in capital service expenditure shares across countries as there is heterogeneity in intermediate input expenditure shares.

We use imported-capital intensity as our main interaction variable, defined as:

$$Z_{njt} = \sum_{i \neq n} \sum_k \beta_{njikt}^K$$

This serves as our main interaction variable to study whether more imported-capital intensive sectors are more prone to assimilation following FDI.

Table 6.2 provides evidence in support of our assimilation hypothesis. First, column (1) shows that FDI stocks on average do not meaningfully correlate with similarity in capital services use. The remaining columns analyse heterogeneity. Column (2) shows that, however, the correlation is positive whenever the destination country and sector is imported-capital intensive. This is our benchmark specification. For country sectors at the top decile of the imported capital intensity distribution, a one log-point increase in the bilateral FDI stock (roughly a doubling) is associated with a 1% (of standard deviation) increase in cosine similarity.

Table 6.2: FDI and GVC Assimilation in Capital Use					
	(1)	(2)	(3)	(4)	(5)
log(FDI Stock)	0.002** (0.001)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.001* (0.001)
log(FDI Stock) × Import Capital Intensity		0.094*** (0.009)	0.158*** (0.015)		0.169*** (0.014)
log(FDI Stock) × Import Intermediate Intensity				0.016*** (0.002)	0.018*** (0.003)
log(FDI Stock) × Import Intensity			0.005 (0.003)		
log(FDI Stock) × Capital Intensity			-0.025*** (0.002)		-0.013*** (0.002)
log(FDI Stock) × Intermediate Intensity					-0.006*** (0.001)
Observations	304,824	304,824	304,824	304,824	304,824
R ²	0.970	0.970	0.970	0.970	0.970

Note: The dependent variable is the cosine similarity between two economies in a given sector over expenditure shares on capital services disaggregated by supplying sector (k) and country (i). Cosine similarity is standardized to unit variance within the sample. All specifications include a saturated trio of triadic fixed effects: FE_{njt} , FE_{mjt} and FE_{nmj} . The main explanatory variable, $\log(FDI Stock)$, varies at the nmt level. Interaction variables (in subsequent rows) vary at the njt level. Standard errors in parentheses. *p < 0.05, **p < 0.01, ***p < 0.001.

Column (3) controls for separate interactions between log FDI stock and import intensity and capital intensity to show that the findings in column (2) are driven specifically by imported-capital intensity. Column (4) finds a weaker (but still positive) effect for sectors that are imported -intermediates intensive. Column (5) puts all interactions together to show that the baseline effect of FDI stocks leading to GVC

assimilation in imported-capital intensive countries and sectors survives additional controls.

Table 6.3 provides evidence that assimilation is limited to the use of different types of capital and its imports from different countries of origin. We repeat the same specifications but use cosine similarity in intermediate input use on the left-hand-side. We find much lower and insignificant magnitudes. If anything, columns (3) and (5) find that similarity is lower whenever bilateral FDI stocks are high among imported capital-intensive sectors.

Table 6.3: FDI and GVC Assimilation in Intermediate Input Use					
	(1)	(2)	(3)	(4)	(5)
log(FDI Stock)	0.001 (0.001)	0.001* (0.001)	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)
log(FDI Stock) × Import Capital Intensity		-0.009 (0.008)	-0.056** (0.020)		-0.036* (0.015)
log(FDI Stock) × Import Intermediate Intensity				0.010* (0.004)	0.024** (0.008)
log(FDI Stock) × Import Intensity			0.016** (0.006)		
log(FDI Stock) × Capital Intensity			-0.001 (0.001)		0.007** (0.002)
log(FDI Stock) × Intermediate Intensity					-0.004*** (0.001)
Observations	304,824	304,824	304,824	304,824	304,824
R ²	0.961	0.961	0.961	0.961	0.961

