

Climbing up global value chains: Leveraging FDI for economic development

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Key messages

1. FDI leveraged through a GVC lens can transform economies

Global Value Chains (GVCs) account for half of global trade. As GVC participation is increasing across sectors, it is a crucial driver of development. Underpinning this rise is the fragmentation of production, with intermediate goods and services now core to global trade.

Multinational enterprises and their foreign direct investment (FDI) are the key actors to leverage this change. By helping local economies move into higher value-added parts of a value chain – the process of upgrading – FDI can be transformative. Upgrading can take many forms, depending on the foundations and trajectory of an economy. Understanding an economy's position in GVCs strengthens its opportunities to climb up the value chain.

2. Asian economies face significant opportunities

In Asia, trade in intermediate goods and services is often more regionalized than trade in final goods. The report's empirical analysis shows that most Asian economies interact and participate with GVCs in different ways. Due to their economic make up, some have many forward linkages, and the exports are transformed into products further along the value chain. Others have backwards linkages and focus on assembly of goods created elsewhere. As each national or subnational strategy will differ, there is no 'best' way to leverage FDI for development.

3. Understanding FDI drivers at the subnational level expands opportunities

To strategically couple an economy's assets with those desired by the investors, consider engaging at the subnational level. The closer decisionmakers are to local firms and workers, the better they can develop the sought-after micro specialisms. This matching of local characteristics with a firm's needs enables quality FDI and can lead to better outcomes, as the area can capture more value-added from economic activity.

4. Deliver with a GVC sensitive approach

GVC-sensitive policies are crucial to ensure workers, firms, and markets benefit from the international economy. Evidence shows value chain-orientated industrial policies were key in nearly all cases of upgrading across developing economies. However, being GVC-sensitive will mean different things to different regions. It partly depends on the segment of the value chains they link to and their characteristics. Taking a GVC-sensitive approach will ensure policy targets match and aid economic development.

5. Leverage horizontal and vertical public policy

Public policy is critical in delivering this approach and climbing up global value chains. Horizontal engagement, such as connectivity through hard infrastructure or standards, and vertical engagement, such as investment promotion agencies, are important in fulfilling the potential of FDI. Depending on the targets for development and specialization, these public policies should be used in different combinations.

1. Introduction

Bangalore's success is due in part to policies that are sensitive to international developments and global value chains (GVCs), and make the most of dynamic specialization and foreign direct investment (FDI).

Coordinated development: the case of Bangalore

In 1898, Bangalore suffered from a plague epidemic that claimed nearly 3,500 lives.¹ The outbreak was the catalyst for a remake of the city's sanitation system. Telephone lines – the modern technology of the time – were laid down to connect the city and enable the coordination of aid operations.

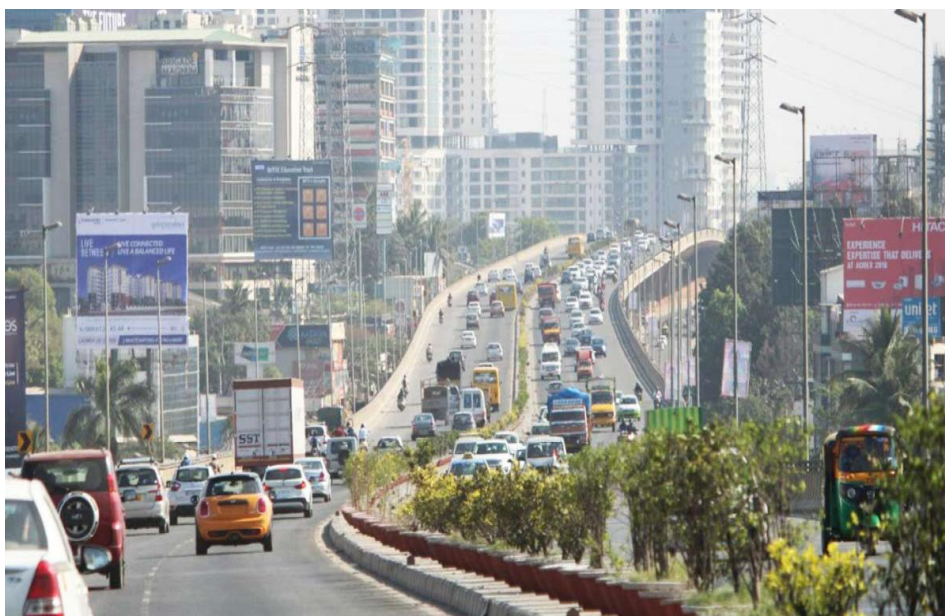
A century later, Bangalore is still leveraging the modern technology of the time to connect and coordinate. But those telephone lines have been succeeded by information technology and Bangalore is now dubbed as the 'Silicon Valley' of India. The result: the city's 12 million residents produce US\$110 billion of gross domestic product. Its current estimated growth rate of 10% – one of the world's fastest – far outstrips the rest of India.

Bangalore's trajectory leverages many of the stories, successes, and underlying statistics of this report. The city owes its success in part to policies that are sensitive to international developments and global value chains (GVCs), and it makes the most of dynamic specialization and foreign direct investment (FDI). The two key factors – GVCs and FDI – create an ecosystem that enables 'upgrading'.

To drive supportive policies, the region leveraged the potential of multi-level development agencies, which changed form as the region developed. Change started with the establishment in 1949 of the Bangalore City Corporation, now known as the Bengaluru Mahanagara Palike. In 1976, further coordinated action for policy change was constituted by the government of Karnataka and the Bangalore Development Authority.² In 1985, the city's rapid expansion led to the establishment of the Bangalore Metropolitan Regional Development Authority, an autonomous body tasked with planning, co-ordinating and supervising development.

The region also leveraged its unique geography and local specificities. Dubbed 'the Garden City of India', Bangalore's public parks and pleasant climate attract talent, including in the knowledge and services sector.³ In 1909, the Indian Institute of Science was established, and it played a central role in the city's development as a hub for science and research.⁴ Rail links also connected the city with local and international markets.

With these foundations in place, Bangalore continued to specialize, finding niches for local companies to promote their comparative advantages. This started with a strong industrial base fostered by the coordinated development. In the 1960s and 1970s, Bangalore's manufacturing base continued to expand, with the establishment of private companies such as Motor Industries Company (MICO), whose manufacturing plant was the city's first major international engagement and an early example of 'upgrading'. MICO was a subsidiary of Germany engineering and technology giant Robert Bosch GmbH. What started as a manufacturing investment became a critical technical centre for the company, one that offers advanced solutions to India's automotives industry.



Bangalore's success is due in part to policies that are sensitive to international developments and global value chains (GVCs), and make the most of dynamic specialization and FDI.

Decisionmakers understood the potential of Bangalore. In 1985, Texas Instruments became the first multinational corporation to set up a subsidiary in Bangalore for designing semiconductors and integrated circuits. The Bangalore center is now the Regional Head Office for South Asia and the company is heavily involved in high value-added activities such as digital design. This represents upgrading through FDI.

The narrative took some intriguing turns. In 1998, whole classes from the Institute of Technology seemingly emigrated to Silicon Valley.⁵ But when many of these engineers returned to Bangalore, they brought knowledge otherwise unavailable in India, subsequently driving the next stage of the city's development.

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That dynamic has brought us to present day Bangalore. The initial specialization started by the likes of Texas Instruments has developed further into more advanced products – for example, semiconductors and biotechnology – and services such as software design. The region leveraged internationalization, now manifest as global value chains, as well as dynamic specialization and 'upgrading' through FDI to deliver for its citizens.

Making the most of FDI and global value chains

Following Bangalore's precedence, the reconfiguration of FDI networks and GVCs offer much promise to other cities and regions in Asia. This report sets out to build a wider evidence base for tackling the opportunities and challenges related to this reconfiguration.

By offering a critical review of existing scholarly and policy literature on GVCs and upgrading in Asia, we present in a systematic and critical manner the nature and evolution of GVCs, and their link to FDI and economic development. It also uncovers the role of different types of firms and regions.

Second, the report unveils the heterogeneous subnational geography of GVC functions and the links between GVC indicators and regional indicators based on FDI.

Lastly, in light of the conceptual and empirical gaps identified in the qualitative and quantitative discussions, the report sketches a policy framework designed to guide and orientate debates and public policies in Asia.

Key findings

What have we learned from the report that is helpful for internationalization and economic development policies in Asia?

First, the report offers a unique stock-taking and critical presentation of quantitative and qualitative material on global value chains in Asia. This exercise forms a helpful stepping stone for additional research, and a compass for policymakers tasked with fostering trade and FDI. The report contributes to the reframing of debates in the region and prompts a consideration of the link between FDI and economic development in a broader framework, such as that of GVCs and upgrading.

The report unveils gaps that need to be addressed by national statistical offices and international organisations, and unveils the importance of the subnational and region dimension of GVCs and FDI.

Second, the report unveils fundamental knowledge gaps. The report has used the most advanced and updated data for the investigation of GVC and FDI trajectories in Asia, and this offers a helpful reference point for scholarly and policy debates. However, the exercise unveils gaps that need to be addressed by national statistical offices and international organisations. In addition, the report has highlighted the importance of the subnational dimension of GVCs and FDI, which requires further investigation. The identification of these gaps is critical for developing policies oriented to GVCs and upgrading.

Third, the report links the critical stock-taking of the literature and the analysis of cutting-edge indicators with the development of an original policy framework. We offer the framework, conceptually and logically grounded in literature and data, to policymakers at all levels to guide a perspective of the potential benefits of leveraging GVCs for local development.

2. GVCs, FDI, upgrading, and growth

To climb the global value chain, it is important to understand its development and present an overview of theory and evidence. It is also crucial to understand the potential benefits and implications of global value chains, foreign direct investment, and the process of upgrading.

Global value chains, intermediate goods, and services

In 2019, GVCs had grown to account for almost 50% of global trade. In 2013, emerging economies struck a milestone: flourishing GVCs led to intermediate goods exports exceeding the total of final and capital goods exports.

Global value chains refer to the organisation of international production across borders by numerous different actors. GVCs result in goods and services produced or delivered “in a number of stages in a number of locations, adding a little bit of value at each stage”.⁶ In 2019, GVCs had grown to account for almost 50% of global trade.⁷ The increasing power of GVCs is evidenced in almost all sectors. From 1995 to 2011, all sectors except the textile industry increased GVC participation.⁸

The global fragmentation of production has led to intermediate goods and services gaining importance along with goods and services for final consumption. These ‘intermediates’ are now core to global trade. More than half of the world’s manufactured imports are now intermediate goods. In addition, more than 70% of the world’s services imports are intermediate services.⁹

These contributions are significant. In 2013, emerging economies struck a milestone: flourishing GVCs led to intermediate goods exports exceeding the total of final and capital goods exports.¹⁰ This increase sheds light on a new challenge faced by countries and regions – to ensure that they are trading in relevant value-added sections of the value chain. The global fragmentation of production offers



Some unique LMICs are shifting their participation in GVCs to an increasing number of higher value-added tasks. By moving up the value chain, they begin the process of upgrading.

new opportunities to countries seeking participation in the internationalized economy: They can race to the top rather than compete in a race to the bottom.

There is no typical or one size fits all approach to GVCs; potentially, different countries engage in different ways. For example, high-income countries (HICs) mostly export intermediate products into GVCs, which are typically in high-value stages such as design or research & development (R&D). HICs also act as demand for final goods and services.

Some lower-middle income countries are shifting their participation in GVCs to an increasing number of higher value-added tasks such as design and marketing – climbing the value chain and ‘upgrading’.

Lower-and-middle income countries (LMICs) are focused on the assembly stage of the value chain, which typically require lower skills and less value-added. Yet some unique LMICs are shifting their participation in GVCs to an increasing number of higher value-added tasks. These manufacturing hubs are beginning to climb the value chain, moving away from the assembly of final goods towards the design or marketing of immediate goods.¹¹ By moving up the value chain, they begin the process of upgrading.

This process of upgrading or climbing the value chain is the focus of this report. Upgrading enables local producers to move into progressively higher value segments of the industries in which the country (or region) has expertise and develop micro specialisms to compete internationally.

Subnational public policy and investment

Despite its importance, the process of upgrading via GVCs is often neglected at subnational or regional discussions and analysis. Both within academic and public policy analysis, approaches to GVCs poorly account for local socio-economic characteristics, which they refer to as ‘spatially neutral’. However, GVCs ultimately connect or touch down at the regional level.¹² While national-level analysis is important, many potential merits and demerits become hidden due to national aggregation. And with respect to upgrading, much of the potential in value-added is at the subnational level. Put simply, regions are often well placed to develop the micro specialisms necessary for effectively climbing the value chain. These regional factors make it possible to build, embed, and reshape value chain segments and link them into higher value-added parts of the value chains.

GVCs ultimately connect or touch down at the regional level, and many potential merits and demerits become hidden due to national aggregation. Much of the potential in value-added is at the subnational level.

Currently, not all regions engage actively with GVCs. Because it is not automatic to benefit from GVCs, difficulties or inequalities can arise.¹³ The extent of benefits also vary, depending on whether a region operates in low or high value-added parts of the value chain – and if the choices reflect their comparative advantage. Hence this paper focuses on subnational public policy.

Multinational enterprises and FDI

The multinational enterprise (MNE) is a key actor in GVCs. Also known as lead firms, MNEs manage the complexity and diversity of GVCs. They also direct the chain’s value addition and distribution, which is achieved by governing global-scale supplier networks and making investment decisions. Such decisions – for example, concerning the outsourcing of low value-added activities – influence where GVCs are established. To understand the structure, extent, and impact of GVCs, the role of the lead firm is critical.

MNEs exercise their command of GVCs as buyers and producers. In buyer-driven GVCs, MNEs coordinate multiple producers, often through design and marketing functions for retailing and branding. Such a dynamic is common, for example, in

If multinational enterprises are the governing actors, FDI is their controlling arm. It is crucial for decision makers to better leverage investment flows to build, embed, and reshape GVCs that can deliver change.

the agriculture or garment sector, where large wholesalers coordinate the orders of retailers and distributors. While entry costs for producers in these sectors are low, power and value creation are typically concentrated with the buyers.

In producer-driven GVCs, MNEs serve as key producers able to afford high entry costs and coordinate a variety of suppliers who provide input for production. This form of GVC organisation is common in industries such as the automotive or pharmaceutical sector, characterised by significant economies of scale and technological sophistication in production. With supplier driven decisions, those that vertically integrate with MNEs are of interest, as they allow MNEs to control and coordinate activities.¹⁴ Some level of equity – such as, FDI – is necessary to achieve this integration. If MNEs are the governing actors, FDI is their controlling arm. It is crucial for national and regional policymakers to know how to better leverage investment flows to build, embed, and reshape GVCs that can deliver change within their geographies.

FDI interacts powerfully and uniquely with upgrading. According to a seminal study of upgrading which compares factors such as investment freedom, services trade, regulatory restrictiveness, and FDI inflows, FDI had the largest effect on economic upgrading through GVCs.¹⁵ When viewed through an upgrading lens, FDI becomes more than an injection of foreign capital. FDI becomes a tool to deliver significant outcomes, such as moving into higher value-added parts of a value chain.

The lens of upgrading is also key in adopting a bottom-up view of investment, to balance the often top-down approach driven by MNEs.



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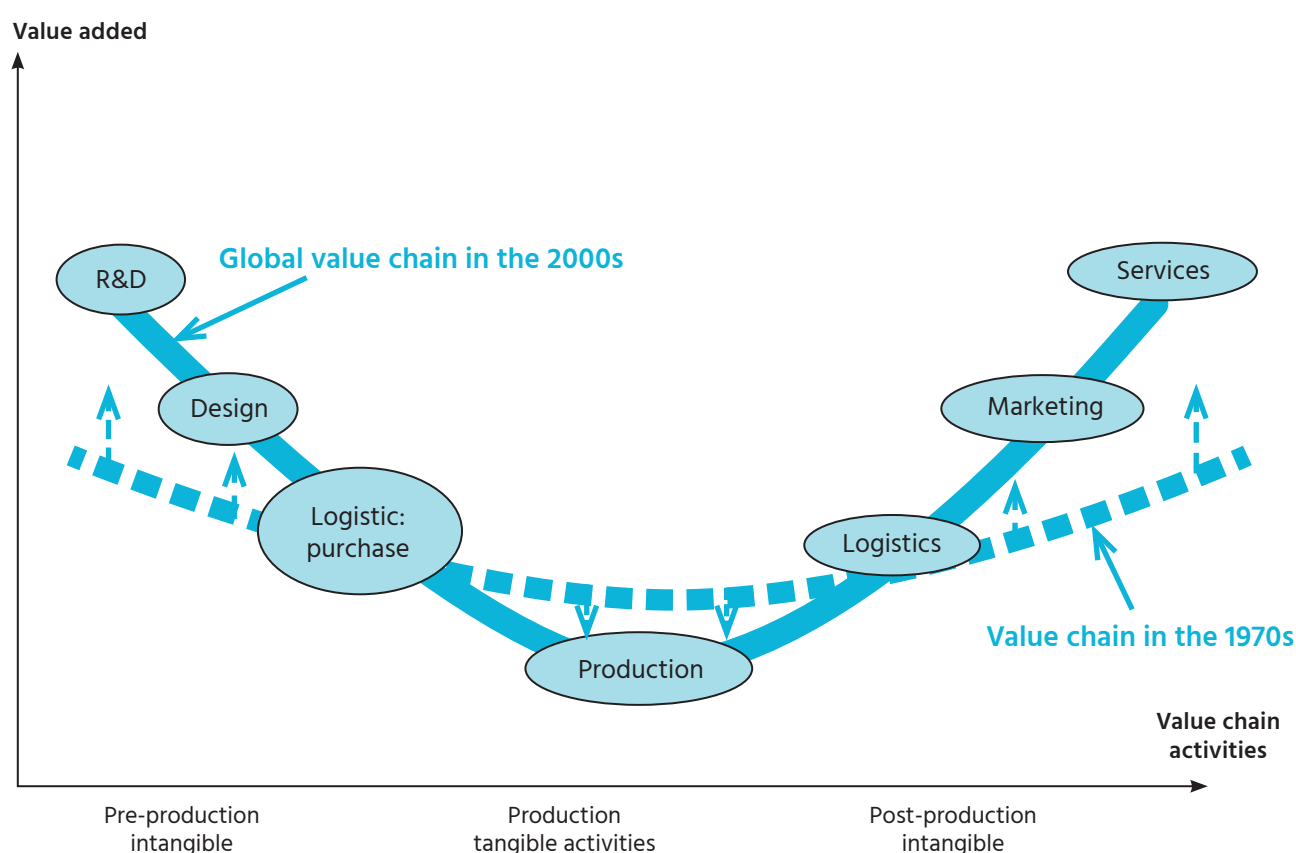
The smile curve stipulates that value generation is highest and concentrated at the early stage and the late stage of a production process, including pre- and post-production.

The smile curve of value creation

Central to the integrated approach of GVC-sensitive policies is the smile curve – a useful concept for understanding an economy's position in value-added and its opportunity to move up. The underlying theory of the smile curve stipulates that value generation is highest and concentrated at the early stage and the late stage of a production process, including pre- and post-production (see Figure 1 below). Initially proposed in the 1990s by Stan Shih, then CEO of personal computer manufacturer Acer, the curve served to highlight the role of manufacturers and, by showing their presence in the middle and least profitable segment of the value chain, encourage change.¹⁶

The smile curve has been empirically tested and grounded since inception.¹⁷ In 2015, a study of 2 million firms in the European Union found that, due to the stronger skills needed to deliver the tasks, the early and late stages of supply chains do generate higher value-added. Specifically, pre-production generates around 60 cents of created value and 53 cents of created value per Euro of sold production. In contrast, production – specifically of intermediate inputs – generates only 35 cents.¹⁸ Here, the notion of moving up the value chain is critical. An economy that is participating in production can explore other tasks that drive more domestic value-added.

Figure 1 – The smiling curve of value added



Source: OECD (2013). Interconnected Economies, OECD.

Smile curves are evolving. Some smiles are more crooked than others. Most smiles are getting much deeper.

Two recent insights about the smile curve are particularly relevant for public policy. First, some smiles are more crooked than others. Second, most smiles are getting much deeper. With respect to crookedness, the smiles of some industries are not perfectly U in shape; witness the examples of China's and Mexico's chains for electrical products.¹⁹ Different industries in different countries may generate more or less value in different sections of the chain.