Note: Dependent variable is the cosine similarity between two economies in a given sector over expenditure shares on intermediate inputs, disaggregated by supplying sector (k) and country (i). Cosine similarity is standardized to unit variance within the sample. All specifications include a saturated trio of triadic fixed effects: FE_{njt} , FE_{mjt} , and FE_{nmj} . The main explanatory variable, log(FDI Stock), varies at the nmj level. Interaction variables (in subsequent rows) vary at the njt level. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6.4 breaks apart similarity into its two separate dimensions: similarity over supplying countries, and similarity over supplying sectors. Columns (1) and (2) repeat the specification from column (2) of Table 6.2 but break out the combined similarity in capital services use into these two different margins. We find that similarity increases in both dimensions. Among more imported-capital intensive producers, higher bilateral FDI is associated with higher similarity in both the mix of capital assets deployed in production and the location of countries where these assets are sourced. In comparison, columns (3) and (4) break out the results from column (2) of Table 6.3 and find mildly negative coefficients along both margins.

Table 6.4: FDI and the Margins of GVC Assimilation

	(1)	(2)	(3)	(4)
	<i>Capital Sim. over k</i>	<i>Capital Sim. over i</i>	<i>Intermediate Sim. over k</i>	<i>Intermediate Sim. over i</i>
log(FDI Stock)	-0.002*** (0.000)	-0.002** (0.001)	0.001 (0.001)	0.001 (0.001)
log(FDI Stock) × Import Capital Intensity	0.023*** (0.006)	0.153*** (0.011)	-0.053*** (0.008)	-0.020* (0.008)
Observations	304,824	304,824	304,824	304,824
R ²	0.980	0.969	0.962	0.953

Note: Dependent variable is the cosine similarity between two economies in a given sector over expenditure shares on (1) capital service across supplying sectors (*k*), (2) across supplying countries (*i*), (3) intermediate inputs across supplying sectors (*k*), and (4) across supplying countries (*i*). Each cosine similarity is standardized to unit variance within the sample. All specifications include a saturated trio of triadic fixed effects: *FEnjt*, *FEmjt*, and *FEnmj*. The main explanatory variable, log (*FDI Stock*), varies at the *nm*t level. Interaction variables (in subsequent rows) vary at the *njt* level, Standard errors in parentheses. **p* < 0.05, ***p* < 0.01, ****p* < 0.001.

One interpretation consistent with the findings in Tables 6.2, 6.3, and 6.4 is that FDI involves the transfer of know-how embedded in investment goods. This know-how incentivizes the use of similar types of capital goods in production in the FDI host country as the source country. On the other hand, one motive for FDI is to take advantage of input cost advantages. This involves sourcing the most cost-effective intermediate inputs depending on the location of production. It is therefore reasonable that host and source countries use different mixes of intermediates in production sourced from different locations.

The contrasting results between assimilation in sources of capital input use versus sources of intermediate input use suggest that capital plays a distinct role, likely embodying skill and technology transfer. These results suggest that an FDI is more than a pure financial flow; rather, it entails assimilation in the physical production process insofar as the proportions of capital assets used (R&D versus machinery) as well as the countries where these assets are imported.

6.3.5 Policy Implications

The analysis presented in this chapter reveals the layered financial architecture that underpins GVC integration, one in which FDI provides the long-term scaffolding for international production, and trade finance serves as the operational lubricant that enables day-to-day transactions. This dual-engine model suggests that policy interventions affecting either side of the financing equation, structural capital or working capital, can generate cascading effects on global trade and investment patterns. Importantly, our findings point to both opportunities and vulnerabilities. While coordinated financial development can amplify trade flows, the proliferation of “phantom” FDI through tax havens and financial hubs can distort headline statistics and complicate policy targeting. As governments recalibrate their international economic strategies in a context of growing geopolitical uncertainty, the following four areas emerge as particularly salient for policy design.

1. Export Controls and FDI Screening Mechanisms

Our network analysis underscores the critical distinction between “real” and “phantom” FDI – a distinction with direct implications for national security and technology governance. The rise of offshore financial centres in the global FDI network, despite minimal participation in trade or production, mirrors broader concerns about the role of SPEs in obscuring the true origin and destination of capital. This opacity becomes especially problematic in sectors involving dual-use technologies, sensitive data or critical infrastructure.

Recent datasets, such as the Global Trade Alert export restriction tracker and the PRISM database on investment screening regimes (Danzman and Meunier, 2023), show that countries are increasingly deploying screening tools to manage FDI risks. Yet our findings suggest that blunt restrictions on FDI may miss the mark unless accompanied by efforts to trace beneficial ownership and disentangle financial intermediation from productive control. A more effective approach would focus on transparency-enhancing measures, such as beneficial ownership registries and stricter reporting standards on the use of special purpose entities. These efforts should also be coordinated across jurisdictions to prevent regulatory arbitrage, particularly in highly financialized sectors.

2. Industrial Policy and Targeted Subsidies

FDI is not just a channel for capital transfer, it is a vehicle for technology adoption, supply chain reconfiguration and upgrading within GVCs. Our empirical findings suggest that inward investment can catalyse export growth and deepen network participation, particularly when partner economies also exhibit robust financial development. However, the benefits of FDI are unevenly distributed and often depend on host country capacity to absorb spillovers.

Recent evidence from Ruta and Sztajerowska (2025) finds that targeted subsidies, especially in capital-intensive industries, can increase greenfield FDI by up to 7%, with the largest effects observed in capital-intensive sectors. These findings resonate with our framework, in which fixed investment costs act as a binding constraint on GVC participation. From a policy perspective, industrial subsidies that lower the cost of capital formation – such as equipment grants, tax credits or co-financing programmes – can enhance a country’s attractiveness to strategic FDI. Importantly, these incentives should be coupled with programmes that build absorptive capacity, such as workforce training, digital infrastructure development and local supplier upgrading.

3. Investment Treaties and Technology Transfer Rules

As FDI becomes increasingly strategic, the governance of cross-border investment is evolving. Investment treaties that once focused narrowly on expropriation and non-discrimination are now being reshaped to reflect concerns over technology transfer,

data localization and regulatory sovereignty. Our chapter highlights the complementary role that capital market development plays in enabling trade but also reveals asymmetries in the responsiveness of FDI to institutional depth.

Literature on “deep” investment provisions, such as those prohibiting forced technology transfer or requiring transparency in investment screening, shows that well-designed treaties can enhance the credibility of host environments and lower the fixed costs of entry (Hofmann et al., 2017; Sztajerowska, 2021). However, not all treaties are equal in scope or effectiveness. Our findings suggest that bilateral and regional investment agreements are most impactful when they align with domestic policies to improve legal predictability, protect intellectual property rights and facilitate dispute resolution. In an era of “weaponized interdependence”, investment governance must strike a careful balance between openness and resilience.

4. Investment Promotion and Strategic Targeting

Finally, the heterogeneity of FDI effects across sectors and countries suggests a key role for targeted investment promotion. While FDI from multinationals can unlock productivity gains and export potential, the likelihood of such benefits depends on the structure of investment – greenfield vs. mergers and acquisition (M&A), platform-seeking vs. market-seeking – as well as the capabilities of domestic firms. Data from the WBG-HBFDI dataset, together with firm-level case studies (Alfaro-Ureña et al., 2022; Carballo et al., 2023), shows that productivity spillovers and GVC integration are highest when local firms are vertically linked into multinational production networks.

Evidence from investment promotion research suggests that how countries promote FDI matters as much as how much they promote it. In particular, firm- and activity-level targeting, inter-agency coordination, and post-establishment services have been shown to increase the effectiveness of investment promotion agencies (IPAs) in attracting multinational activity (Volpe Martincus et al., 2021). While this literature does not directly quantify the depth of local production linkages, it highlights institutional mechanisms, such as aftercare services and coordination with domestic regulators, that are plausibly complementary to supplier development and GVC embedding. Our analysis is consistent with this interpretation: FDI complements trade most powerfully when it is embedded in a financially developed and institutionally supportive ecosystem. Policymakers should therefore view investment promotion not merely as a tool for attracting capital inflows, but as part of a broader strategy that aligns investment attraction with domestic capability building, innovation policy, and long-term employment creation.