With respect to smile depth, this change reflects higher relative value-add at each of the smile's ends; this is also known as deepened vertical specialization. In some cases, the smiles are getting wider, highlighting expanding cross-border fragmentation of production with more intermediate goods over time.²⁰

The smile curve is a useful framework to understand China's positioning. The country may be the "world's workshop", but much of its work is in producing products designed and developed elsewhere.²¹ Countries can gain some of this pre- or post- production value-added. Indeed, some countries do.

Evidence from 1995 to 2011 shows some countries are upgrading towards either end of the smile. Others are reducing value-added and moving towards the centre of the smile. For example, Cambodia has moved increasingly into assembly, with higher amounts of foreign value-added in final goods. In contrast, Vietnam has witnessed large reductions in the amount of foreign value-added in final goods. Researchers project that the latter may soon catch up with local competitors regarding their GVC position.²²

Benefits of global integration through GVCs

GVCs reflect a connected global economy and should be engaged with. Research shows that it is *"not only a matter of whether to participate in the global economy, but how to do so gainfully."*²³

Connectivity is key for gainful engagement with GVCs and achieved through openness to trade and investment with well-functioning markets. For OECD economies, increasing openness by 1% leads to a 0.4% increase in per capita income.

Openness and connectivity to drive value-added and development

Connectivity is key for gainful engagement with GVCs, and this interactivity is achieved through openness to trade and investment with well-functioning markets – all foundational for upgrading.²⁴ Related studies show that, for OECD economies, increasing openness by 1% leads to a 0.4% increase in per capita income.²⁵ For Southeast Asia specifically, similar liberalisation of FDI in services is shown to be positively associated with increasing productivity and upgrading. These benefits are expected to occur predominantly in downstream manufacturing, with local SMEs in particular benefitting.²⁶

This connectivity and openness are not always evident in Asia. The GVC and FDI policies of some Southeast Asian nations are quite restrictive. In some countries, legislative foreign equity restrictions may be inhibiting FDI flows, despite evidence showing an association between more FDI inflows and higher openness across the ASEAN region. In the case of Vietnam, increasing openness saw a higher increase in FDI stock as a percentage of GDP.²⁷ Compared to regional peers, the country changed from one of the most restricted to FDI, to one of the most open. One useful change was the revision of the Law on Investment policy, which restricted the ability of the central and subnational government to issue regulations on investment. This change removed uncertainty and overlapping or contradictory legislation.²⁸

Vietnam is not a unique case. Globally, countries that choose to integrate with the international economy see economic benefit, particularly in upgrading, or increased domestic value-added. Evidence from an OECD country study, which includes Japan and South Korea, showed that a 10% increase in openness led to an 0.7% increase in domestic value-added. Similarly, a country sample of the World Input Output Database (including Japan, South Korea, Indonesia, India, and Taiwan) shows a similarly positive increase of 0.4% in domestic value-added gains as global integration increases.²⁹

GVCs are particularly important in lower middle-income countries where firms can use their comparative advantage to concentrate on one specific part of the production process rather build the whole of production.

In addition to increasing value-added, GVCs are, on aggregate, drivers of development. This is particularly important for firms in lower middle-income countries, where firms can use their comparative advantage to concentrate on one specific part of the production process rather build the whole of production, from design through manufacturing and logistics.³⁰ Such a targeted application makes global economic participation possible. Regional decisionmakers can advance this comparative advantage through active public policy and investments. Sub-national comparative advantages (also referred to as micro specialisms) may, for example, be based on low energy costs that subsequently allow lower costs for capital production or promote a citizenry skilled in a particular set of tasks.

At its core, the GVC lens with upgrading is a useful route for development and can help lagging regions to catch up. Leveraging GVCs through the lead firms provides a unique learning opportunity for developing regions and countries.³¹ For example, technology transfer disseminates technology from one person or organisation to another, and knowledge spill-over emerges from organisation sharing of ideas. Both can stimulate local learning, as has been the case in East Asia.³²

By generating employment, GVCs also advance development. While difficult to generalize, intermediate exports and final goods generated employment as firms became suppliers or assemblers within global value chains.³³ This generation was at different extents depending on economic makeup and size, and driven by two



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factors. Firstly, increases in demand for goods drove employment. Secondly, this was somewhat offset by increases in labour productivity. Although in some cases there is declining GVC participation, employment growth has been stable or increased since 2008.³⁴ In short, building a connection with a GVC creates more opportunities.³⁵ Consider, for example, call centre operations in the Philippines and India, apparel production in Vietnam, or automobile and auto-parts production in Thailand.

Resilience to shocks

Contrary to popular belief, GVCs are often resilient to shocks and have shown relative strength despite the Covid-19 pandemic. Although under pressure during lockdowns, their interconnected nature offered a ‘stickiness’ with their high fixed costs and considerable economies of scale, ultimately restricting the feasibility of short-term reactions.³⁶

Furthermore, despite the rhetoric around reshoring supply chains, action has been limited. A recent survey in the US found that 71% of the 346 firms surveyed had no plans to re-shore any production. Only 4% planned to do so, with the remaining respondents seeking to lower wage production in other countries in Asia.³⁷

When compared to other trade options, the task-by-task international division of labour displayed higher resilience and robustness compared to other trade transactions. Given evidence of robustness during similar crisis, namely the Global Financial Crisis and the Fukuyama earthquake, this is unsurprising.³⁸ Some exceptions are notable, particularly related to sensitive technologies such as those requiring semi-conductors or rare earth metals. Regions with comparative advantages in these sensitive sectors should map their GVC and upgrading intention differently.

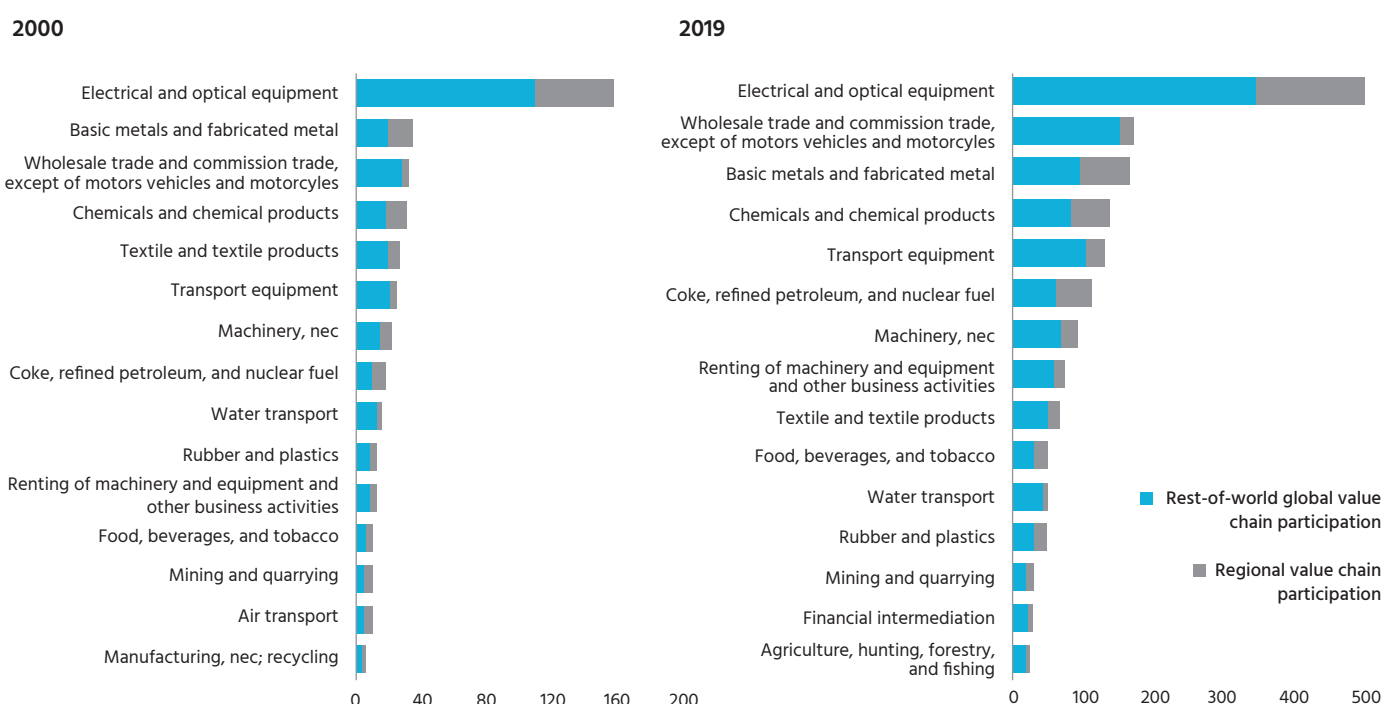
A unique opportunity for Asia

Many countries in Asia are uniquely positioned to leverage GVCs to a greater extent, including through the new Regional Comprehensive Economic Partnership (RCEP) between ASEAN countries, China, South Korea, Japan, Australia, and New Zealand. The resulting significant trade liberalisation is expected to cement Asia’s place at the centre of many regional value chains and encourage direct investment.³⁹ Similarly, the new ASEAN Investment Facilitation Framework adopted by member countries in October 2021 allows and encourages ASEAN countries to capture opportunities presented by shifts in GVCs.⁴⁰ Capturing this opportunity is explicit in some national level strategies such as Rebuild PH (Philippines), which seeks to integrate high-value products into GVCs.

These continental partnerships could be powerful stimulants for GVCs, particularly since trade in intermediate goods and services is often more regionalized than final goods. As such, economic unions such as ASEAN are critical units for analysis. Furthermore, MNEs in ‘global south’ hubs such as India increasingly drive knowledge production and innovation from technology transfer.⁴¹

This benefit to the region can be attributed to traditional trade in final goods networks, often dominated by economic giants such as Germany, China, and the United States. Countering this dynamic are GVC trade networks which are far more regionalized than trade in final goods and often lead to regional value chains (RVCs), which typically involve only regional production partners close in geography.⁴² As highlighted in the figure below, some industries have

The new ASEAN Investment Facilitation Framework adopted by member countries in October 2021 allows and encourages ASEAN countries to capture opportunities presented by shifts in GVCs.

Figure 2 – ASEAN+3: Top 15 sectors with highest GVC participation, 2019 (billions, US\$)

Source: Asian Development Bank; and AMRO staff calculations

stronger RVC links than others. These industries – for example, the manufacture of electrical and optical equipment sector, which have progressively upgraded in GVC participation – see the strongest RVC contribution. South-south trade will only further drive benefits to Asia.⁴³ If inter-regional benefit is sought, then prioritising infrastructure investment where RVC participation is strong and growing should enhance local upgrading.

MNEs and FDI governing global integration

MNEs and their controlling arm FDI account for large stocks of investment in developing countries. By 2019, openness to FDI had led to an accumulated stock of US\$ 11.3 trillion in developing countries⁴⁴ – a figure amounting to US\$1,730 of capital investment by MNEs for each citizen in developing countries.⁴⁵

While this is significant, attitudes towards FDI are changing as policymakers seek quality over quantity. Governments do not want more FDI, they want better FDI.⁴⁶ ASEAN is increasingly prescribing to the view that FDI should be aligned with development goals – both those that are nationally determined and those determined by the Sustainable Development Goals.⁴⁷

Yet as a driver of global integration, FDI is under pressure and has fallen. The decline preceded the Covid-19 pandemic, which led to a dramatic reduction of FDI. Estimates ranged from a 34% fall⁴⁸ to as much as a 42% drop in annual inflows.⁴⁹ The ASEAN region has survived relatively well compared to global averages, with

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The recovery of FDI remains uncertain. While FDI surged by almost 90% in 2021, rising above pre-pandemic levels, it is unclear if this rise includes the return of postponed projects or completely new investments.

‘only’ a 25% reduction.⁵⁰ The recovery of FDI remains uncertain. While FDI surged by almost 90% in 2021, rising above pre-pandemic levels,⁵¹ it is unclear if this rise includes the return of postponed projects or completely new investments.⁵² The effects are uneven, with mergers and acquisitions in emerging and developing countries also exceeding pre-pandemic levels but greenfield investment remaining subdued.⁵³

A resumption of FDI does not negate the importance of a GVC-sensitive strategy. Positive experience from the Republic of Korea proves the usefulness of public policy sensitive to GVCs. The country boosted international interactions through FDI, which fostered domestic innovation and learning capacity – raising opportunities for upgrading. In contrast, public policy in Brazil settled for attracting FDI without an explicit strategy for GVC integration.⁵⁴ The country has no policy for how it could learn from the knowledge associated with its FDI flows. In addition, there is no explicit strategy to facilitate the matching of investors with host environments, or embedding the new subsidiary into the host economy. Innovation suffered as a result and consequently, Brazil missed out on the potential for upgrading.

Harnessing sustainable gains with upgrading

Upgrading is central to efforts to harness the gains from trade.⁵⁵ Upgrading enables local producers to move into progressively higher value segments of the industries in which the country or region has expertise. It can be measured qualitatively; for example, through understanding socio-economic consequences illustrated by case studies. It can be measured quantitatively; for example, through the amount of higher value-added FDI entering a sector. Thus, FDI is a key tool for upgrading.

Forms and approaches of upgrading

Upgrading occurs in many different forms; distinguishing the different types is the initial step for directing future analysis.

Horizontal upgrading accounts for the first type of upgrading and refers to the development of a new GVC product or industry in a region related to an existing GVC. For example, the manufacturing of mobile phones may follow from the existing production of laptops.

If horizontal upgrading describes a movement from laptop production to mobile phone manufacturing, vertical upgrading describes the movement from mobile phone production to mobile phone design.

Horizontal upgrading includes three frameworks for upgrading. Chain or inter-sectoral upgrading⁵⁶ refers to firms moving into new but related industries. Entry into the supply chain upgrading⁵⁷ specifies the inaugural participation of firms in a local, regional, or global value chain. In end market upgrading, firms move into more sophisticated markets which require new or more demanding standards.⁵⁸

The second type of upgrading is vertical upgrading, which offers a new function for the manufacturers; for example, R&D, or marketing, logistics, headquarters management, and perhaps production in an existing value chain. If horizontal upgrading describes a movement from laptop production to mobile phone manufacturing, vertical upgrading describes the movement from mobile phone production to mobile phone design.

Four frameworks⁵⁹ fit within vertical upgrading. Process upgrading refers to firms and workers transforming inputs to outputs more efficiently. Product upgrading refers to firms and workers moving into more sophisticated product lines. In functional upgrading, firms and workers increase the skill content of tasks.

While national-scale evidence shows that horizontal upgrading is less difficult to achieve than vertical upgrading, there is substantial variation across industries and economies.

Meanwhile, in backward linkages upgrading, local firms become active in an industry supplying goods and services to an MNE in a foreign country already engaged in an existing value chain. Depending on which upgrading route is sought, there is an inherent trade-off. While national-scale evidence shows that horizontal upgrading is less difficult to achieve than vertical upgrading, there is substantial variation across industries and economies.⁶⁰

For all types of vertical or horizontal upgrading, the increase in skills or complexity is critical to driving development.⁶¹ Upgrading at the subnational level occurs with the introduction of new tasks or products that are more complex than are currently undertaken. Regions that can carry out more complex tasks, especially in manufacturing sectors, benefit from GVCs.⁶²

Co-directionality of upgrading

The types of linkages and the direction of upgrading is important to consider. With respect to vertical linkages, regions can upgrade through forward and backward linkages. Forward linkages, also known as downstream linkages, refer to upgrading with firms further along the value chain; that is, firms closer to final goods or eventual export. Backward linkages, also known as upstream linkages, refer to linkages closer to suppliers or initial goods, or the creation of services. Upgrading does not necessarily mean moving upstream or downstream. Rather, it is the process of climbing up the value chain. This co-directionality is detailed further in the below case study.

Upgrading does not necessarily mean moving upstream or downstream. Rather, it is the process of climbing up the value chain.

The concept of upgrading and its process can be summarised as, “firms, countries, or regions moving to higher value activities in GVCs in order to increase the benefits (e.g. security, profits, value-added, capabilities) from participating in global production.”⁶³ Arguably, because upgrading drives non-patenting innovation, developing regions and countries can leverage upgrading as a development strategy. It sees a region innovate, although it removes the tie to patenting. By participating in more profitable tasks that are more sophisticated or complex in nature, regions can add more value and catch up with the technological frontier.



For all types of upgrading, the increase in skills or complexity is critical to driving development.

CASE STUDY 1

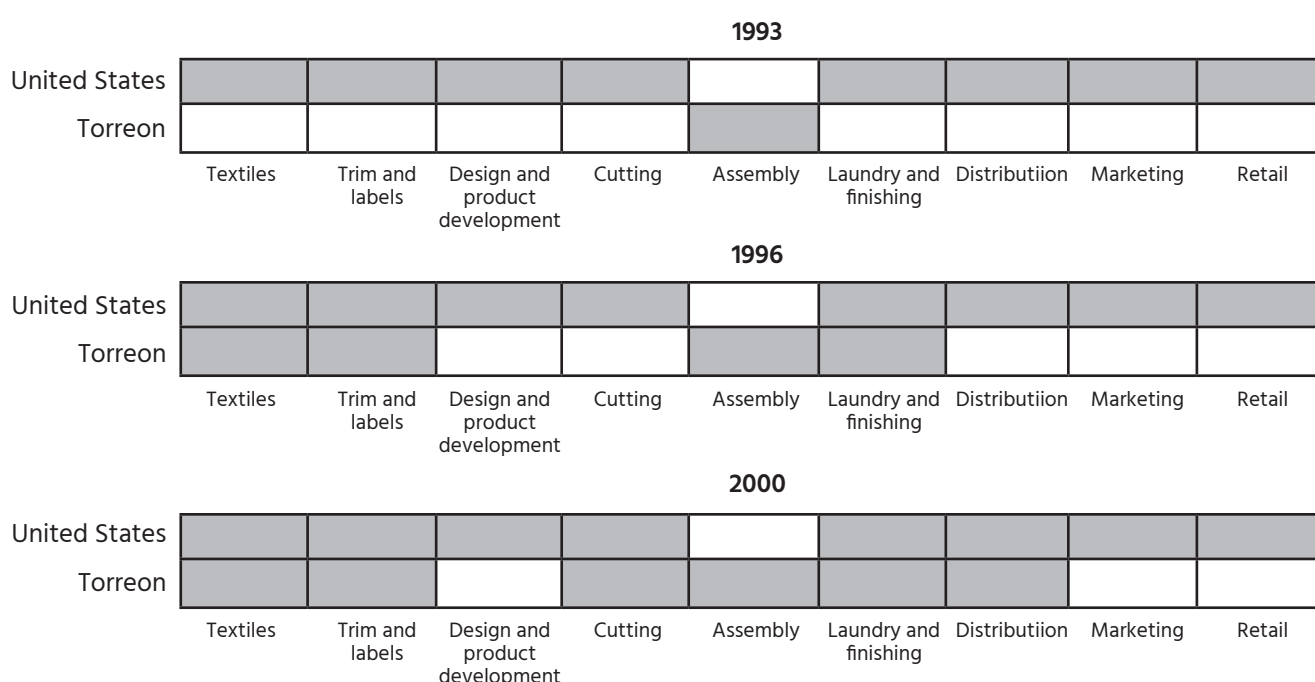
Co-directionality of upgrading in practice: producing jeans in Torreon, Mexico⁶⁴

The jeans production cluster in Torreon, Mexico highlights how a region can upgrade both forward (downstream) and backward (upstream). In 1993, Torreon primarily engaged in the low-value activities of assembly production. Yet, Figure 3 illustrates that the region became involved with both downstream and upstream activities as it advanced in upgrading. In 1996, the region gained more value-added by expanding into the production of textiles and trims – this is an example of upstream upgrading. These inputs into the assembly process increase upstream value-added and is an example of vertical upgrading, specifically product and functional upgrading.

On the downstream side, the region gained value-added from distribution. In apparel GVCs, distribution is typically associated with higher-value activities, requiring more skilled input and knowledge intensive tasks. This is in contrast to raw material transportation, and production of fibres, trim or finishing. The region gained knowledge of distribution from the MNEs that sought full-package solutions and strived to obtain them from local suppliers. Firms often invested in skills training for workers to achieve this new relative complexity. This post-production activity is an example of vertical functional upgrading through forward linkages.

Figure 3 – Upgrading in Torreon

Source: Bair, J. and G. Gereffi (2001). "Local clusters in global chains: the causes and consequences of export dynamism in Torreon's blue jeans industry." *World development* 29(11): 1885-1903.