Across its two parts, this chapter has shown that participation in GVCs depends on both the liquidity that moves production and the investment that anchors it. Trade and supply chain finance expand firm-level inclusion and resilience; FDI embeds technology, capital and organizational know-how. Together they form a layered financial architecture in which short-term and long-term capital reinforce each

other. Effective policy therefore requires coordination between TF development and investment promotion, linking working capital access with productive capital formation to achieve resilient and inclusive reglobalization.

To complement the analytical and empirical perspectives presented in this chapter, it is useful to understand how firms themselves perceive the evolving relationship between FDI, trade finance and GVC integration. From the corporate side, investment decisions and liquidity management are increasingly shaped by what may be termed a “finance-driven geography”, in which the depth, credibility and interoperability of financial systems determine not only where production is located but also how reliably it operates. Box 6.5 offers a business sector view of these developments. It illustrates how multinational firms and financial institutions are adapting to shifting patterns of capital availability, regulatory environments and digital financial infrastructure, and how these dynamics interact with the structural forces analysed in the chapter.

Box 6.5: The View from Business: Financing Connectivity in the New Frontier of FDI and Trade Finance

Introduction: The Finance-Driven Geography of FDI, Trade Finance and (re)Globalization

Chapter 6 frames FDI as structural capital – embedding long-term capacity in host economies – and TF/SCF as the liquidity layers keeping cross-border production running. Together, they form a unified capital ecosystem increasingly decisive for GVC participation and upgrading. From the business side, FDI determines where and how production is organized; TF/SCF determines how reliably materials, components and services circulate.

TF underwrites the front end of cross-border exchange, ensuring goods move and get paid for; SCF underwrites the back end, providing working capital across multi-tier supplier networks. This helps explain why cash reliance in many emerging economies – with Viet Nam and Cambodia highlighted in this Chapter (WTO and IFC, 2023) – results in very low SCF penetration even where trade intensity is high, constraining business growth.

Two additional propositions from Chapter 6 resonate with corporate behaviour. First, capital market depth on both sides of a trading relationship lowers frictions and boosts bilateral trade, whereas banking system depth more closely links to FDI flows: equity markets oil trade wheels with better risk and liquidity management tools; banks mobilize loans and acquisition financing needed to create or expand multinational footprints at scale.

Second, services now account for a rising share of GVC activity and have proven notably resilient; TF/SCF must therefore extend to digitally delivered services and intangibles, not only containers and warehouses. Sophisticated financial offerings for services providers are a natural corollary of more developed regulatory regimes.

These factors combine as “finance-driven geography”, whereby firms re-route investment and liquidity along corridors that maximize policy predictability, financial depth and digital interoperability. The result is not deglobalization but reglobalization via finance, so much so that financial flows can distort FDI data: a re-wiring of production around finance availability. This chimes with DHL analysis finding that global connectedness “unequivocally dispels the notion of globalization reversing course” (Logistics Business, 2024).

This section focuses on key themes: (1) treating capital as a supply chain input; (2) tracking the new geography of investment; (3) prioritizing policy credibility in investment regimes; and (4) developing trends in TF/SCF.

1. Capital as a supply chain input

As this chapter outlines, FDI builds production structures whilst TF and SCF sustain production flow. An HSBC executive notes: “An intelligently designed supply chain finance programme can do a lot of heavy lifting in de-risking trading relationships and improving supplier resilience” (BusinessWire, 2024).

In modern business, operations teams track physical lead time while finance teams monitor credit velocity – time from shipment or service milestone to cash at each chain tier. For managing boards, value chains are organized as much by capital flows as by goods flows; they are symbiotically related but need equal consideration.

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Box 6.5: continued

Yet this development is uneven: Chapter 6 highlights World Bank data showing that in many emerging markets, exporters still finance most working capital from internal funds and retained earnings (71% in LMICs), with substantial shares (40%) of sales paid post-delivery. Banks and supplier credits provide only 18% of finance for LMIC exporters.

This expands cash-conversion uncertainty and forces firms to ration orders precisely when market windows open; TF/SCF access becomes a limiting factor for business revenues. Chapter 6's firm-level literature reinforces this mechanism: access to external finance and bank health shape both the extensive margin (the decision to export) and the intensive margin (how much and to whom) (Berman, 2010; Amiti and Weinstein, 2011). Higher financing costs map into lower trade volumes – even small cost increases translate into meaningful export and import reductions.

The implications for business are tangible: capital provided by TF/SCF are supply chain inputs requiring careful management, and policymakers can help businesses significantly by improving access to and the price of this financing.

2. The New Geography of Investment

The bilateral gravity framework in this chapter demonstrates what corporate boards contend with when planning future development: capital market depth on both sides of a trade relationship associates with more trade, while banking system depth on both sides associates with more FDI. Because services and software account for rising value added shares, data governance, e-contracting and payments interoperability now sit alongside wage costs and logistics when boards map the next plant, platform or shared-services hub. Modern location strategy has become a finance map as much as a cost map – consistent with Chapter 6's analysis of WBG-HBFDI and BACI evidence.

Specifically, firms now seek friend-shored finance (IMF, 2024) when siting new facilities, sourcing finance in economies where banks can mobilize long-duration, asset-backed loans and legal enforcement is predictable. This means increasing reliance on regional financial centres offering sophisticated instruments, efficient payment clearing and scale hedging – hence growing finance flows through conduit economies. Capital flow geography is defined less by lowest cost and more by highest financial compatibility.

Another popular corporate move is increasing use of in-market, syndicated loans, which have emerged as a board-friendly, “risk-off” complement to equity FDI. Instead of funding projects entirely with parent equity, firms co-finance with local currency tranches from host market banks and international lenders, often alongside export credit agencies or development finance institutions. This does four things that executives value: (1) de-risks exposure by giving senior lenders security over assets and revenues; (2) anchors domestic stakeholders in the project; (3) hedges FX by matching local revenues with local currency debt; and (4) preserves strategic optionality. Coupled with host governments' desire to attract FDI, local banks benefit from implicit government support when funding flagship foreign investments. This demonstrates why Chapter 6 explains that deeper joint credit markets associate with larger FDI volumes – banks actively facilitate cross-border expansion through syndications and acquisition finance.

This sits within broader re-wiring across corridors and “connector countries”. In business decisions – consistent with patterns highlighted elsewhere in the report – Mexico, Viet Nam and Türkiye feature repeatedly as connector countries linking production nodes across blocs (Gopinath et al., 2025). Market evidence cautions against over-generalizing: “while some rerouting and transshipment may have occurred via Viet Nam, there is little evidence of similar activity through Mexico this year” (IIF, 2025). The implication for firms is to treat connector roles as dynamic and sector specific, not static labels, and to confirm that finance rails (correspondent banking, FX access, documentation) in each connector are fit for purpose.

Overall, networked FDI is growing: single financing nodes support investment flows into many economies; connector economies link production across trading blocs; services-intensive corridors open up with tax-efficient regimes. The geography of investment is increasingly complex, dynamic and liable to further change with policy shifts and market factors.

3. Policy Credibility in Investment Regimes

This reorganization directly affects the global economy. JPMorgan Chase Chair and CEO Jamie Dimon notes that “the restructuring of global supply chains... may lead to stickier inflation and ultimately higher rates than markets currently expect” (JPMorgan Chase, 2025). This and resultant policy changes impact how companies price expansion project risks.

As Chapter 5 highlighted industrial policy credibility's importance for firms and GVC development, the same holds for investment policy. As this Chapter concludes, FDI is most developmentally effective when embedded in “financially developed, institutionally supportive” ecosystems. Sudden changes in screening rules, capital-control regimes, weak contract enforcement or vague prudential guidance cause firms to re-price risk and can strand projects even where incentives exist.