To fully leverage and benefit from upgrading, regional policymakers must alter the way in which they see or target growth and innovation.

Changing the development paradigm

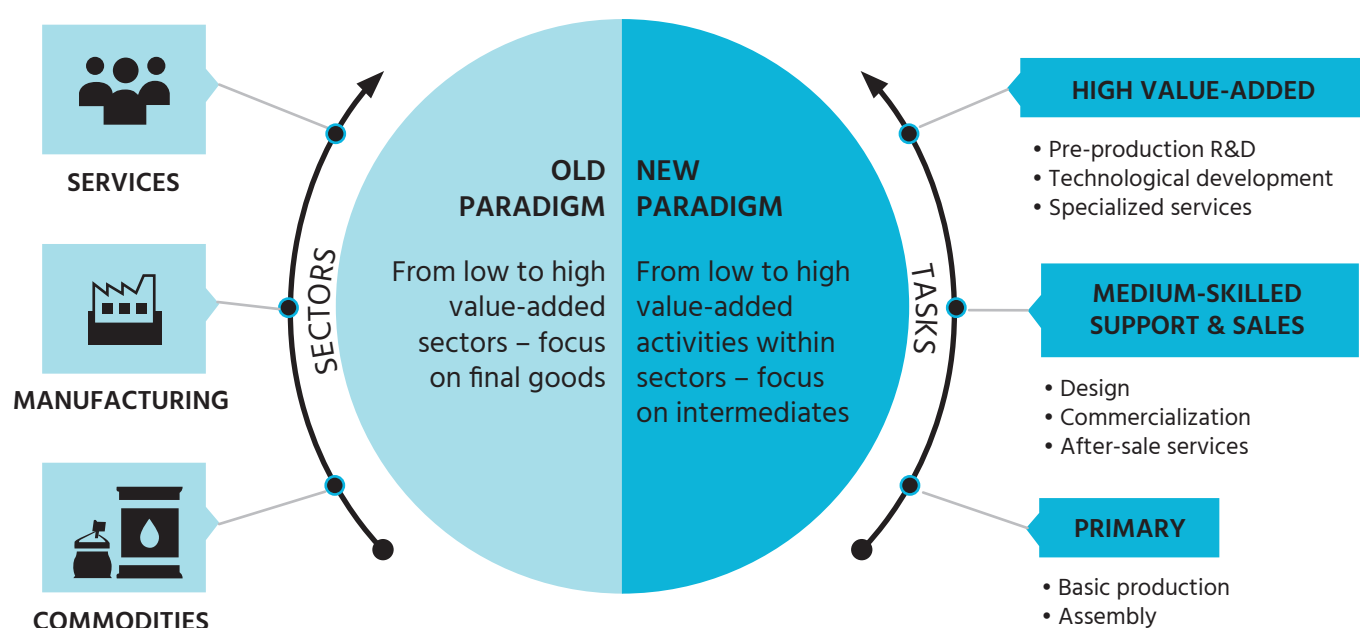
To fully leverage and benefit from upgrading, regional policymakers must alter the way in which they see or target growth and innovation. This means shifting from the old paradigm – that is, focusing on moving from low to high value-added sectors with an emphasis on final goods and services – to the new paradigm, which accentuates moving from low to high value-added activities or tasks within sectors, with a focus on intermediate goods and services.⁶⁵

Figure 4 highlights this paradigm shift. The old paradigm sought moving from agriculture to manufacturing. In contrast, the new paradigm seeks moving from basic production or assembly to design, commercialisation, and eventually pre-production R&D or technological development.

With this paradigm shift, upgrading offers an alternative or complementary development pathway – one that is centred on tasks instead of structural and sectoral change. The new paradigm attempts to move local economic activity onto more complicated tasks in which a region or city has an existing advantage. Understanding and finding this advantage explains the criticality of focusing on the local context, as each region will have a specific trajectory and comparative advantage to leverage for development. Well-functioning regions leveraging micro specialisms translate into national gain.

The new paradigm also benefits from a slight change in actors to drive the development process. A certain amount of strategic coupling is required to harness sustainable gains from upgrading. Strategic coupling refers to, “the dynamic processes through which actors in cities and/or regions coordinate, mediate, and arbitrage strategic interests between local actors and their

Figure 4 – The new paradigm: value-added sectors to value-added tasks



Source: Taglioni, D. and D. Winkler (2016). Making global value chains work for development, The World Bank.

*counterparts in the global economy.*⁶⁶ At the regional level, this includes local actors and institutions such as business associations and labour unions who shape regional assets such as socio-economic characteristics or relationships.⁶⁷ Local policymakers should consider these regional assets and see which lead firms in GVCs seek such features. In so doing, local actors and global investors are matched, creating the pre-conditions of a more durable connection and more fruitful local interactions.

It is critical in strategic coupling to ensure a region does not become dependent on their lead firm partner(s). Such a dynamic may lead to 'lock in',⁶⁹ which occurs when a region may be unable to change its structure or economic path due to its ties with other powerful actors.

Similarly, lead firms should provide input into the local agenda. Together, the strategic needs of MNEs and the regional assets can interact and evolve together in dynamic fashion.⁶⁸ However, it is critical in strategic coupling to ensure a region does not become dependent on their lead firm partner(s). Such a dynamic may lead to 'lock in',⁶⁹ which occurs when a region may be unable to change its structure or economic path due to its ties with powerful actors.

Implications for skills, innovation, institutions, and economic growth

Successful upgrading needs certain requirements to be in place. These necessities are broadly defined as an economy's absorptive capacity – the ability of its firms and other economic agents to recognise, assimilate, and apply new information. Studies show that, for the benefits of upgrading to materialize beyond the boundaries of individual firms involved in GVCs, certain levels of infrastructure, economic development, and human capital must be met. Through their investment, the lead firm plays a key role.

Consider the example of China. From 1992 to 2012, host regions and local environments there had to meet a certain threshold of three factors – infrastructure, development, and human capital – in order for received FDI to benefit from productivity.⁷⁰ Similarly, this threshold effect was found in a study taking place from 2003 to 2007. For FDI to improve local productivity, it required some local economic development, human capital, and infrastructure – and improvements jumped when an area witnessed a higher bound of these characteristics.⁷¹ In addition to human capital and infrastructure, openness also influences the ability of local economies to benefit from technological spillovers associated with FDI.⁷²

A region's absorptive capacity to benefit from FDI is important in high-tech industries. If the local firms do not have capacity, they will be unable to bridge the information gap and lose out to competition effects.

A region's capacity to benefit from FDI is particularly important in high technology industries. If the local firms do not have capacity, they will be unable to bridge the information gap with high-capacity firms. Instead of learning, these firms will lose out to competition effects.⁷³ Education, particularly at the tertiary level, is one means to reduce this gap and helps the capacity of regions to benefit more from FDI. Some of this impact can be attributed to the spill-over benefits of FDI reaching firms and workers beyond the targeted beneficiaries.⁷⁴

With some exception, there is regional variation with respect to absorptive capacity. Chapter 6 details the role of public policy and investment and evidences the need to deliver effective horizontal public policy, such as the importance of building a region's digital assets in order to receive the transferred technological advantage for upgrading.⁷⁵ It also evidences the need to deliver effective vertical public policy, such as the importance of the home country of the investor. For example, China only saw positive FDI benefits from MNEs from OECD countries, and not from investment from Hong Kong, Taiwan, or Macau.⁷⁶ Similarly other characteristics, such as the motivations for investing and the type of FDI, can affect the magnitude of impact.⁷⁷

If the right engagement is struck with GVCs and regional assets are correctly matched, upgrading can boost economic productivity and help countries to escape the middle-income trap. Many middle-income countries remain trapped in low-complexity states; only a select few, such as Taiwan and the Republic of Korea, have been successful in overcoming the trap.

If the right engagement is struck with GVCs and regional assets are correctly matched, upgrading can boost economic productivity and help countries to escape the middle-income trap. Many middle-income countries remain trapped in low-complexity states; only a select few, such as Taiwan and the Republic of Korea, have been successful in overcoming the trap.⁷⁸ Successful escapees promoted local skills or regional assets, and leveraged international knowledge sources.⁷⁹

What matters in breaking through the middle-income trap is smart industrial policy – one that looks beyond the gravitation towards simple products and focuses instead on higher value-added products to transform the economy. Particularly for lower middle-income countries, the explosion of GVCs represents important channels for industrial development and its requisite access to knowledge.⁸⁰ There are risks associated with such industrial policies, for example regions can become locked into low value-added manufacturing tasks, merely replicating difficulties associated with low value added commodities.⁸¹ Overcoming these risks requires dynamic specialization.

Furthermore, it can depend on whether MNEs act as conduits for technology diffusion for local firms or use in-house production and their own suppliers; this would limit the opportunities of local suppliers to expand their knowledge.⁸² To counter these risks and the potential of lock-in, many call for vigorous action from central and subnational governments.⁸³



A region's absorptive capacity to benefit from FDI is particularly important in high technology industries. If the local firms do not have capacity, they will be unable to bridge the information gap with high-capacity firms.

3. Asia's role in GVCs and upgrading through FDI

Overview

The following section documents the progress of the main economies of Asia⁸⁴ in upgrading through FDI and GVCs at the national and subnational level, with a highlight on FDI related to R&D and innovation. Using indicators on GVC participation and FDI location and function until 2018,⁸⁵ we present a timescale that is in line with available data and avoids major variation in trends caused by the Covid-19 pandemic.

More specifically, the descriptive quantitative analysis underpinning the conceptual and policy framework will cover the following aspects:

- The participation and position of national economies in GVCs: backward and forward linkages (current position and evolution from 2005 to 2015);
- The composition of total value-added in final demand (manufacturing and services);
- The role of foreign affiliates;
- The sourcing structure of foreign affiliates and their geography.

This part of the analysis is based on the elaboration of OECD Tiva and A-MNE indicators as well as World Bank indicators.

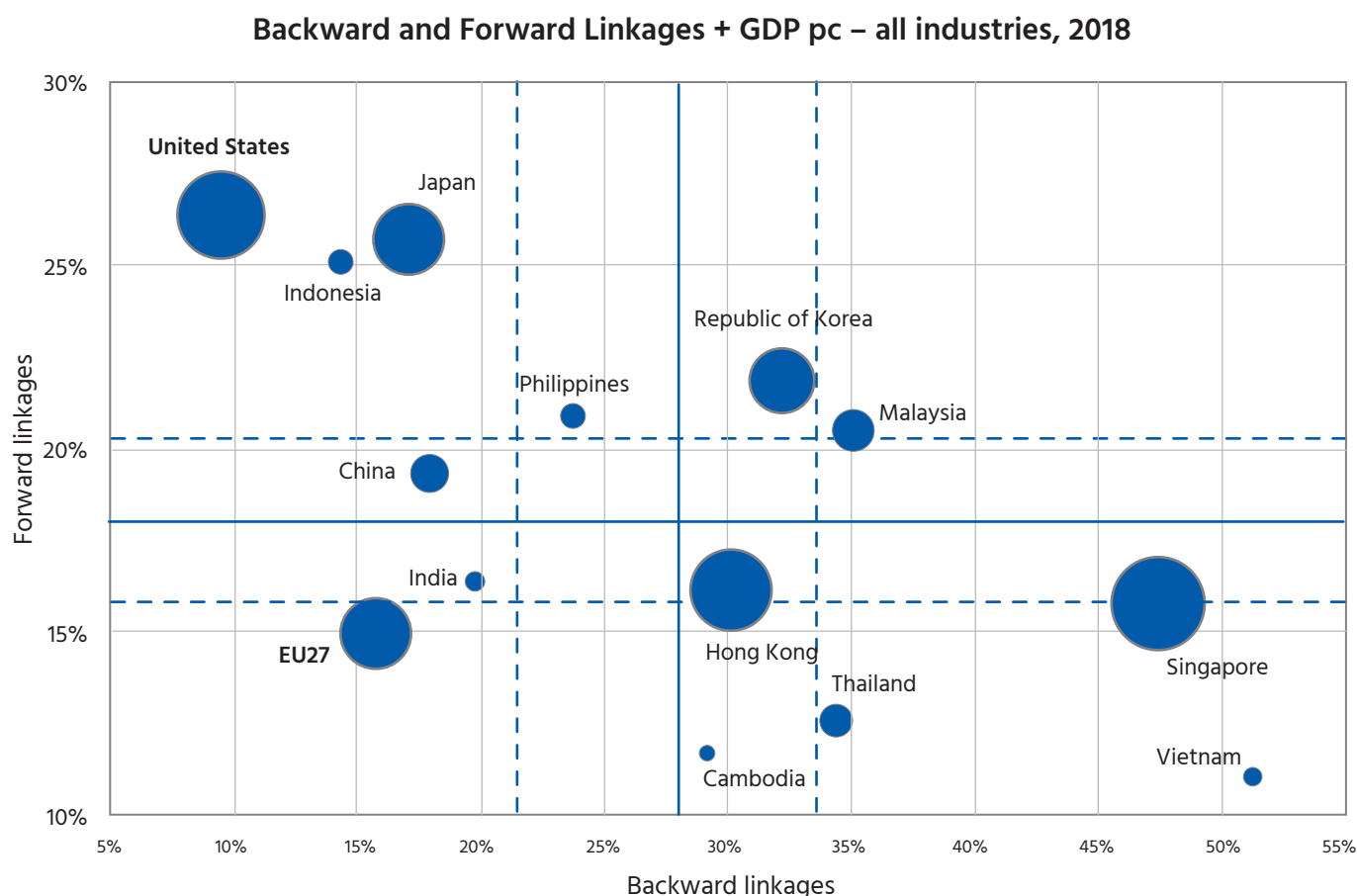
- The participation and position of subnational regions into GVCs through FDI,
- Mapping of total FDI (inward and outward) by subnational region, and
- Mapping of total FDI by GVC stage (HQ, R&D, sales, production, logistics & distribution - level and change over time).

This part of the analysis will be based on the elaboration of FDI Markets Indicators from the Financial Times.

Participation and position of national economies in GVCs

Participation in GVCs can be visualised through backward and forward integration. Backward integration is captured by the country's vertical specialisation share, measured by the import content of the country's exports. A country also participates as a supplier of inputs used in foreign countries' exports. Hence it is important to account the share of exported goods and services used as intermediate inputs in other countries' exports (forward integration).⁸⁶ The combination of these two offers a first description of an economy's participation in GVCs. This contribution is both as a user of foreign inputs – upstream links, that of backward participation – and as a producer of intermediate goods and services used in other countries' exports; that is, downstream links, that of forward participation.

Figure 5 shows the position of a set of Asian economies covered by the OECD Tiva indicators in terms of backward⁸⁷ and forward linkages for all industries.⁸⁸ The blue lines mark the countries' average for each variable and the dashed lines represent the standard deviation of the sample from the group average. The United States and the European Union (EU27) are included as benchmarks.

Figure 5 – Productivity and GVC participation, 2018

Source: Author's elaboration based on OECD and World Bank data.

Notes: Average values (blue lines) are for all the countries in the chart (Asian economies, EU27, and US). The dashed blue lines identify the standard deviations from the average for backward and forward linkages. The size of the dots is proportional to each country's GDP pc in 2018.

To enable countries to upgrade, it is important to understand a country's placement on its respective value chains and to where it wants to move. There is considerable variation in country approaches and there is not one single model of GVC participation.

Economies with larger internal markets and higher levels of domestic value addition show generally balanced levels of both backward and forward integration.

For example, the US contributes a lot of value to the exports of other economies, with significant forward linkages exporting domestically created value. This forward integration is in part due to well-developed internal suppliers and large domestic markets. With lower GDP per capita than the United States, Indonesia has similarly large forward linkages compared to backward ones. Its dynamic is also a consequence of an economy comprised of primary or natural resource goods – palm oil, liquified natural gas, steel – transformed as inputs in further goods and services exports elsewhere.

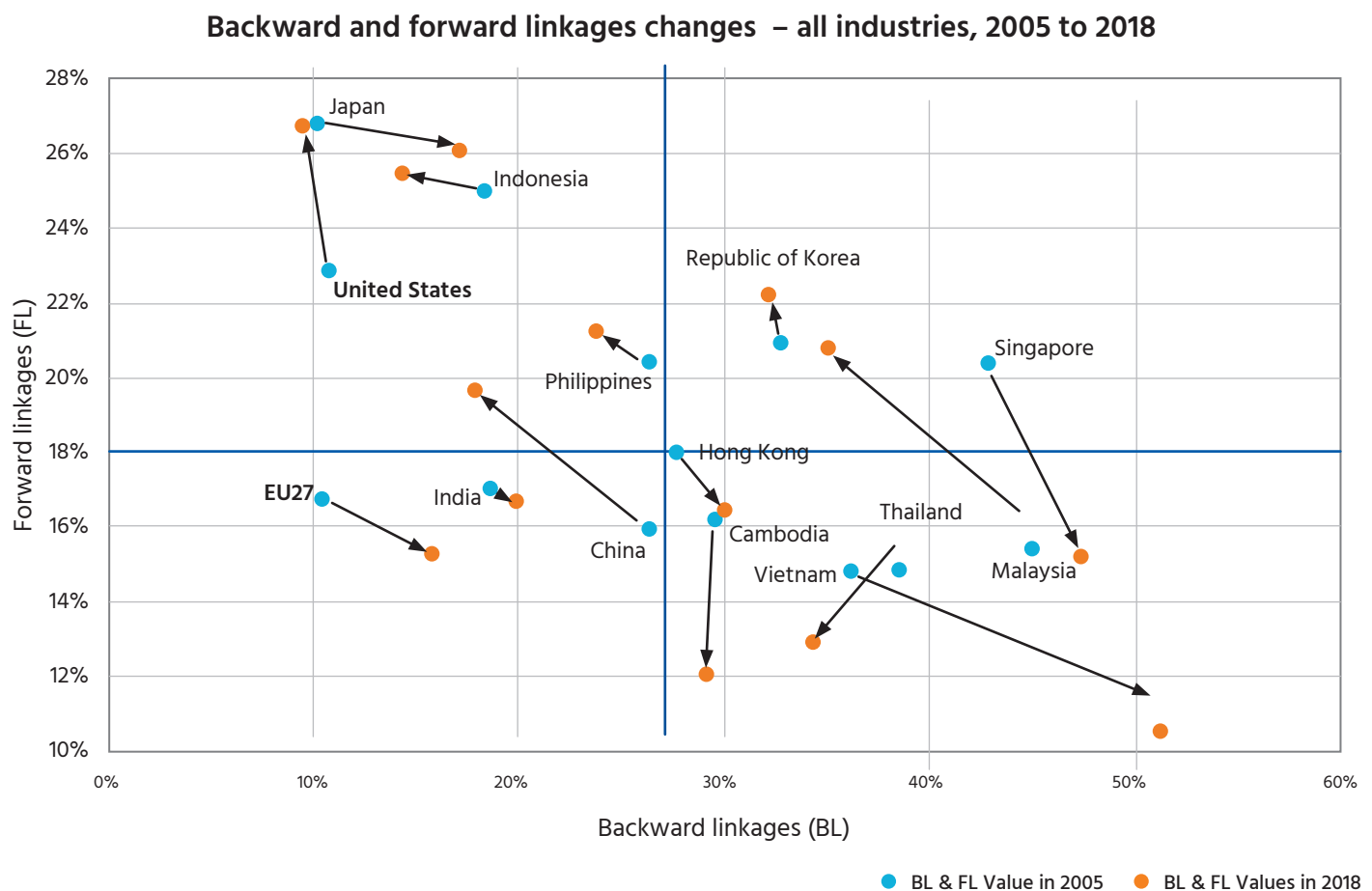
Economies with larger internal markets and higher levels of domestic value addition show generally balanced levels of both backward and forward integration. In contrast, the EU27 is less orientated for forward linkages, with less

value further exported to other countries. In the case of the EU, activity is within its boundaries. For comparison, countries such as China and India have broadly similar GVC positions as the average EU27 member.

A diversified set of economies shows relatively high foreign value-added in domestic exports and low domestic contribution to other countries' exports of intermediates.

This group includes two different sets of economies. The first set comprises of high productivity countries, as indicated by higher GDP per capita but with small internal markets; this category includes Hong Kong and the Republic of Korea. These economies rely heavily on imported intermediate goods for their own exports, which are mostly oriented towards final consumption. Hence, their contribution to the value of other economies' exports is low. Singapore, the most extreme example of this group, is a transshipment port for goods imported, stored, and traded to be exported again. Often, much of the value exported has been generated elsewhere.