From a business perspective, key FDI project risks heavily link to the local policy environment and regime credibility. Firms therefore discount destinations with ambiguous investment reviews or unpredictable market access, and pay premiums for clear investment statutes, reliable courts and sound regulatory supervision.

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Box 6.5: continued

The gravity model results demonstrate that distance is a “powerful barrier” to trade and investment, with FDI flows and stocks exhibiting even greater sensitivity than trade. Part of this stems from spatial frictions and information asymmetries in investment decisions, but greenfield FDI shows more sensitivity to geopolitical distance than goods trade, especially in the past decade (McKinsey, 2025). This reinforces that firms seek stability in all policy aspects, not just those directly pertaining to investment.

4. Developing Trends in Trade Finance and Supply Chain Finance

Whilst the trends above are becoming increasingly understood, trade finance scarcity remains the binding constraint for inclusive participation. Chapter 6 notes the TF gap in developing economies widened markedly, reaching \$2.5 trillion in 2022 (ADB, 2023), and frictions – collateral, enforcement, FX access and correspondent-bank capacity – produce high rejection rates and self-exclusion. Bank rejection rates reach about 25% of request values in West Africa, versus around 12% for Africa overall, with SMEs and new clients disproportionately affected (AfDB, 2020; WTO and IFC, 2023). This is why such a small share of firms’ finance needs comes from banks, and why TF/SCF determines whether firms can translate FDI linkages into export growth – investment alone cannot bring capital-scarce economies into global production networks.

Even in relatively advanced markets, TF/SCF penetration is far below potential: trade supported by bank-intermediated TF stands at 8% in Mexico, 15% in Senegal, 20% in Nigeria and Viet Nam, and 3% in Cambodia and Lao PDR, compared with >=60% in developed economies. Prices track these frictions: in advanced systems, 90-day letters of credit price near inter-bank rates; in thin markets, collateral and margins surge (BIS/CGFS, 2014).

On the SCF side, Chapter 6 emphasizes that TF and SCF are complementary. TF helps goods and services cross borders safely; SCF keeps inputs flowing inside multi-tier networks. Technology and legal upgrades have enabled banks to internationalize domestic factoring/ reverse-factoring programmes for MNEs, but “deep-tier” financing remains the frontier: surveys show only 0.5% of trade in some Mekong economies is supported by SCF from local institutions (WTO and IFC, 2023). Even in Mexico, where SCF is relatively developed and the Nafin platform highlighted in this Chapter has helped bring SMEs into formal liquidity channels, \$12 billion of SCF in 2023 supported barely 1% of total trade, highly concentrated among three banks and anchor MNEs.

Digital trade finance platforms are beginning to compress these frictions – e-invoicing, e-KYC, digitized documents and risk-scoring reduce processing times and expand eligibility. Despite advances, limited progress in producing interoperable international standards for trade, including electronic trade documentation, hinder such systems’ efficacy. Furthermore, Chapter 6’s identified constraints (lack of collateral, weak enforcement, foreign exchange scarcity and lack of bank scale) still limit uptake in many markets; digital rails cannot outrun analogue institutions and cash-dominated economies.

While artificial intelligence (AI) and automation hold exciting productivity potential, financial market development and liquidity optimization across borders will be equally important in ensuring these gains can be realized.

We have also seen growth in green and sustainability-linked loans (SLL) in recent years, accounting for roughly 10% of the global total in 2024 (Natixis CIB, 2025). For boards and CFOs, the share of green borrowing is becoming a key performance indicator in its own right – not only for investor signalling, but because it unlocks customer access and compresses financing costs across the chain, with potentially lower yields of green bonds seen as the attractive “greenium” from a borrower’s perspective (Pohl et al., 2023).

However, SMEs and businesses in emerging markets still face verification and data hurdles that can elevate capital costs (BIS, 2021; EBA, 2023). Eligibility for buyer programmes, SCF limits and margin discounts increasingly hinge on verifiable environmental, social and governance (ESG) metrics. Credit and data-infrastructure gaps mean many otherwise competitive firms cannot produce the verifiable metrics that open doors to green credit lines. Without verifiable ESG data, suppliers face smaller SCF limits, tighter collateral requirements or higher margins – raising capital costs. This shows how the same institutional and developmental constraints that depress TF/SCF access also shape who can join higher-value GVC nodes.

Overall, the strategic outlook for FDI, TF and SCF’s role in GVCs is significant and warrants further study insofar as it can assist economic development. The message from this Chapter is clear for businesses and the policymakers who wish to support them: participation and upgrading in GVCs depends on co-optimizing financial structures and liquidity flows, including readily adapting to the finance-driven geography of investment.

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Box 6.5: continued

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Note: This box was authored by Daniel Cowen MBE, Trade & Investment Lead, Greater China, World Economic Forum. The views expressed are those of the author and do not necessarily reflect those of the affiliated institutions.

6.4 Concluding Remarks

This chapter has argued that the global economy operates through a dual-capital architecture in which FDI provides the structure and TF/SCF provides the motion of production. Foreign direct investment and trade finance have traditionally been studied as separate instruments in the global economic toolkit, one long-term and strategic, the other short-term and transactional. Yet the evidence presented in this chapter suggests a more unified perspective: these two forms of capital flow operate not in isolation but in concert, serving as complementary facilitators of globalization and GVC integration. One sets out the structural foundations for cross-border production; the other enables the continuous exchange of goods, services and intermediate inputs that sustain those very linkages.

Throughout our analysis, a consistent theme appears: FDI and TF reinforce one another in expanding firm-level participation in global markets. For SMEs, the availability of working capital through trade finance can be transformative, but its benefits are magnified in environments where FDI has already created upstream or downstream linkages. Whether acting as suppliers to multinational affiliates or distributors of foreign-

invested goods, SMEs are better able to leverage financing when embedded in broader investment ecosystems. In this sense, FDI not only brings capital and know-how, but also anchors value chain participation that makes TF more productive.

Conversely, the developmental impact of FDI itself is shaped by the financial environment into which it arrives. Our empirical results show that FDI-driven technology upgrading is more likely to occur in countries that are already capital-import intensive, that is, economies with the trade infrastructure and liquidity systems capable of absorbing sophisticated inputs. Without adequate access to finance importing machinery, R&D or intermediate goods, the knowledge embodied in foreign investment may fail to diffuse across local firms. Trade finance, in other words, is a critical enabler of absorptive capacity, particularly in sectors where upgrading depends on timely access to frontier technologies.

These insights carry direct implications for policy. The successful integration into GVCs requires more than liberalized trade and investment regimes; it demands a dual strategy that targets both long-term productive investment and short-term liquidity provision. Efforts to attract FDI – through industrial policy, investment promotion or treaty reform – must be accompanied by interventions that improve access to trade finance, especially for especially firms lacking collateral, scale or financial literacy. Similarly, reforms that strengthen banking systems, deepen capital markets and promote digital TF platforms can expand the pool of firms ready to benefit from FDI linkages.

In a global economy marked by heightened geopolitical risk, reconfiguration of supply chains and tightening credit conditions, the complementarities between FDI and trade finance become even more important. They are not merely coexisting instruments, they are mutually reinforcing pillars of economic integration. A resilient globalization strategy, therefore, must treat them as part of a coordinated financial architecture: one that supports the entry, survival and upgrading of firms in the evolving landscape of global production multiplier.

The preceding analysis has shown how liquidity, credit and investment together form the layered financial architecture of GVCs. Trade and supply chain finance sustain operational continuity, while FDI establishes the structural capital base that anchors production networks. Yet financial depth alone does not ensure upgrading or resilience. The ability of economies to convert financial inflows into productive transformation depends on how firms absorb, adapt and apply new technologies. These technological capabilities, ranging from digitalization and automation to process innovation and intangible capital, determine how value is created and distributed along GVCs.