Figure 6 – Changes in GVC participation, 2005 to 2018



Source: Author's elaboration based on OECD data.

Note: Average values (blue lines) are for all the countries in the chart (Asian economies, EU27 and US). The blue dots show the values in 2005; the orange dots in 2018; arrow highlights the direction of the change between the two periods.

On the other hand, the diagram includes typically lower-productivity economies, as proxied by GDP per capita, such as the Philippines, Cambodia, Malaysia, and Thailand. Due to their lower levels of technological sophistication, these economies show a limited domestic value-addition. Most of their exports' value comes from imported inputs. They either assemble for final consumption or, when they produce intermediates, their value addition remains low.

Vietnam represents another extreme. Similarly, the country has large backward linkages, but very limited forward linkages. These backward linkages highlight the high share of value in goods and services exported which can be accounted by intermediate imports. This relatively high amount is due to Vietnam's economic model remaining led by FDI but focused on final-stage assembly tasks that depend on imports.⁸⁹ These exports are primarily broadcasting equipment to United States and telephones to China and South Korea.

With respect to the smile curve outlined in Chapter 4, these economies are at the bottom of the smile in low value-added tasks. In comparative terms, the position of these economies resembles that of many Central and Eastern European Countries. There, backward GVC integration is influenced by the extended presence of MNEs from advanced economies, reflecting their supply chains and associated intra-firm trade that account for a large share of their imports.

Changes take place over time in the GVC position of the economies, as Figure 5 shows. Backward and forward integration in 2005, represented by the blue dot, is compared with the current position, shown by 2018's orange dot. Interestingly, no country records an increase in both backward and forward linkages over this period. This evidence is in line with evidence on 'global stagnation' of GVCs that predates the Covid-19 crisis.

Thailand – and, to a lesser extent, Cambodia – has decreased its shares in both measures of GVC participation; both have become generally less integrated over the past decade.

On the contrary, Thailand – and, to a lesser extent, Cambodia – has decreased its shares in both measures of GVC participation; both have become generally less integrated over the past decade. As discussed in Chapter 1, GVC participation facilitates economic development. Subsequently, these countries may be losing out by decreasing shares. Public policy can help to reverse this outcome.

Another group of countries – comprised of China, Indonesia, Malaysia, the Philippines, and the Republic of Korea - increased their forward linkages while decreasing backward linkages. The economies in this group all rely less on imported value-added for their own exports but are increasingly relevant in value-generation in countries importing the intermediate goods they produce. For example, the significant movement recorded by Malaysia might reflect its shift towards automobile component manufacturing, as inputs into final car construction, or the increase in oil and gas exports, as inputs into petroleum products. Similarly, it reflects the shift into high-tech, with semi-conductor devices and electrical products all inputting into mobile devices, storage devices, and photovoltaic panels.

Japan, Hong Kong, Singapore, and, more marginally, India showed a drop in forward linkages while increasing their backward linkages. Vietnam makes a considerable movement towards the bottom right corner, that being a larger share of backward linkages compared to forward linkages. This could be due to increases in the tasks for final-stage assembly. Each country will be competing and trading on different comparative advantages; therefore, there is no ideal GVC

direction with increases or decreases in linkages important to consider in the local context. Ideally, policymakers are making public policy and investment that are sensitive to GVCs and encourage task-based specialties.

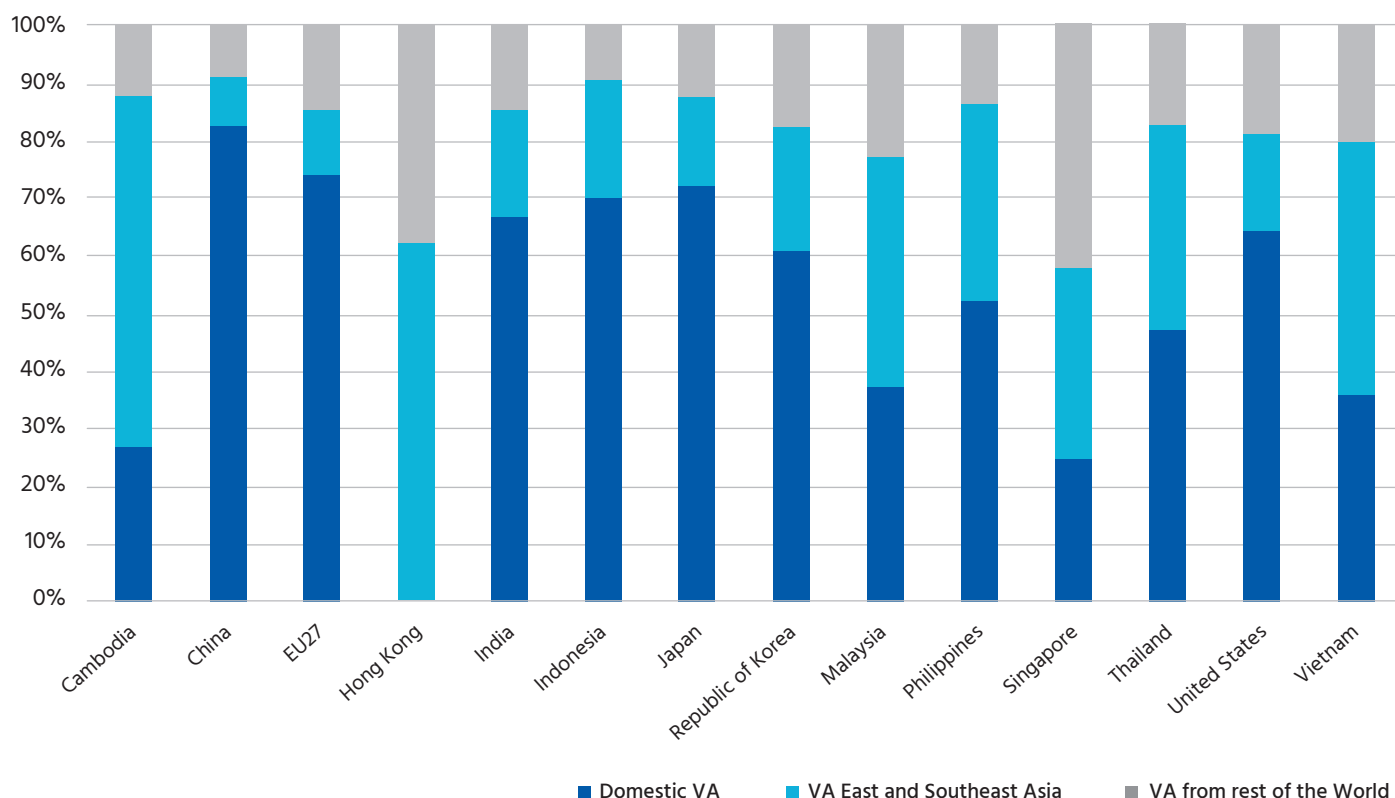
Value-added in final demand: manufacturing and services

A complementary perspective on GVC participation is offered by the composition of Total Value-Added in Final Demand. Foreign value-added embodied in a country's final demand corresponds to the share of value-added in final goods and services. Specifically, those purchased by households, governments, non-profit organisations, and as investment originating from abroad.

Relaying on TiVA indicators, Figure 7 shows the composition of total value-added in final demand for manufacturing industries in 2018 for the economies in our sample. For any given economy, the figure shows the following:

- 'Decomposition' of value-added generated by manufacturing industries⁹⁰ into domestic value-added (created in the focal country);
- Value-added from East Asia and Southeast Asia (excluding the focal country if part of East and Southeast Asia countries); and
- Value-added from the rest of the world.

Figure 7 – Composition total value added in final demand, manufacturing, 2018



Source: Author's elaboration based on OECD data.

Note: Value-added source industry same as industry of final demand (Manufacturing, TiVa code D10T33).

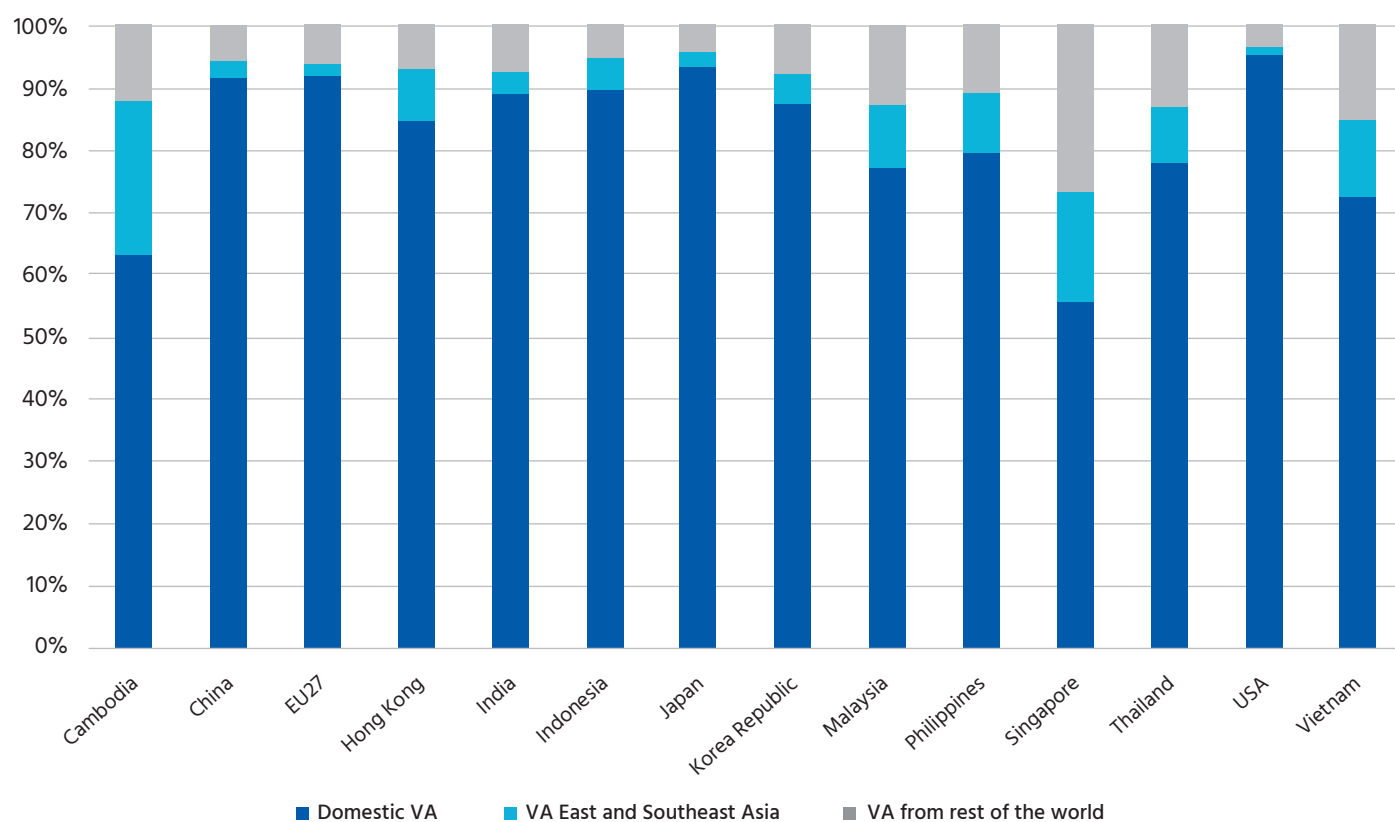
China is by far the country where value-added generated domestically has the largest shares (83%). Japan is second with a 72% share, with Indonesia (70%) and India (67%) following.

In the data, the value-added source industry is the same as the industry of final demand. As expected, China is by far the country where value-added generated domestically has the largest shares (83%). Japan is second with a 72% share, with Indonesia (70%) and India (67%) following.

Typically, larger economies tend to generate large proportions of value-added domestically, while smaller economies are more dependent on other countries. This is particularly visible in Hong Kong and Singapore, where most of the value-added in final demand is generated abroad. A strong dependency on foreign value-added, especially from East and Southeast Asia (ESEA) countries, is found in other countries, such as Cambodia (61% of value-added coming from ESEA countries), Thailand (36%), and Vietnam (44%). Larger economies notwithstanding, it is useful to understand what is driving this domestic value-added and leverage public policy options to capture more gains for upgrading. By leveraging the right specialization, capturing some of these gains could lead to foreign value-added turning to domestic value-added.

Services are a less prominent but increasingly vital part of GVCs. The international fragmentation of goods production in GVCs has been associated with outsourcing of both manufacturing and service tasks. In the United Kingdom, France, Germany,

Figure 8 – Composition total value added in final demand, services, 2018



Source: Author's elaboration based on OECD data.

Note: Value-added source industry same as industry of final demand (Services, TiVa code D45T98).

and Italy, services comprise more than half of the total value-added embodied in exports.⁹¹ Yet when compared to manufacturing, most of the value-added in final demand for services is – not surprisingly – generated domestically. **Figure 8** shows the value for the European Union and the USA as a reference.

On average, 80% of total value-added in final demand for services is generated internally, but with some significant differences between countries.

In Asia, the picture is generally similar although more diversified. On average, 80% of total value-added in final demand for services is generated internally, but with some significant differences between countries. China (91%), India (89%) and Japan (93%) all have values of domestic value-added in line with the largest economies of the EU27 (92%) and the USA (95%). Meanwhile, countries like Cambodia (62%), Malaysia (77%), Singapore (56%), Viet Nam (74%), and Thailand (78%) are more dependent on other economies.

The role of MNEs in national economies in GVCs

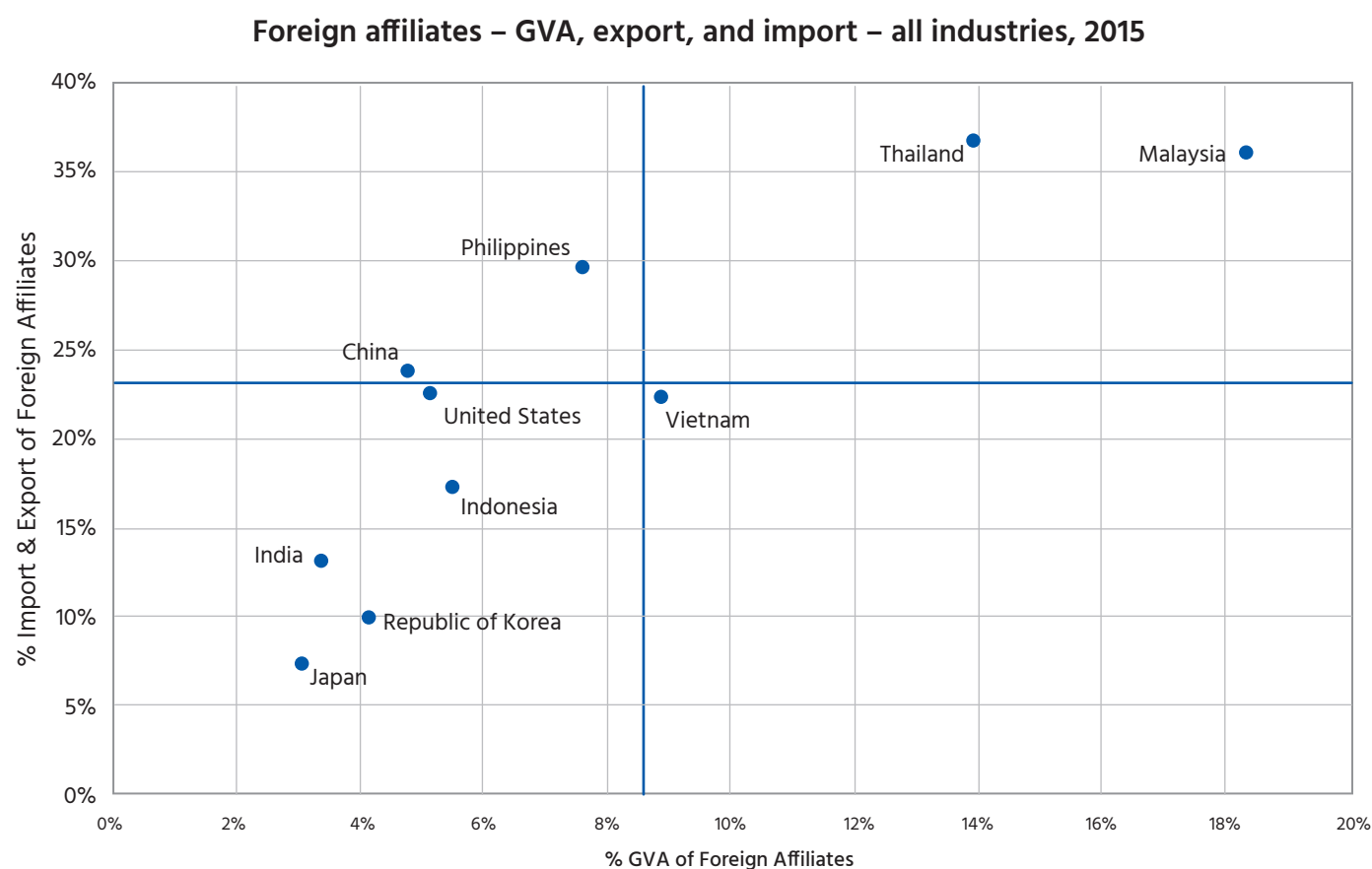
To better characterise the models of GVC participation in the region, we need to account for the role of MNEs and their affiliates. MNEs shape the extent to which domestic economies can benefit from GVCs in terms of productivity growth and innovation. MNE affiliates are relevant drivers of both exports and imports; in 2014, they were responsible for 31% and 28% of global exports and imports, respectively. These shares were higher than those of MNE headquarters – 24% and 21%, respectively.

However, due to both the structural features of the economies involved, important differences exist across countries.⁹² The organisation and management practices of MNEs also have implications. The OECD Analytical-AMNE⁹³ database makes it possible to identify the distinctive contribution of purely domestic firms, MNEs, and their foreign affiliates to global trade and production, and capture the interdependencies between trade and multinational investment in global value chains.

Low-productivity high-backward integration countries such as the Philippines, Vietnam, and Malaysia show a strong involvement of foreign MNE affiliates in their economies.

Figure 9 shows a positive relationship between the gross value-added generated by foreign affiliates and their participation in exports and imports. In other words, economies where foreign affiliates contribute more to value-added creation tend to experience a more pronounced presence of foreign affiliates in their trade flows. The low-productivity high-backward integration countries identified above – the Philippines, Vietnam, Malaysia, and Thailand – show a strong involvement of foreign MNE affiliates in their economies. This chart also sheds light on the fundamental difference in the models of GVC participation of China, India, and Indonesia. With similar levels of GVA accounted for by foreign affiliates, China's trade is significantly more influenced by the domestic activity of MNEs vis-à-vis India or Indonesia.

Conversely, both Japan and the Republic of Korea show comparatively lower percentage shares of foreign affiliates in both GVA and export and import, suggesting that their forward linkages are mostly driven by domestic producers and domestically based MNEs.

Figure 9 – The role of foreign affiliates in GVCs: the lead firm

Source: Author's own elaboration based on Analytical AMNE database

Note: Average values (blue lines) are for the countries in the chart. Hong Kong (GVA: 50%; IMP+EXP:68%) and Singapore (50%;74%) are excluded from the chart and from the averages (blue lines) as outliers.

The analysis of the sourcing structure of MNE affiliates in their host countries sheds further light on the nature of their domestic linkages and MNE involvement in domestic and global value chains.⁹⁴ Table 1 shows the sourcing structure of foreign affiliates operating in Asia present in the analytical AMNE database, for manufacturing goods. The table shows the inputs used by MNE foreign affiliates, divided into four categories – inputs obtained from domestic firms active in the same country where the foreign affiliate is operating, inputs obtained from other foreign affiliates located in the same country, inputs obtained from firms located internationally in Asia and Southeast Asia, and, finally, inputs obtained from firms active in other countries.

SMEs may product upgrade through better quality inputs that were previously unavailable locally. In Indonesia, 40% of the inputs used are produced by foreign suppliers.

This knowledge of sourcing structure is important since productivity benefits can take place through linkages between MNEs and local buyers. SMEs may product upgrade through better quality inputs, previously unavailable locally. In Indonesia, 40% of the inputs used are produced by foreign suppliers. In Lao PDR, Malaysia, the Philippines, and Viet Nam, it is still not negligible at 20%.⁹⁵

Differences emerge in the sourcing structure of foreign affiliates across the economies. The most relevant difference is linked with the difference between

China and India are in the group of lower-productivity backward-integration countries discussed above. When focusing on manufacturing, the importance of foreign affiliates in China and India is broadly comparable. However, the corresponding sourcing structure is fundamentally different. In China, foreign subsidiaries source their inputs mostly from domestic firms and other foreign affiliates located in China. In India, most of the inputs are from outside the wider region. While interesting and useful on aggregate, it is important to note these observed differences may reflect the sectoral make up of the economy as well as positioning within specific value chains. It is not necessarily an indication of local firm integration in supply chains of MNEs.