The next chapter shifts from finance to technology, examining how participation in GVCs enables diffusion of knowledge, productivity convergence and skill development, while also revealing persistent asymmetries across firms, sectors and regions. Building on the layered resilience framework developed here, Chapter 7 argues that while finance and investment are necessary enablers, long-term competitiveness and inclusiveness ultimately depend on innovation ecosystems and the capacity to transform knowledge into sustained productivity gains.

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Annex 6.1: Methodological Notes for Chapter 6

This annex provides the formulation and implementation details for the Richmond centrality measure applied to global FDI networks. Richmond centrality was originally introduced by Richmond (2019) for trade flows, and we adapt it here to capture the structural features of bilateral FDI stock relationships.

Original Richmond centrality (Trade)

In its original formulation, Richmond centrality measures the importance of a country in the global trade network, weighting bilateral trade flows by both the size and the connectivity of partner countries. The basic formulation is:

$$TradeCentrality_{it} = \sum_{j \neq i} \left(\frac{Trade_{ijt}}{GDP_{it} + GDP_{jt}} \times s_{jt}^{Trade} \right)$$

Here, $Trade_{ijt}$ denotes the bilateral trade flow between countries i and j , GDP_{it} and GDP_{jt} are their respective GDPs, and s_{jt}^{Trade} represents the share of country j in total world exports.

Modified Richmond centrality (FDI Stock)

To adapt this framework for FDI, we construct a stock-based centrality measure that reflects the persistence and long-term nature of investment positions. The modified formula is:

$$FDICentrality_{it} = \sum_{j \neq i} \left(\frac{FDIStock_{ijt}^{Total}}{GDP_{it} + GDP_{jt}} \times s_{jt}^{FDI} \right)$$

Here, $FDIStock_{ijt}^{Total}$ is the bilateral outward FDI stock between i and j , while s_{jt}^{FDI} is the share of country j in global outward FDI stock. This highlights how systemic importance depends not only on direct ties but also on connections to globally significant capital exporters.

Richmond centrality provides a way to think about influence in networks beyond direct link strength. For trade, it highlights how being connected to a globally important exporter confers additional systemic importance. Our adaptation for FDI preserves this idea but adjusts it to the unique characteristics of capital stocks: persistence, long-term relationships and the role of MNE structures. The result is a measure that captures the evolving architecture of global FDI, distinguishing between productive capital linkages and financial flows routed through offshore centres.

Box 6.A.1: Illustrating Trade vs. FDI Centrality with a Simple Example

To illustrate the mechanics of the Richmond centrality framework, consider a stylized global economy with three countries: A, B and C.

- Country A is a large economy with GDP of \$10 trillion.
- Countries B and C are medium-sized, each with GDP of \$5 trillion.
-

Trade Example

Suppose the bilateral trade flows are as follows:

- A exports \$500 billion to B and \$500 billion to C.
- B and C each export \$100 billion to A, but trade little with each other.

In this case, A has high trade centrality not only because of the absolute size of its flows, but also because its partners B and C together account for a large share of global trade. B and C, by contrast, are less central, as their trade is concentrated with a single partner.

FDI Example

Now consider FDI stocks:

- A holds \$1 trillion of outward FDI in B and \$1 trillion in C.
- B and C each hold \$50 billion in A, but both channel \$500 billion through each other as financial conduits.
- Here, the centrality picture shifts. While A remains important due to the absolute size of its outward FDI, the intense bilateral FDI ties between B and C – despite their modest GDPs – push them to the centre of the FDI network. Their role as conduits amplifies their systemic importance, even if their real economic activity is smaller.

Implications

This example shows why the Richmond centrality measure, when applied to FDI stocks, highlights financial hubs and conduits (such as Luxembourg, Singapore or the Netherlands) that do not always appear central in trade. In practice, these hubs often owe their prominence not to large-scale domestic production, but to their role in facilitating and re-routing multinational investment flows.