In comparatively lower productivity countries, such as those in Southeast Asia, a generally stronger prevalence of foreign affiliates in GVA is associated with a lower domestic participation in input sourcing in favour of foreign countries. A large share of inputs is sourced within the region: Malaysia (38%), the Philippines (40%), Thailand (33%), and Viet Nam (27%).

Table 1 – The sourcing structure of foreign affiliates (FA)

Manufacturing 2015					
Country	Share of GVA of FA	Sourced domestically		Sourced abroad	
		Domestic firms	Other FA	East & Southeast Asia	Other countries
China	10%	57%	7%	10%	26%
Hong Kong	51%	37%	36%	11%	15%
Indonesia	8%	39%	3%	10%	48%
India	10%	38%	4%	4%	54%
Japan	4%	63%	3%	19%	15%
Republic of Korea	6%	51%	3%	28%	19%
Malaysia	23%	32%	7%	38%	23%
Philippines	17%	36%	7%	40%	17%
Singapore	81%	10%	24%	37%	29%
Thailand	32%	29%	12%	33%	26%
Vietnam	16%	42%	3%	27%	28%
EU27	37%	28%	11%	7%	54%
USA	18%	72%	13%	5%	11%

Source: Author's own elaboration based on Analytical AMNE database

Notes: The grey shading of the cells reflects the distribution of the corresponding values – The darkest grey highlights the maximum value, the lightest the minimum and the gradient of grey is proportional to the values in range.

4. Foreign direct investment

GVCs and FDI are closely interlinked phenomena. MNEs often act as lead firms in a variety of GVC configurations. As a result, the sourcing structure of intermediate inputs by MNE subsidiaries has become the backbone for GVCs and domestic value formation.

To capture the nature, directionality, and functionality of internationalisation processes, analysis should cover both inward flows (investment in the domestic economy from other countries) and outward flows (investment projects by domestic companies in foreign economies).

Therefore, the analysis of FDI flows remains central to a comprehensive picture of the patterns of internationalisation. To capture the nature, directionality, and functionality of internationalisation processes, analysis should cover both inward flows (investment in the domestic economy from other countries) and outward flows (investment projects by domestic companies in foreign economies).

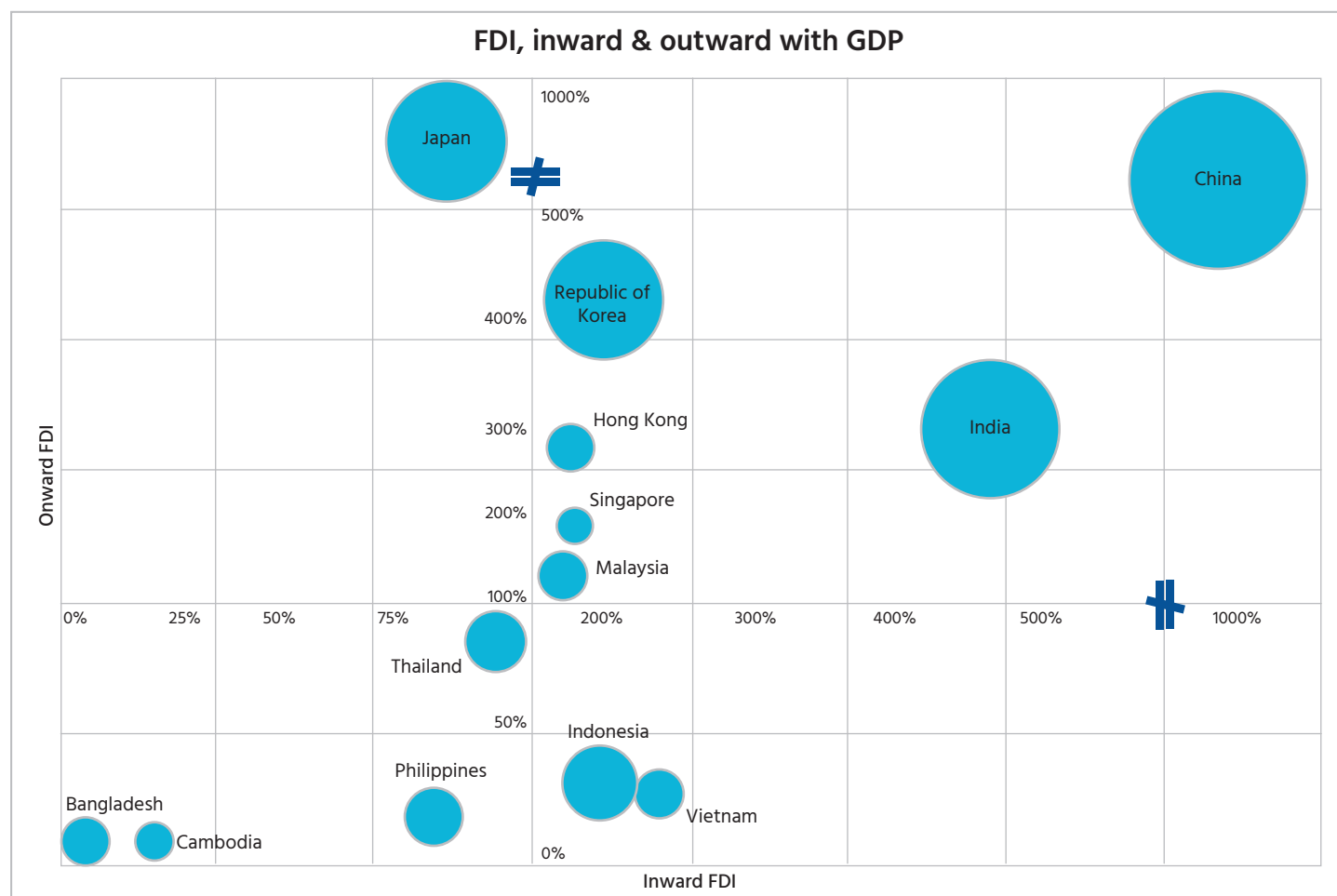
This section focuses on inward and outward greenfield FDI, highlighting the relative position of each country as an investment origin (for outward flows) and destination (for inward flows).⁹⁶ Information comes from fDiMarkets which covers cross-border greenfield investments for all countries and sectors worldwide between 2003 and 2017. The accuracy of fDiMarkets and its coherence with official statistical sources has been tested and confirmed by a consolidated literature.⁹⁷

This data source offers a two-fold advantage for the purposes of the present study. First, it enables the monitoring and tracing of individual investment projects down to the regional level, offering a coherent and integrated picture throughout the report. Second, fDiMarkets offers detailed information on the business function pursued by each investment; for example, specifying whether a new investment project is a production site vis-à-vis an R&D unit or a regional headquarters. By following this approach⁹⁸ and linking the business functions classification in fDiMarkets with identification of GVC stages⁹⁹ (based on occupations), it is possible to associate each investment project with a particular stage of the value chain. The functional classification of inward and outward FDI flows makes it possible to organically link the GVC analysis, based on backward and forward linkages and value generation, with FDI and their subnational geography.

Figure 10 plots the cumulative value of inward (x-axis) and outward (y-axis) FDI normalised by the corresponding average for the countries in the sample (the average being plotted at the origin of the axes) over the 2003-2017 period.¹⁰⁰ The size of the dots is proportional to the countries' average total GDP (PPP, constant 2017 international US\$) over the same period.

China is by far the largest recipient of FDI, securing more than 25% of the total capital invested in the countries under analysis, followed by India with 11%.

As expected, China is by far the largest recipient of FDI, securing more than 25% of the total capital invested in the countries under analysis, followed by India with 11%. Together with the Republic of Korea, Hong Kong, Malaysia, and Singapore, these two countries are all above the regional average in terms of both inward and outward investment. Together with Japan, these economies are the main gravitational centres of FDI flows in East Asia and Southeast Asia, with significant international circulation that forms the backbone of GVC patterns. Japan's position is unique. Similar to other advanced economies, multinational firms play a key role as foreign investors while policies allow only limited foreign investor presence in the domestic economy.

Figure 10 – Foreign direct investment & GDP, all industries, 2003-2017

Source: Author's own elaboration based on fDiMarkets data.

Note: Cumulative value of inward (x-axis) and outward (y-axis) FDI normalised by countries' average (=100% at the origin of the axes) over the 2003-2017 period. The size of the circles is proportional to the countries' average total GDP (pps) over the same period.

The lower right quadrant of the diagram is occupied by net FDI receivers with relatively lower outward flows, such as Indonesia and Viet Nam. Both countries have received investment flows in line with the average of the region, highlighting their ability to attract foreign capital. However, they are still characterized by more limited internationalization of domestic firms. In East Asia and Southeast Asia, significant FDI inflows have not always been matched by a corresponding process of domestic upgrading supportive of active (outward) internationalization. Bangladesh and Cambodia are clustered in the lower left quadrant of the diagram, reflecting their lower degree of internationalization through FDI.

Table 2 and Table 3 look at the geographical orientation of inward and outward FDI flows, reporting FDI flows by country, area of origin, and destination, and considering ESEA countries and the rest of the world.

Table 2 shows that, on average, around 60% of inward FDI flows in the ESEA economies come from outside the ESEA regions. However, there are relevant differences across countries. High productivity economies – such as Hong Kong (80%), Japan (83%), Republic of Korea (75%), and Singapore (78%) – have comparatively higher shares of investment from the rest of the world, working as global hubs.

Cambodia, Indonesia, the Philippines, Thailand, and Viet Nam are much more dependent on countries in the region for their FDI – and hence face mostly ‘regional’ internationalization.

Conversely, Cambodia (18%), Indonesia (50%), Philippines (51%), Thailand (48%), and Viet Nam (40%) are much more dependent on ESEA countries for their FDI, being involved in a process of mostly ‘regional’ internationalization, in line with the GVC data discussed above.

In terms of outward investment, on average there is a prevalence of investment outside the ESEA region (Table 3), dominated by the truly global projection of the most advanced economies (e.g., Japan) that, together with China, are responsible for most outward FDI. The region’s less advanced economies account for a marginal share of total outward FDI flow and remain mostly regional players. More than half of their outward investment is directed within the ESEA region:

Table 2 – Foreign direct investment, inward, 2003-2017

Inward FDI 2003-2017					
Country	From world	From ESEA		From rest of the world	
	Investment	Investment	Percentage	Investment	Percentage
Bangladesh	23,009	6,554	28%	16,455	72%
Cambodia	31,368	25,619	82%	5,749	18%
China	1,385,227	457,293	33%	927,933	67%
Hong Kong	80,450	16,239	20%	64,211	80%
India	602,280	160,002	27%	442,278	73%
Indonesia	276,156	139,222	50%	136,934	50%
Japan	93,805	15,912	17%	77,893	83%
Republic of Korea	131,577	32,436	25%	99,142	75%
Malaysia	168,121	67,239	40%	100,882	60%
Philippines	99,990	49,243	49%	50,747	51%
Singapore	182,523	40,399	22%	142,124	78%
Thailand	119,598	62,287	52%	57,311	48%
Vietnam	329,271	199,205	60%	130,066	40%
Total	5,474,580	1,731,434	32%	3,743,146	68%

Source: Author’s own elaboration based on fDiMarkets data.

Note: Total investment value is expressed in million USD dollars. The percentage reported in “FROM ESEA” and “FROM REST OF THE WORLD” refers to the relative amount in comparison to total investment “FROM WORLD”. The grey shading of the cells reflects the distribution of the corresponding values – the darkest grey highlights the maximum value, the lightest the minimum and the gradient of grey is proportional to the values in range.

Table 3 – Foreign direct investment, outward, 2003-2017

Outward FDI 2003-2017					
Country	To world	To ESEA		To rest of the world	
	Investment	Investment	Percentage	Investment	Percentage
Bangladesh	1,708	242	22%	836	78%
Cambodia	808	78	10%	730	90%
China	541,246	119,720	22%	421,526	78%
Hong Kong	238,162	126,367	53%	111,795	47%
India	270,510	46,379	17%	224,130	83%
Indonesia	22,345	13,775	62%	8,570	38%
Japan	894,852	348,877	43%	509,976	57%
Republic of Korea	371,260	182,791	49%	188,469	51%
Malaysia	169,486	93,523	55%	75,963	45%
Philippines	15,109	7,667	51%	7,443	49%
Singapore	210,310	129,144	61%	81,166	39%
Thailand	79,793	51,296	64%	28,496	36%
Vietnam	24,912	2,620	11%	22,293	89%
Total	4,028,545	1,333,211	33%	2,695,334	67%

Source: Author's own elaboration based on fDiMarkets data.

Note: Total investment value is expressed in million USD dollars. The percentage reported in "TO ESEA" and "TO REST OF THE WORLD" refers to the relative amount in comparison to total investment "TO WORLD". The grey shading of the cells reflects the distribution of the corresponding values – the darkest grey highlights the maximum value, the lightest the minimum and the gradient of grey is proportional to the values in range.

Cambodia, Indonesia, the Philippines, Thailand, and Viet Nam are much more dependent on countries in the region for their FDI – and hence face mostly 'regional' internationalization.

Indonesia (62%), Malaysia (55%), the Philippines (51%), and Thailand (64%). Outward investment is an important facilitator for upgrading and enhancing knowledge. Evidence indicates that firms in Thailand investing abroad are 40% more productive than those only importing and exporting. Furthermore, they are 11 times more productive than firms whose activities do not cross national borders.¹⁰¹

Participation of subnational economies in GVCs through FDI

Subnational mapping of FDI

Regional FDI statistics are based on fDiMarkets Database, covering cross-border greenfield investments for all countries and sectors worldwide between 2003 and 2017. fDiMarkets includes detailed information about the location of each investment project as well as the location of the investing company. Geo-location enables the computation of detailed regional-level statistics for both inward and outward FDI. In the case of China, province classifications are selected. Table 4 and Table 5 shows respectively the cumulative value (in US\$) of inward and outward FDI to and from Chinese provinces for the years covered (2003 to 2017), the pre-crisis period (2003 to 2007), and the post-crisis timeframe (2013 to 2017), in absolute and percentage terms.

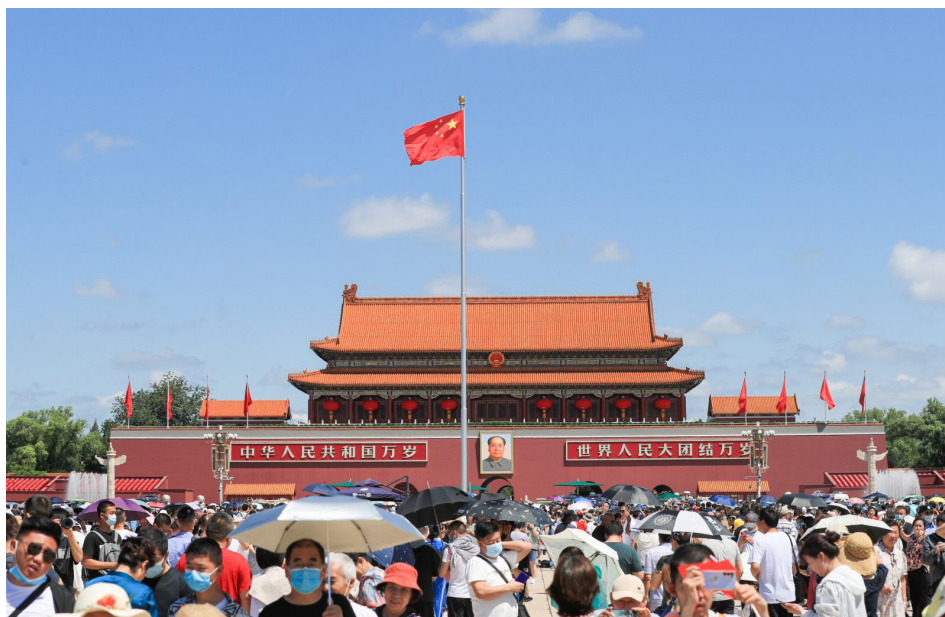
A limited set of leading provinces shows the capability to simultaneously attract and generate new FDI, through the internationalization of local firms. These are:

- Beijing Municipality (inward 2003-2017: 7%; outward 2003-2017: 46%),
- Guangdong (12%, 9%),
- Jiangsu (13%, 4%), and
- Shanghai Municipality (17%, 10%).

Inward investments are somehow evenly distributed among China's provinces, with the shares of the largest recipients declining after the financial crisis. The same does not apply to outward investments. In fact, Beijing Municipality alone covers almost half (46%) of the outward FDI from China.

This shows major variation in FDI at a subnational level. Inward investments are somehow evenly distributed among China's provinces, with the shares of the largest recipients declining after the financial crisis. The same does not apply to outward investments. In fact, Beijing Municipality alone covers almost half (46%) of the outward FDI from China, even as its share decreased during the two periods of analysis (from 58% pre-crisis to 42% post-crisis).

Ideally, different regions develop different comparative advantages. Hence, this variation in FDI works at the industry level. What matters at the regional level is their ability to absorb FDI for positive outcomes – and GVC-sensitive policy can be critical in achieving success here. At a regional level, this may translate into attracting the right kind of FDI. At the national level, this may indicate the need to use public policy to counterbalance any spatial inequalities arising from FDI. These are detailed in Chapter 6.



Inward investments are somehow evenly distributed among China's provinces. The same does not apply to outward investments. In fact, Beijing Municipality alone covers almost half (46%) of the outward FDI from China.

Table 4 – Foreign direct investment, inward, all industries – China

Inward China subnational – all industries						
Country	2003-2017		2003-2007		20013-2017	
	Investment	Percentage	Investment	Percentage	Investment	Percentage
Anhui	15,602	1%	2,090	0%	6,900	2%
Beijing Municipality	102,748	7%	45,925	8%	17,445	5%
Chongqing Municipality	45,223	3%	10,234	2%	9,373	3%
Fujian	34,487	2%	16,921	3%	8,965	3%
Gansu	1,185	0%	204	0%	194	0%
Guangdong	170,113	12%	87,636	16%	33,459	10%
Guangxi	11,016	1%	3,549	1%	3,745	1%
Guizhou	4,276	0%	2,261	0%	1,599	0%
Hainan	6,318	0%	3,744	1%	690	0%
Hebei	10,519	1%	3,368	1%	2,448	1%
Heilongjiang	5,301	0%	905	0%	846	0%
Henan	13,187	1%	4,942	1%	3,106	1%
Hubei	39,529	3%	8,873	2%	9,972	3%
Hunan	10,545	1%	2,345	0%	3,458	1%
Inner Mongolia	12,677	1%	6,046	1%	1,256	0%
Jiangsu	185,072	13%	77,437	14%	44,486	14%
Jiangxi	11,112	1%	3,400	1%	4,083	1%
Jilin	11,590	1%	3,669	1%	2,685	1%
Liaoning	59,023	4%	24,359	4%	9,927	3%
Ningxia	6,989	1%	3,595	1%	2,171	1%
Qinghai	178	0%	51	0%		
Shaanxi	30,832	2%	7,421	1%	12,432	4%
Shandong	47,276	3%	18,164	3%	9,197	3%
Shanghai Municipality	231,963	17%	115,431	21%	44,319	14%
Shanxi	5,663	0%	1,988	0%	1,916	1%
Sichuan	49,360	4%	12,372	2%	16,575	5%
Tianjin Municipality	50,701	4%	18,574	3%	14,287	4%
Tibet	319	0%	311	0%	8	0%
Xinjiang	4,658	0%	1,124	0%	447	0%
Yunnan	6,948	1%	1,416	0%	1,801	1%
Zhejiang	52,440	4%	14,403	3%	15,507	5%
<i>Not specified</i>	<i>148,375</i>	<i>11%</i>	<i>50,678</i>	<i>9%</i>	<i>37,529</i>	<i>12%</i>
Total	1,385,227	100%	553,436	100%	320,828	100%

Source: Author's own elaboration based on fDiMarkets data.

Note: Total investment value is expressed in million USD dollars. The grey shading of the cells reflects the distribution of the corresponding values – the darkest grey highlights the maximum value, the lightest the minimum and the gradient of grey is proportional to the values in range.

Table 5 – Foreign direct investment, outward, all industries – China

Outward China subnational – all industries						
Country	2003-2017		2003-2007		20013-2017	
	Investment	Percentage	Investment	Percentage	Investment	Percentage
Anhui	9,729	2%	1,703	2%	2,425	1%
Beijing Municipality	247,671	46%	45,171	58%	129,452	42%
Chongqing Municipality	8,243	2%	462	1%	1,217	0%
Fujian	5,222	1%	137	0%	3,721	1%
Gansu	3,414	1%	1,003	1%	408	0%
Guangdong	47,380	9%	7,389	10%	28,247	9%
Guangxi	2,115	0%	63	0%	1,474	0%
Guizhou	250	0%			212	0%
Hainan	279	0%	70	0%	204	0%
Hebei	6,526	1%	814	1%	2,650	1%
Heilongjiang	4,070	1%	410	1%	1,826	1%
Henan	4,390	1%	280	0%	3,397	1%
Hubei	11,789	2%	40	0%	8,188	3%
Hunan	9,608	2%	201	0%	8,384	3%
Inner Mongolia	1,019	0%	54	0%	643	0%
Jiangsu	22,650	4%	1,349	2%	17,776	6%
Jiangxi	5,060	1%	105	0%	1,597	1%
Jilin	3,171	1%	411	1%	1,446	0%
Liaoning	18,984	4%	85	0%	14,680	5%
Ningxia	619	0%			618	0%
Qinghai	61	0%			1,064	0%
Shaanxi	2,125	0%	240	0%		0%
Shandong	20,512	4%	1,584	2%	15,486	5%
Shanghai Municipality	53,664	10%	7,179	9%	38,598	12%
Shanxi	614	0%	8	0%	560	0%
Sichuan	4,124	1%	308	0%	3,454	1%
Tianjin Municipality	5,519	1%	268	0%	4,111	1%
Tibet	0	0%			0	0%
Xinjiang	1,493	0%			590	0%
Yunnan	3,951	1%	875	1%	3,042	1%
Zhejiang	22,237	4%	1,648	2%	11,898	4%
<i>Not specified</i>	14,758	3%	5,716	7%	2,689	1%
Total	541,246	100%	77,570	100%	310,056	100%

Source: Author's own elaboration based on fDiMarkets data.

Note: Total investment value is expressed in million USD dollars. The grey shading of the cells reflects the distribution of the corresponding values – the darkest grey highlights the maximum value, the lightest the minimum and the gradient of grey is proportional to the values in range.

Subnational mapping of FDI by functional stage of FDI

The fDiMarkets Dataset makes it possible to leverage the functional nature of FDI projects and obtain indication of the participation of China's provinces in GVCs, by examining the function pursued by each investment. For example, discerning whether a project is establishing an R&D unit or a regional headquarter makes it possible to associate each investment project with a specific stage of the value chain. This distinction enables an identification of the regions receiving the more high-value FDI that facilitates upgrading. By linking the business function classification¹⁰² in fDiMarkets with identification of GVC stages¹⁰³ (based on occupations and skills associated with each stage), we can link each investment project with a particular stage of the value chain.

The functional classification of FDI flows makes it possible to organically link the GVC analysis based on backward and forward linkages and value generation with FDI and their subnational geography. This split is outlined in Table 6a, with lower value-added activities such as extraction related to production, and higher value-added activities such as design, development and testing linked with innovation and R&D. The figures particularly draw on the highest value-added sections – those of Headquarters (HQ) and R&D.

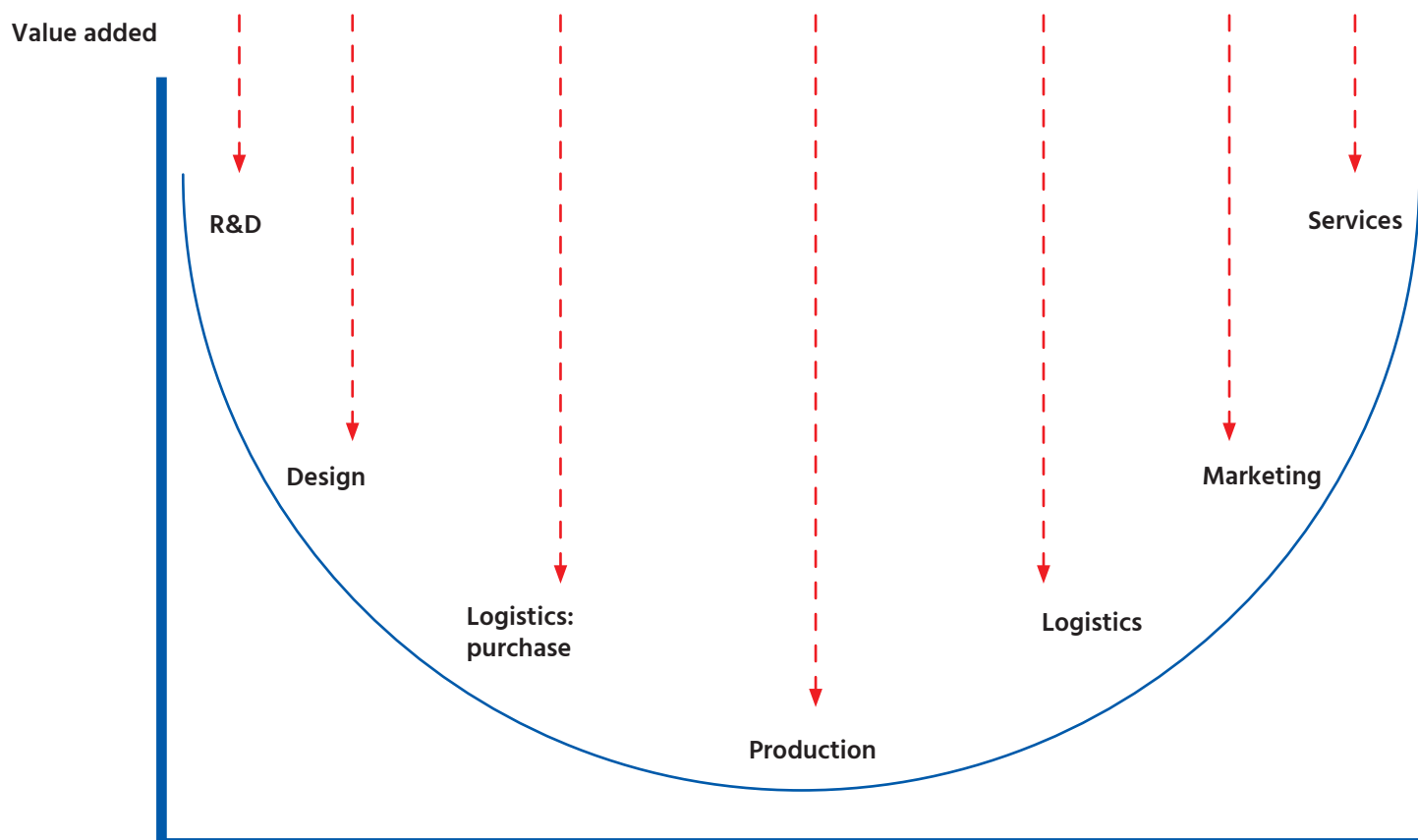
Table 6a – Value chains classification: From tasks into business functionality and GVC stages

FDI markets classification – business activity	Classification adopted in the project	FDI value addition
Headquarters (core) Business services (support) Shared service centres (support)	HQ	Highest value add
Research & development (core) Design, development and testing (core) Education & training (support)	R&D	Highest value add
Sales, marketing and supports (core) Retail (core) Technical support centres (support) Maintenance and servicing (support) Customer contact centres (support) Recycling (support)	Sales	Higher value add
Manufacturing (core) Construction (core) Extraction (core) Electricity (support) ICT & internet infrastructure (support)	Production	Lower value add
Logistic, distribution and transportation (core)	Logistics & distribution	Medium value add

Source: Author's own enhancement of Crescenzi, R., C. Pietrobelli and R. Rabellotti (2014). "Innovation drivers, value chains and the geography of multinational corporations in Europe." *Journal of Economic Geography* 14(6): 1053-1086.

Table 7b – Value chains classification: The smile curve and FDI business functions

GVC task	R&D	Design	Logistics: purchase	Production	Logistics	Marketing	Services
FDI business activity	Research & Development (core)	Education & training (support)	Logistic, distribution and transportation (core)	Manufacturing (core)	Logistic, distribution and transportation (core)	Sales, marketing and supports (core)	Business services (support)
	Design, development and testing (core)			Extraction (core)		Retail (core)	Shared service centres (support)
				Construction (core)		Customer contact centres (support)	Headquarters (core)
				ICT & internet infrastructure (support)		Maintenance and servicing (support)	
				Electricity (support)		Technical support centres (support)	
						Recycling (support)	



Source: Author's own elaboration

In Table 8 and Table 9, greenfield FDI to and from China's provinces are subdivided according to the different stages of the value chain, or groups of functions. This follows the approach classified in the academic literature.¹⁰⁴ With respect to the upgrading story and the smile curve of value-added, different FDI flows align with different GVC value-add activities. For example, FDI classified as production typically represents lower value-add production tasks; meanwhile logistics and distribution aligns to medium value-add logistics, both as purchaser and distributor. Business activity and FDI flows related to Sales can tie with higher value-add post-production services such as marketing,

Finally, HQ ties with highest value tasks, as with R&D are equivalent to highest value-add pre-production R&D or design activities. From 2003 to 2017, almost 70% of inward and 85% of outward FDI was directed into production-related activities, with some differences at the subnational level. In fact, while inward investments in production are equally distributed between Jiangsu (16%), Guangdong (13%), and Shanghai (12%), outward investments are much more concentrated. Beijing (45%) accounted for nearly half of total capital invested abroad.

Shanghai receives a large proportion of FDI for regional headquarters and R&D, which are typically associated with higher-value activities. The second largest business function for all Chinese provinces with respect to inward investment is Sales.

Uniquely, while Table 4 showed Jiangsu with large amounts of FDI, a breakdown of the GVCs indicates mostly lower value-add production activities. In contrast, Shanghai receives a large proportion of FDI for regional headquarters and R&D, which are typically associated with higher-value activities. The second largest business function for all Chinese provinces with respect to inward investment is Sales (11% of total national inward FDI), followed by Headquarters (10% of total).

Shanghai, Beijing, and Guangdong remain the biggest draws. Of total national inward FDI, Shanghai has 22% of sales FDI, and Beijing has 15%. Of the smaller FDI flows, there are still stories of regions building micro specialisms; the regions of Shandong and Tianjin received relatively high logistics and distribution FDI. In earlier years, this was potentially driven by the outward-facing port cities of Yantai and Qingdao, which represented Beijing's route to the sea and were home to an Export Processing Zone, an Airport Economic Area, and a Port Free Trade Zone. These regions are potentially making a comparative advantage out of their geographical assets.

With outward investments, all non-production FDI is limited. The second largest business function is logistics & distribution with related flows sending out 5% of total capital from Chinese firms, followed by HQ (4%).

Table 8 – Foreign direct investment, inward by FDI function – China

Inward China subnational - 2003-2017										
Country	HQ		R&D		SALES		PROD		LOG & DIST	
	Invesment	Percentage	Invesment	Percentage	Invesment	Percentage	Invesment	Percentage	Invesment	Percentage
Anhui	371	0%	922	1%	1,348	1%	12,587	1%	374	0%
Beijing Municipality	25,433	19%	10,405	16%	22,764	15%	40,707	4%	3,439	5%
Chongqing Municipality	3,590	3%	917	1%	3,268	2%	36,386	4%	1,061	1%
Fujian	2,455	2%	355	1%	2,866	2%	26,935	3%	1,877	2%
Gansu					16	0%	1,106	0%	63	0%
Guangdong	12,478	9%	4,283	6%	15,325	10%	124,291	13%	13,736	18%
Guangxi	438	0%	165	0%	302	0%	10,016	1%	95	0%
Guizhou			441	1%	275	0%	3,469	0%	91	0%
Hainan	167	0%	38	0%	789	1%	5,324	1%		
Hebei	200	0%	125	0%	576	0%	9,349	1%	269	0%
Heilongjiang	685	1%	164	0%	492	0%	3,737	0%	223	0%
Henan	607	0%	197	0%	1,515	1%	10,434	1%	433	1%
Hubei	1,293	1%	2,561	4%	2,842	2%	31,547	3%	1,287	2%
Hunan	523	0%	268	0%	1,161	1%	8,462	1%	131	0%
Inner Mongolia	81	0%	22	0%	206	0%	12,284	1%	85	0%
Jiangsu	6,038	5%	7,319	11%	7,478	5%	157,456	16%	6,781	9%
Jiangxi	406	0%	61	0%	746	0%	9,526	1%	374	0%
Jilin	205	0%	85	0%	582	0%	10,521	1%	198	0%
Liaoning	3,532	3%	1,532	2%	4,412	3%	46,495	5%	3,052	4%
Ningxia					1,606	1%	5,383	1%		
Qinghai					53	0%	125	0%		
Shaanxi	625	0%	1,182	2%	1,856	1%	26,224	3%	946	1%
Shandong	2,876	2%	1,336	2%	4,400	3%	32,606	3%	6,058	8%
Shanghai Municipality	42,933	32%	24,030	36%	32,895	22%	114,244	12%	17,861	24%
Shanxi	162	0%		0%	270	0%	5,224	1%	7	0%
Sichuan	3,204	2%	1,524	2%	4,278	3%	39,081	4%	1,273	2%
Tianjin Municipality	3,178	2%	1,239	2%	5,582	4%	35,767	4%	4,935	7%
Tibet					70	0%	250	0%		
Xinjiang	242	0%	15	0%	410	0%	3,853	0%	137	0%
Yunnan	466	0%	181	0%	1,863	1%	4,328	0%	110	0%
Zhejiang	2,365	2%	1,501	2%	5,489	4%	39,306	4%	3,779	5%
<i>Not specified</i>	<i>19,613</i>	<i>15%</i>	<i>5,418</i>	<i>8%</i>	<i>24,775</i>	<i>16%</i>	<i>91,804</i>	<i>10%</i>	<i>6,765</i>	<i>9%</i>
Total	134,168	100%	66,283	100%	150,509	100%	958,826	100%	75,441	100%

Source: Author's own elaboration based on fDiMarkets data.

Note: Total investment value is expressed in million USD dollars. The grey shading of the cells reflects the distribution of the corresponding values – The darkest grey highlights the maximum value, the lightest the minimum and the gradient of grey is proportional to the values in range.

Table 9 – Foreign direct investment, outward by FDI function – China

Outward China subnational – 2003-2017										
Country	HQ		R&D		SALES		PROD		LOG & DIST	
	Invesment	Percentage	Invesment	Percentage	Invesment	Percentage	Invesment	Percentage	Invesment	Percentage
Anhui	166	1%	196	1%	49	0%	9,317	2%	1	0%
Beijing Municipality	11,211	52%	2,581	18%	4,881	28%	209,413	45%	19,584	77%
Chongqing Municipality	11	0%	114	1%	50	0%	8,067	2%	1	0%
Fujian	148	1%	33	0%	338	2%	4,703	1%		
Gansu					20	0%	3,394	1%		
Guangdong	2,891	13%	7,863	55%	4,854	28%	29,040	6%	2,733	11%
Guangxi	36	0%			13	0%	1,127	0%	939	4%
Guizhou			22	0%	38	0%	189	0%		
Hainan	66	0%			175	1%	35	0%	5	0%
Hebei	548	3%	126	1%	143	1%	5,708	1%		
Heilongjiang	10	0%			15	0%	3,745	1%	300	1%
Henan	35	0%	20	0%	17	0%	4,307	1%	12	0%
Hubei	27	0%	9	0%	129	1%	11,602	3%	21	0%
Hunan	98	0%	25	0%	28	0%	9,415	2%	42	0%
Inner Mongolia	45	0%	11	0%	57	0%	906	0%		
Jiangsu	758	4%	433	3%	1,502	9%	19,624	4%	332	1%
Jiangxi	1	0%	23	0%	16	0%	5,021	1%		
Jilin	31	0%	9	0%	44	0%	3,086	1%		
Liaoning	20	0%	57	0%	230	1%	18,584	4%	94	0%
Ningxia					1	0%	618	0%		
Qinghai							61	0%		
Shaanxi	1	0%			110	1%	2,004	0%	10	0%
Shandong	129	1%	463	3%	646	4%	18,835	4%	439	2%
Shanghai Municipality	3,440	16%	827	6%	2,376	14%	46,524	10%	497	2%
Shanxi	21	0%			44	0%	550	0%		
Sichuan	142	1%	99	1%	104	1%	3,774	1%	6	0%
Tianjin Municipality	20	0%	8	0%	33	0%	5,457	1%	0	0%
Tibet					0	0%				
Xinjiang	17	0%	40	0%	36	0%	1,384	0%	16	0%
Yunnan	89	0%	343	2%	95	1%	3,425	1%		
Zhejiang	1,198	6%	895	6%	1,083	6%	18,830	4%	231	1%
<i>Not specified</i>	343	2%	57	0%	318	2%	13,863	3%	176	1%
Total	21,501	100%	14,254	100%	17,443	100%	462,609	100%	25,439	100%

Source: Author's own elaboration based on fDiMarkets data.

Note: Total investment value is expressed in million USD dollars. The grey shading of the cells reflects the distribution of the corresponding values – The darkest grey highlights the maximum value, the lightest the minimum and the gradient of grey is proportional to the values in range.

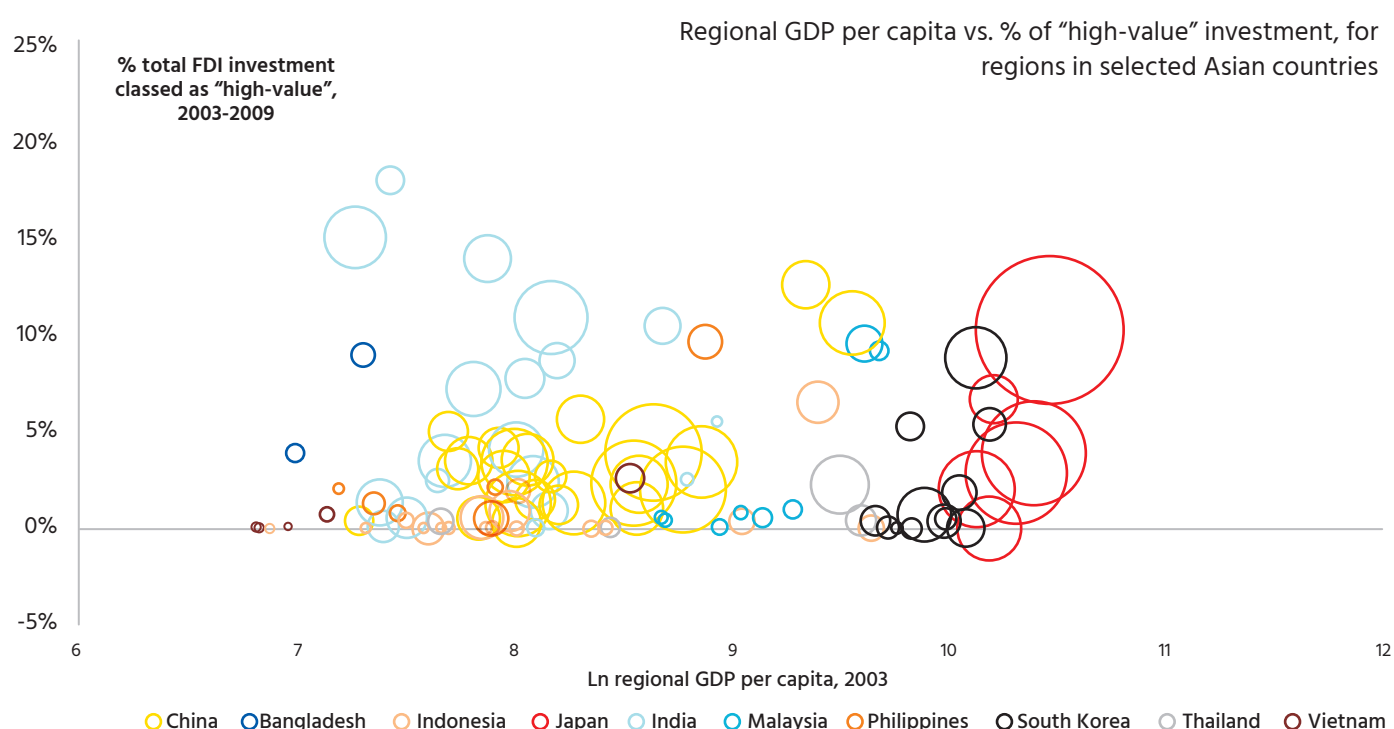
Regions that can attract and subsequently 'send' abroad investment flows that incorporate more sophisticated tasks – as proxied by higher value-added stages in the value chain – are likely to undergo a process of internal upgrading.

Broader view of upgrading at the subnational level

By looking at the prevalence of value chain stages in different regions across countries and the change over time in the functional composition of FDI, we can gain useful insights into local upgrading trajectories. Regions that can attract and subsequently 'send' abroad investment flows that incorporate more sophisticated tasks – as proxied by higher value-added stages in the value chain – are likely to undergo a process of internal upgrading. For example, regions where innovation-related FDI projects increase their prevalence above the average of other regions in the same country - both in terms of inward and outward FDI – are likely to experience a process of local upgrading.

Figure 11 and Figure 12 illustrate this rationale. The charts plot the share of 'higher value-added' inward FDI in each subnational region of the countries under analysis for two sub-periods, 2003 to 2009 and 2010 to 2016. Higher value-added FDI are defined as those classified as HQ and Innovation. The share of higher value-added FDI is plotted against the productivity level of each region (proxied by GDP per capita). The size of the circles is proportional to total regional GDP as a proxy for the absolute size of the regional economy/market.

Figure 11 – High-value FDI (GVC stages 1 & 2), 2003 to 2009, % total FDI value



Source: Author's own elaboration based on fDiMarkets data.

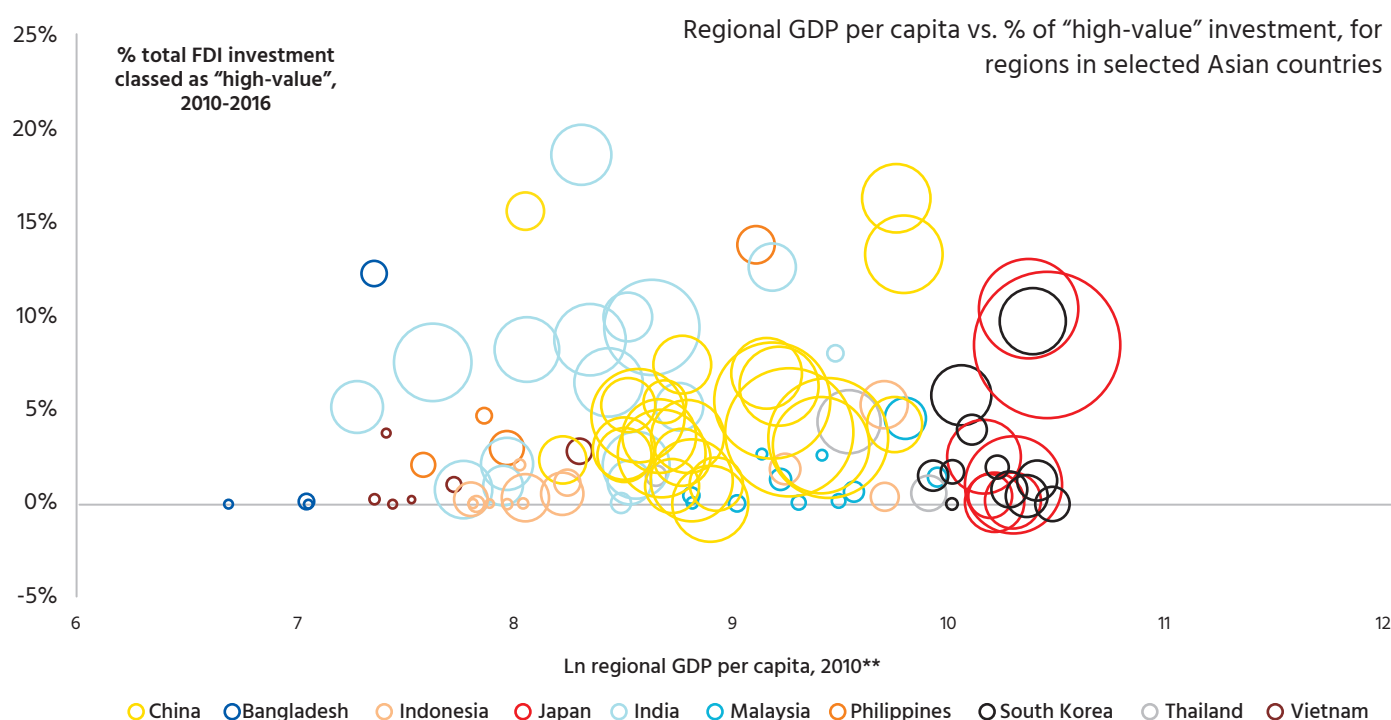
Note: High Value Added FDI Projects = GVC stage of FDI Project is either 1 or 2 (HQ / R&D) in previous table
Regions receiving under \$500M total FDI between 2003 and 2009 (inclusive) are excluded

An analysis of changes over time show that while relative productivity levels tend to remain stable, the sophistication of FDI tends to evolve more markedly even over a short period.

The charts offer several relevant initial insights. First, they show that the link between the functional composition of FDI and local productivity is not the same for all regions and countries. It is the case that regions with a high share of high value-added FDI belong to virtually all countries and can display very different levels of productivity. Second, a comparison of Figure 11 and Figure 12 enables an analysis of the changes over time. Relative productivity levels tend to remain stable. However, the sophistication of FDI tends to evolve more markedly even over a relatively short period of time. The comparison of the two figures shows how more regions are moving up the sophistication ladder to join the 'top group'. A large 'middle' group also emerges, cutting across national boundaries.

To understand upgrading, it is useful to examine the high-value FDI regions in the figures. While currently unlabelled in Figure 12, analysis of the data shows some similarities between the high-performing regions with respect to percentage of high-value investment. They all seem to share a functional combination of the horizontal GVC- sensitive policies and the vertical GVC-sensitive policies. Consequently, many of them are examples of upgrading in progress.

Figure 12 – High-value FDI (GVC stages 1 & 2), 2010 to 2016, % total FDI value



Source: Author's own elaboration based on fDiMarkets data.

Note: High Value Added FDI Projects = GVC stage of FDI Project is either 1 or 2 (HQ / R&D) in previous table
Regions receiving under \$500M total FDI between 2003 and 2009 (inclusive) are excluded

For example, the highest green circle represents the regions of Kedah and Perlis in Malaysia. The two regions showcase the presence of infrastructure, specifically the North-South Expressway and Penang International Airport, which support both domestic and international connectivity – two horizontal GVC-sensitive policies. Additionally, by tailoring specific human capital training to the needs of domestic and foreign MNEs and subsequently ensuring the necessary knowledge flow, the nearby Penang Skills Development Centre reflects a vertical GVC-sensitive policy. These aspects tie nicely with Kulim Hi-Tech Park, Malaysia's first high-technology industrial park. Citing advantages in high quality infrastructure, ready utilities, a dedicated local authority, and access to talented human capital, the park is currently working with American, German, French, Canadian and Malaysian MNEs in developing solar panels, semiconductors, and micro-processors.

Many of the first GVC tasks in Bangalore consisted of 'production' type call-center jobs regarded as low value-added tasks. Today the city is described as the Silicon Valley of India, with MNE headquarters and new industrial clusters.

The region of Shanxi, China has a similar story but is also able to generate high job creation by type 1 and type 2 FDI. Again, the Taiyuan Hi-Tech Industrial Development Zone is the likely driver, citing similar domestic and international connectivity as the supporting element towards success. The zone itself reflects upgrading, as it was formerly an industrial park producing stainless steel. The park received assistance at the national level from China's 'catalogue' of FDI and persisted in being open to the outside world; it actively engaged with returning Chinese scholars or those who were still active internationally. As such, the facility transitioned from manufacturing stainless steel products to designing and developing a new materials industrial cluster as well as a smart manufacturing cluster. To do so, domestic MNEs were invited to participate. Despite the region's low GDP, Shanxi is an example of vertical upgrading - specifically product upgrading and horizontal upgrading, that of chain or inter sectoral.

Karnataka, India, occupies the highest purple circle and exemplifies regional excellence in upgrading. Its capital Bengaluru (Bangalore) is one of the most cited examples of upgrading and promotion of value-added jobs. Many of the first GVC tasks in Bengaluru consisted of 'production' type call-centre jobs regarded as low value-added information technology (IT) tasks. Today the city is described as the Silicon Valley of India, with many MNEs headquartered there and new industrial clusters – for example, for software development – also burgeoning.

Often, only successful high-tech industrial development zones offer evidence. Unsuccessful parks have limited or inexistent history.

These examples share a history of leveraging FDI to upgrade through GVC-related tasks. However, a word of caution is necessary. Often, only successful high-tech industrial development zones offer evidence. Unsuccessful parks have limited or inexistent history. Some fail if the public policy framework is not in place, such as India's Bangalore-BIAL Information Technology Investment Region. This region has been put on hold due to lack of interest by major MNE companies. The reason cited: lack of connectivity and high travel time.

Insightful findings become apparent when tying together information from all the figures in this chapter, particularly with respect to more incremental upgrading. Figure 5 highlights countries at different levels of forward and backward linkages. Public policy, investment, and market forces may look to increase the extent of forward or backward linkages, as many countries did in Figure 6.

Due to their contrasting positions but similar GVC foundations, Thailand and Indonesia are useful examples. Both are heavily involved in automobile GVCs. Figure 4 shows the former has above average backward GVC links, but below average forward links. Thus, the country is downstream in value chains, with a high share of value in goods or services exported accounted for by imported

intermediates. It makes intuitive sense considering Thailand is downstream in the GVC – engaging on fully or near fully assembled cars.

Meanwhile, Indonesia has above average forward links, but below average backward links. The country also has a major role in automobile value chains, but Indonesia is upstream, constructing intermediate goods and services as inputs. The country – or, more specifically, certain clusters – are large manufacturers of components with Thailand as its biggest market for exports.

In Thailand, the majority of economic activity takes place in the provinces of Rayong and its neighbours north and northwest. Most of the vehicles built are developed and licensed by foreign producers, indicating the importance of MNEs.

This cluster of regions engaged on similar tasks explains the criticality of using the subnational lens for analysis. In Thailand, automobile value chains are not spread evenly across the country's 76 provinces. Instead, most economic activity takes place in the provinces of Rayong and its neighbours north and northwest – Chonburi, Chachoengsao, Prachinburi and Samut Prakan. In these regions, most of the vehicles built are developed and licensed by foreign producers, indicating the importance of MNEs. In Figure 11 and Figure 12, these provinces are located in the country's blue central macro-region, which received the second highest value of FDI and enjoys the second largest GDP. While still upgrading, the region is not one of the highest circles due to the production focused nature of the FDI.

Indonesia offers a similar story of GVC subnational proximity. The automobile value chain clusters in Indonesia are around Banten province (Tangerang City) and West Java province. In Figure 11 and Figure 12, these provinces are classed as relatively high investment and high value, with relatively high GDP; they occupy the orange circles. At the time of study, between 65% and 75% of the 85 companies operating in the regions were foreign based.¹⁰⁵ In both cases, GVC-sensitive policies – specifically, the ability to strategically couple the assets of regions to the needs of MNEs – initiated the upgrading process. This strategic coupling involved at first face-to-face contact, building mutual trust and showing Indonesia had both domestic market demand and skilled human resources for



Th Indonesia government public policy was ready to improve infrastructure in certain regions and also provide incentives to MNEs to leverage FDI creating new opportunities.

automobile production. More importantly, though, it showed that government public policy was ready to improve infrastructure in certain regions and provide incentives to MNEs to leverage FDI.¹⁰⁶

Again, Thailand successfully illustrates this approach. In 2019, a Honda automobile production plant worth US\$485 million was established in Prachinburi, the country's cluster for automobile GVCs. Introducing highly efficient and environmentally friendly production techniques, this plant is an example of upgrading through FDI. This process upgrading is set to occur with cell-style production – a world first – that will improve efficiency by 10% compared to conventional lines. As the lead firm, Honda is also pioneering environmental sustainability by incorporating a water conveyor that fully reuses water to cool the plant's production process.¹⁰⁷ With these improvements, product upgrading is due to occur, as manufacturing of the new Honda Civic takes place. These investments will see higher gross value-added from production in the region, driven by foreign affiliates. With successful public policy detailed in Chapter 6, the region may ensure that the next investment remains in higher value-added tasks, potentially in logistics or maintenance and servicing.

Foreign affiliates in Thailand are major contributors of gross value-added in the economy – generating over twice the amount in Indonesia. In addition to generating lower GVA, foreign affiliates in Indonesia also represent a smaller percentage of imports and exports.

These foreign companies – or, in these cases, MNEs – play a role in both economies; see Figure 9. Foreign affiliates in Thailand are major contributors of gross value-added in the economy – generating more than twice the amount in Indonesia. In addition to generating lower GVA, foreign affiliates in Indonesia also represent a smaller percentage of imports and exports; examine Table 1. Like Japan and China, Indonesia is perhaps impacted by its relatively large domestic market. Indonesia exports intermediate goods to Thailand, and therefore Thailand sees a relatively large percentage of GVA sourced abroad from ESEA (33%). On its own, Indonesia is further upstream in the value chain and sources value-added from firms doing tasks further up in the value chain, such as R&D and design of the intermediate components which Indonesia is manufacturing. These are highest value-added tasks that are often undertaken in high-income countries and may partly explain why Indonesia has a higher percentage of GVC sourced abroad from other non-ESEA countries (48%).

Table 8 and Table 9 highlight how this practice of using FDI via MNEs to upgrade can work in practice. Witness data illustrating China's experience. Evidence shows that some regions receive greater proportions of higher value-added investments such as R&D or sales. The intention of Chapter 6 is to highlight how some regions can increase the number of this high-value FDI by delivering on subnational public policy.

5. Integrated approach to GVC-sensitive policies: analytical and policy framework

As a target or outcome, upgrading can be a powerful tool for development. The key questions for policymakers and investors alike are: What makes upgrading possible? What are the ingredients for change? Active policy – both public policy at the national and sub-national level, as well as policy issued by firms and NGOs – is increasingly recognised as pivotal. Early studies of GVCs observed nation states as being largely passive and restricted to facilitating lead firm investment.¹⁰⁸ Today, there is agreement on more pro-active state mediation to advance national policy priorities and coordinate actors.¹⁰⁹ In addition, policymaking for GVCs should include developing interventions to foster local development.¹¹⁰

The closer decisionmakers are to local firms and workers, the better they can highlight and develop the micro specialisms needed to upgrade successfully in GVCs. These decisionmakers can be local institutions, local organisations, or local groups of firms.

Indeed, there is often a missing link, however, at the subnational level. It is pertinent to go beyond regional government – the public institutions – and instead leverage regional governance, including private enterprise and civil society, for effective integration with local actors. The closer decisionmakers are to local firms and workers, the better they can highlight and develop the micro specialisms needed to upgrade successfully in GVCs.¹¹¹ These decisionmakers can be local institutions, local organisations, or local groups of firms.

Mewat district in India highlights this positive leveraging of regional governance. The district initiated a partnership between a leading global buyer, the government, export agencies, and home-based embroidery workers – all connected via an embedded non-profit organization.¹¹² A multitude of actors in a networked contracting system secured good working conditions and wages. This place-based approach focused beyond the factory floor and on workers in the broader labour market. It also helped diffuse good labour standards down and beyond firms within value chains.



For policies at the subnational level to be GVC-sensitive, it is pertinent to go beyond regional government. The closer policy makers are to local firms and workers, the better they can highlight and develop the micro specialisms needed to upgrade successfully in GVCs.

Mewat exemplifies the impact of active mediation by effective multi-level governance units. These units can account for regional and local market specificities. For example, such local units can regulate, learn, collaborate, and reconcile where necessary among firms, workers, and civic actors. This joint local approach reaches workers in the lowest tiers of global subcontracting systems, which is important in LMICs with a large informal sector typically outside the reach of labour laws. Similarly, being place-based enables GVC upgrading to be dynamic. In Mewat, other actors could adapt with new and old collaborators when the leading global buyer exited. Lastly, the presence of a decentralized state at the core provided longer term legitimacy for collective change and continuity.

The importance of local interaction is also exemplified by the *chaebols* of the Republic of Korea and the Town and Village Enterprises (TVEs) in China. Vertically integrated industrial conglomerates similar to Japan's *zaibatsu*, the chaebols were critical in accelerating technology transfer and learning in the industrial sector,¹¹³ which led to greater knowledge sharing with the international community.¹¹⁴ In turn, this strengthened local capabilities in technology and promoted knowledge of the country's enterprises globally and allowed them to better engage and upgrade in GVCs.

Groups of locally based firms played a similar role in China. In 2013, the Guangdong International Consultative Conference brought 18 executives from Fortune 500 companies and local firms. The sharing of proposals and suggestions for upgrading the business environment and promoting internationalization gave rise to several major projects. Two pertinent outcomes were the Joint Institute of Engineering and the Foshan Sino-German Industrial Services Zone, which bridged the knowledge gap among MNEs, researchers, and education providers – and helped to increase the region's absorptive capacity. Input from foreign MNE advisors lifted 'the level of industry, technology, education, training and social development' as well as enhanced cooperation and exchange.¹¹⁵

Dental implants for a new smile: a new approach to value upgrading

It is critical to develop public policy to engage with the smile curve of value creation; however, our integrated analytical and policy framework encourages policies that are sensitive to GVCs. This approach accounts the policies and investments necessary for moving up the value chain, as well as the social, environmental, and spatial inequalities in which such movement results.

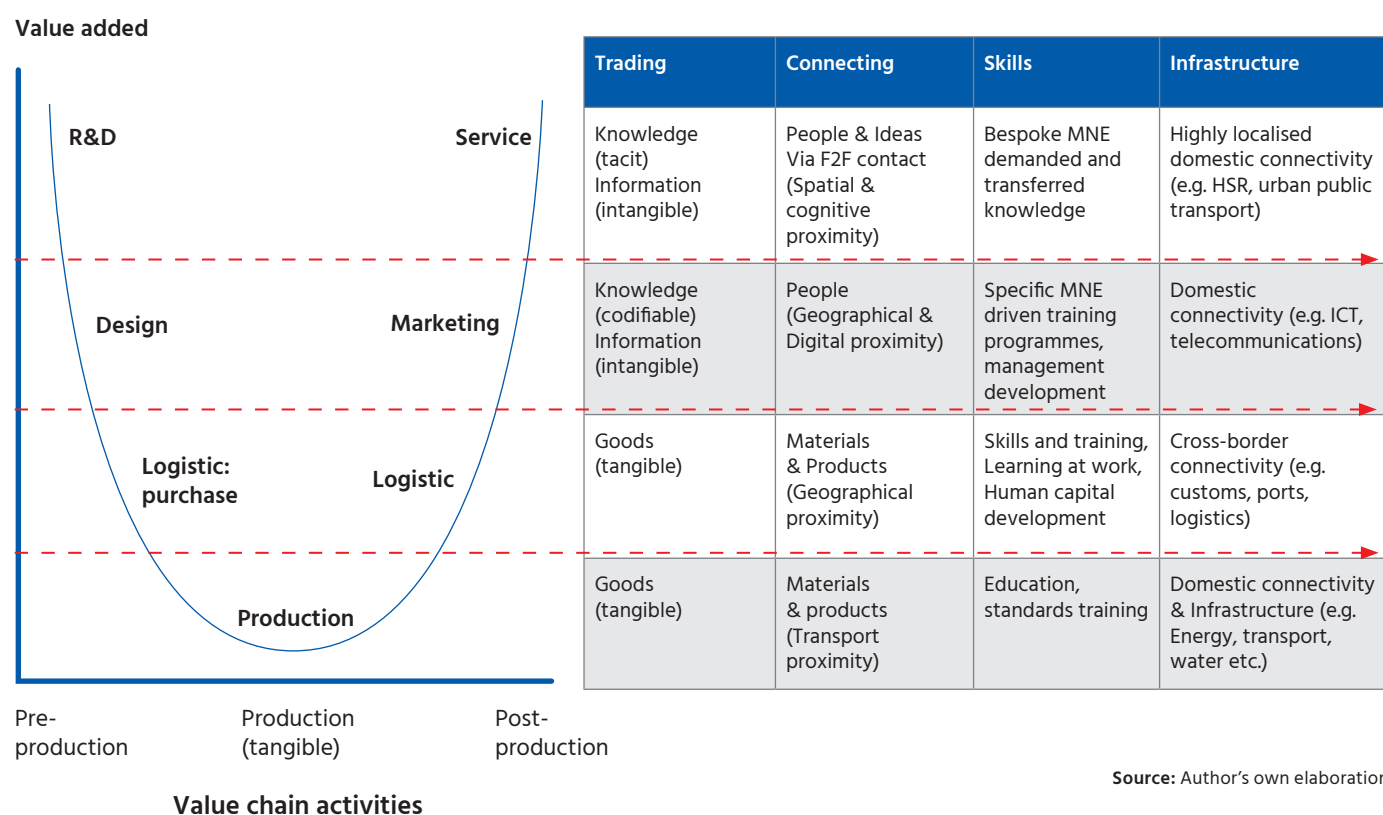
As a country or region moves along the value chain, the pressures on spatial or social inequality will likely change. For example, services supportive of GVCs, such as design or marketing, are often associated with space, proximity, and clustering. As such, they are likely to congregate in primary cities, gateway cities, or special economic zones. The more sophisticated or complex tasks typically requires clustering.

Occasionally, these SEZs result in regional and socio-economic inequality. On the other hand, production, processing, or assembly tasks inputting into GVCs can and do take place in secondary cities. These tasks tend to head to less costly locations.

The new approach to value upgrading shown by Figure 13 can help direct policy choices. Different sectors within the chain will benefit from different types of intervention. The new approach indicates the potential focus and specialization of a region if it is to upgrade to certain value chain activities, by showing the goods

Services supportive of GVCs, such as design or marketing, are often associated with space, proximity, and clustering. As such, they are likely to congregate in primary cities, gateway cities, or special economic zones.

Figure 13 – The GVC sensitive smile curve



and services traded at that level the needs for linkages and interaction, and the skills and infrastructure investments that public policy can prioritize and facilitate. Such a GVC-sensitive approach addresses important gaps.

Upstream upgrading activities consisting of R&D or design will require different infrastructure investment relative to other value chain activities.

Consider, for example, infrastructure. Upstream upgrading activities consisting of R&D or design will require different infrastructure investment relative to other value chain activities. Compared to downstream upgrading activities, these are likely to facilitate face-to-face knowledge exchange in urban areas. Downstream activities – for example, after sales service¹¹⁶ – may instead require telecommunications for engaging customers and logistical enhancements.

Even in the production process itself, different types of infrastructure will be appropriate to various regions, each engaged on different stages of fabrication. For example, good institutions provide a comparative advantage if an area is in the later stages of the production process.

In Brazil, investments dating back to 2009 have improved port infrastructure, which led to a 14% increase in exports and an 11% increase in imports.

In contrast, transport infrastructure provides an advantage in the early stages of production.¹¹⁷ Maritime transport, 'hard' port infrastructure, and related 'soft' infrastructure such as customs procedures are particularly important to a country's participation in GVCs. In Brazil, investments dating back to 2009 have improved port infrastructure, which led to a 14% increase in exports and an 11% increase in imports.¹¹⁸ The type of industry and where they are in the GVC matters.

In countries with downstream activities such as production, poor infrastructure and high transport costs can and do impede participation in GVCs.¹¹⁹ Some of the public policy considerations for hard infrastructure are detailed below.

R&D is particularly sticky and tends to stay in one region for a long duration. Such spatial inertia is less evident for assembly activities, which can be a consequence of uneven spatial development.

Figure 13 also helps policymakers to think about spatial inequalities and the stickiness of upgrading. The functions of a firm – such as assembly, marketing, design, or R&D – differ both in terms of specific necessary inputs, but also in its ability to be spatially ‘sticky’.¹²⁰ For example, R&D is particularly sticky and tends to stay in one region for a long duration. Such spatial inertia is less evident for assembly activities, which can be a consequence of uneven spatial development. These functions, which are typically lower-skilled, are often closely related across many different industries, and the closeness can lead to a relative ease for relocating low-skilled work across regional boundaries and types of industries.¹²¹ Table 22 enables policymakers to ask whether they are getting the right kind of FDI for a trajectory of long-term development.

Upgrading with different local needs and corresponding ‘policy targets’

The approach and aims of upgrading will differ across countries and regions, and corresponding policies should reflect these differences. However, to drive development, GVC orientation and smart industrial policy must work well together.

Increased education, specifically in science, technology, engineering, and mathematics (STEM) contributed significantly to upgrading in Brazil, China, and India.

A study across the GVC-orientated industrial policies of emerging countries¹²² found that, in Brazil, China, India, Mexico, Russia, South Africa, and South Korea, economy-wide policies had different levels of importance with respect to upgrading. For example, increased education, specifically in science, technology, engineering, and mathematics (STEM) contributed significantly to upgrading in Brazil, China, and India. Meanwhile, in Russia and South Korea, similar policy choices were only partially significant. In Mexico or South Africa, the role of STEM education played an even smaller role.



A study across the GVC-orientated industrial policies of emerging countries found that, in Brazil, China, India, Mexico, Russia, South Africa, and South Korea, economy-wide policies had different levels of importance with respect to upgrading.

Across these emerging countries, tension is building between horizontal policy targets (those that hope GVCs fall from above) and vertical policy targets (those actively seeking GVCs). Investment in R&D represents the most significant example of a horizontal policy for upgrading. Yet even this policy is unlikely as effective as vertical policy engagement, namely the targeting of specific priority industries such as including upstream links or inputs. For example, the targeting of export-processing manufacturing was critical for upgrading in Mexico. It is also much less important than GVC-orientated industrial policies. Here, three areas of specialisation were moderately important across all countries: added-value niches in global and regional production networks; local content units to attract global suppliers; and using GVC links to upgrade domestic production. Each of these three GVC-orientated industrial policies were considered of ‘moderate importance’ or ‘particularly significant’ in 20 of the 21 cases analyzed.

Global value chain mapping

GVC mapping is crucial to understanding upgrading needs. All GVCs are different and different areas may engage with different parts of VCs in different ways. Learning from the examples of others is important. But copying these examples may be detrimental.

Consider the example of Indonesia and Thailand. The two countries contribute similar shares of value-added in their automotive gross exports, but they participate in the production chain in different ways. By producing or exporting fully or almost fully assembled cars, Thailand is orientated more closely to the downstream part of the value chain. By producing intermediate parts and components of automobile production, Indonesia is focusing upstream.

Thus, despite the similar industry focus for both countries, the public policies for encouraging upgrading or strengthening linkages will differ. One may require better connectivity, and the other may need stronger human capital. The case study below shows how local institutions can help map and aid GVC trajectories.

In addition, mapping with respect to income levels is important. From 1999 to 2018, a study of 100 nations examined the improvement in productivity brought by GVC participation, specifically its role in upgrading via intermediate exports.¹²³ The findings show a positive relationship between backward participation (upstream linkages) and income, which is stronger relative to forward participation. However, this is a general observation does not hold for all income levels.

In contrast, an examination of developing countries shows limited benefits from backward participation, because of its focus on downstream activities such as assembling goods. If the activity requires fewer skills, local firms will have to rely more on direct transfers of knowledge from lead firms.

As such, forward participation is more beneficial, on aggregate, for developing countries – and specifically for low-middle-income countries. Different countries and regions should make different choices based on the value chains in which they are engaged or seek engagement. Lastly, local institutional actors are important in any mapping exercise, as evidenced in the case study below.

Indonesia and Thailand contribute similar shares of value-added in their automotive gross exports, but they participate in the production chain in different ways.

An examination of developing countries shows limited benefits from backward participation, because of its focus on downstream activities such as assembling goods.

CASE STUDY 2

Local institutions and upgrading in the Philippines¹²⁴

Economic upgrading taking place in the Philippines illustrates the considerable scope for intervention which rests with local institutional actors. This case study also addresses the uneven power relationships between local governments and MNEs in many lower-middle income countries.

The Philippines faced a huge opportunity to integrate smaller secondary cities into international production networks, attract FDI, and couple local assets with the needs of MNEs. Two of these lower-tier cities were Baguio City, which suffered from the weak participation of local institutions, and Bacolod City, which enjoyed high levels of local institutional support. Initially, the investment climate was discouraging and local assets were not abundant. However, Bacolod succeeded in attracting as many business processing jobs as Baguio. Local institutional actors helped. They understood the needs of industry and identified the regional assets with whom the two cities should couple. Success here reflects the participation of local agencies in shaping the processes to attract FDI. A council for information and communication technology was set up along with a one-stop-shop contact for investors, which displays trust and long-term commitment and understanding that the role of GVC actors is not fixed.

Attracting FDI requires a consideration for actions at lower geographical scales. It also reminds policymakers that, while regional assets can take a long time to change, local institutions can match existing links to global networks in the short term.



Despite a less encouraging investment climate initially as well as less abundant local assets, Bacolod City of The Philippines succeeded in attracting as much Business Processing Outsourcing employment as Baguio, which suffered from the weak participation of local institutions

After mapping local needs and regional assets, a roadmap can help to match lead firms with local talent. China has successfully provided a guiding FDI framework through 'The Catalogue', a variation of a one-stop-shop for potential investors.

After mapping local needs and regional assets, a roadmap can help to match lead firms with local talent. China has successfully provided a guiding FDI framework through 'The Catalogue', a variation of a one-stop-shop for potential investors. The catalogue splits FDI into four categories: Those that are 'encouraged', 'permitted', 'restricted', or 'prohibited'.¹²⁵ There are some additional categories for specific geographic regions.

'The Catalogue' has developed along with China. In 2006, to advance its aim of upgrading its industrial structure, China emphasised quality FDI instead of the quantity of FDI. In 2007, FDI witnessed a jump as 500 high-tech industries were added to the 'encouraged' column. That year also saw high consumption of resources or pollution placed in restrictive or prohibited FDI. The current plan for national development is focused on high-tech and newly emerging industries. As such, Beijing is encouraging foreign MNEs to set up regional headquarters and R&D centres in China. The attempt is to encourage FDI into 'production services' – a clear link to upgrading from its existing assembly industrial base.



In 2006, to advance its aim of upgrading its industrial structure, China emphasised quality FDI instead of the quantity of FDI.

6. Public policy considerations

Representing existing policies for attracting investment, horizontal policies are more passive in nature, responding to needs of a region's increasing absorptive capacity. Meanwhile, vertical policies are more active.

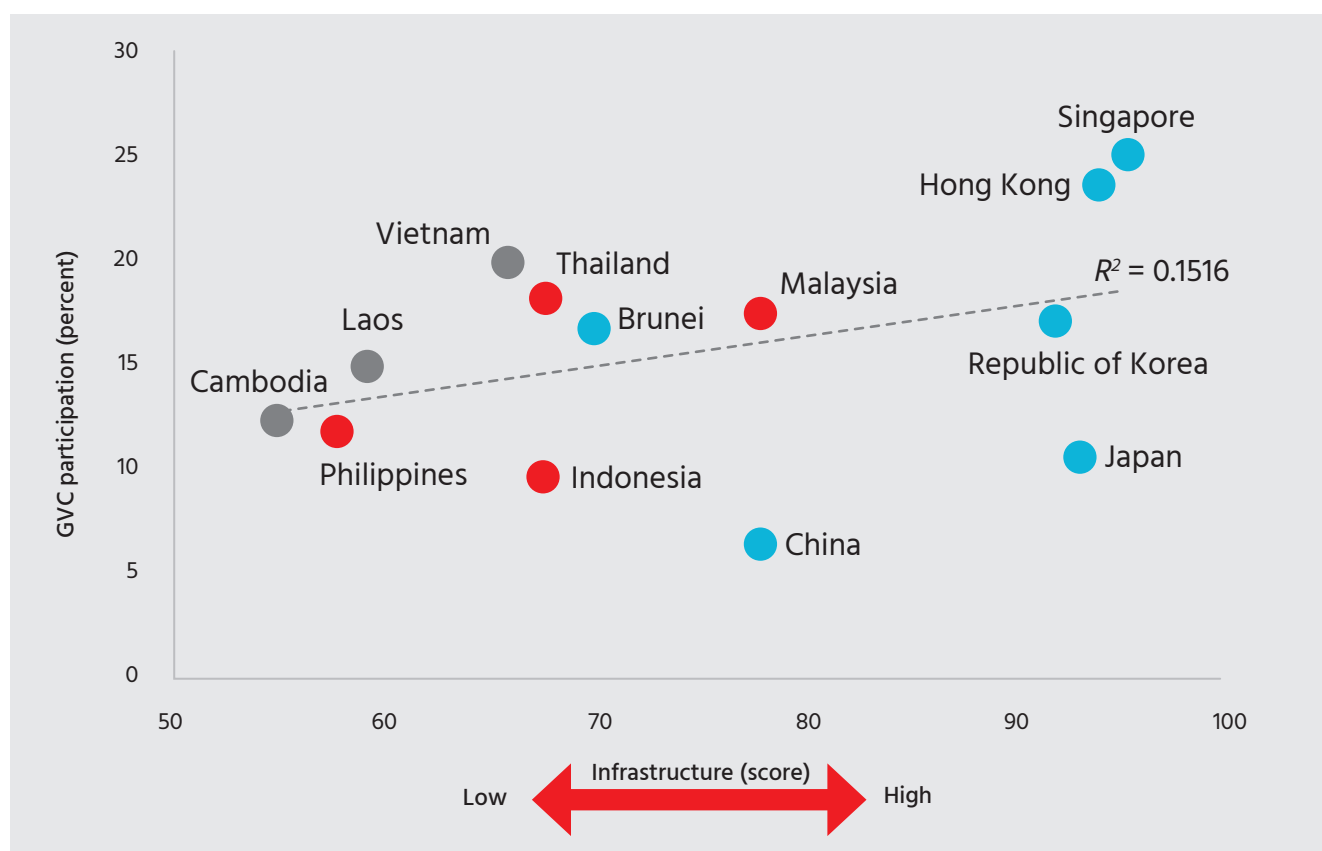
The options for public policy and investment directions for national and subnational policymakers are plentiful. Each locality is on a different part of the value curve, each with unique regional assets and maps for their upgrading direction.

Upgrading can utilize many GVC-sensitive horizontal and vertical policies. Representing existing policies for attracting investment, horizontal policies are more passive in nature, responding to needs of a region's increasing absorptive capacity. Meanwhile, vertical policies are more active and seek FDI for upgrading.

GVC-sensitive horizontal engagement

While MNEs can transfer knowledge through FDI, regions must also be able to absorb and benefit from the transfer. In the same way that firms in clusters have different levels of absorptive capacity, regions also have different capacity. GVC-sensitive horizontal engagement is about raising the floor and facilitating regions to link up to GVCs and leverage their strengths.

Figure 14 – ASEAN+3: GVC participation versus infrastructure development



Source: ASEAN+3 Macroeconomic Research Office (AMRO) (2021). ASEAN+3 Regional Economic Outlook 2021. Global Value Chains in the Post-Pandemic "New Normal". Singapore.

Connectivity – hard infrastructure

Evidence from Asia, specifically ASEAN, shows that infrastructure prevalence matters for GVC participation. In Asia, there is a correlation between high level of FDI inflows into economies with more developed infrastructure.¹²⁶ (See Figure 14)

Road networks seem to mediate the impact of GVC integration as a buyer on domestic value-added. The suggestion here: GVCs also require good connections to regional suppliers in order to link effectively.

The stock of infrastructure matters. However, the regions' different needs and positions on value chains, as well as their different upgrading trajectories, should lead to different infrastructure choices. For example, studies show that better air connection, specifically freight infrastructure, facilitates the benefits of GVC integration for buyer value-added; that being when a region sources its intermediates to produce its exports. In contrast, road networks seem to mediate the impact of GVC integration as a buyer on domestic value-added. The suggestion here: GVCs also require good connections to regional suppliers in order to link effectively with GVCs.¹²⁷

Port and rail networks exemplify infrastructure that facilitates value-added gains with backward links and forward links. Both networks increase economic upgrading when integrating with a GVC as a seller. As indicated by the new smile curve, there are also sectoral considerations for infrastructure.

In short, hard infrastructure is not created equal. The appropriate choice for infrastructure depends on the upgrading focus of the country or region, the location of its partners, and the type of GVC integration. To bring about the right choices, resources that highlight good international practices and measures do exist for policymakers, both for developed and developing country contexts.¹²⁸

Soft infrastructure and connectivity

Soft infrastructure, particularly institutions and logistics at border points, also advances GVC integration for potential upgrading. Better internet coverage and a higher performance on the logistics performance index (LPI) can magnify economic upgrading through forward GVC links. This magnification is delivered through improved customs procedures, logistics, and overall values as well as shorter export and import times. Brunei Darussalam is putting this in practice by marketing efficiency improvements in port cargo handling, to lure firms to set up GVCs there.¹²⁹

Local institutions matter too. Studies show that the local benefits of participation in global markets are expected to be low in weak or unfavourable institutional settings.¹³⁰ There is limited study on the explicit role of regional institutions and institutional change with respect to GVCs and especially within lower-middle income countries.¹³¹ While the case study below shares some insights, more research is needed on the types of institutions that affect the type of diversification and fine-grained specialisms found in regions.

CASE STUDY 3

Cross-border timber trade and process upgrading in Myanmar and China¹³²

Myanmar has the largest amount of forest cover remaining in Southeast Asia. However, deforestation is advancing rapidly, partly due to cross-border timber trade with Yunnan province in China. A few privileged actors benefit from rent-seeking activities and exploits the value chain through the power given by both governments. Poor governance allows certain groups access to certain permits and licenses. Rather than all timber exports exiting through Yangon as prescribed by Burmese law, illicit timber exports travel overland through the porous eastern border.¹³³

Studies show that improvements to governance would minimise environmental degradation. These improvements would include fostering soft infrastructure such as transparency and accountability of timber harvesting concessions and trade permits. One way to limit the power of certain firms is to coordinate around the implementation of Yunnan's Examination & Authorised System as well as its Record & Registration System for timber imports.

Because GVCs are interconnected, soft infrastructural reforms need not stop with China. The EU's Timber Regulation of 2013 attempted to stop the illegal import of Burmese teak. However, some EU firms are still circumventing legislation.¹³⁴

Beijing is now encouraging Chinese MNEs to invest in preliminary processing factories in Myanmar. In light of the Belt and Road Initiative, this processing upgrading would transfer finance and technology to the country and help improve the social responsibility of Chinese FDI. Such factories could combine logging, cultivation, restoration, sales, and facilitation of better jobs for Burmese in Kachin State and Shan State border regions. Cooperation between both China's public and private sectors and Burmese actors on the border may also improve. As such, stability and economic development may ensue.



Studies show that improvements to GVC governance would minimise the environmental degradation caused by illicit timber trade between Myanmar and China.

Tax incentives are often the first public policy choices for GVC-sensitive action. Yet because they can lead to a race to the bottom, they should be used with caution.

Tax incentives tend to attract low value-adding activities or firms, and deter high-value activities or firms. As such, the potential for upgrading diminishes.

Incentives – fiscal

Tax incentives are often the first public policy choices for GVC-sensitive action. Yet because they can lead to a race to the bottom, they should be used with caution. In China, for example, where fiscal incentives started with broad tax concessions for foreign firms in the coastal regions' special economic zones. Then a more unified national approach emerged, maintaining only narrowly defined preferences for FDI and MNEs in specific regions and sectors.¹³⁵ This evolution was due in part to an earlier clash between local authorities in China, which led to local agencies using their power to slash tax rates. Some regions gained, but on aggregate China lost. Beijing then ordered local authorities to eliminate fiscal incentives outside of national legislation.¹³⁶

Generally, as China exemplified, tax incentives tend to attract low value-adding activities or firms, and deter high-value activities or firms. As such, the potential for upgrading diminishes. Tax incentives that remain are typically preferential tax for high-tech enterprises, with 50% rebates for certain R&D spending as well as a two-year holiday on taxes in certain preferred geographies or regions.¹³⁷ Similarly, high-quality tax incentives can correct otherwise negative consequences from FDI. Evidence from 36 developing countries shows an increasing number adopt tax incentives that include conditions associated with the Sustainable Development Goals, for example, on skills development or local linkages.¹³⁸

Human capital – education

Like infrastructure provision, high human capital is correlated with GVC participation¹³⁹ – key to a region seeking high absorptive capacity. Upgrading requires a workforce that continually improves its knowledge and moves towards higher value-added tasks. Underpinning this is education, both foundational and life-long.¹⁴⁰

Consider the positive example of Singapore’s Ministry of Trade and Industry. The Ministry is working with universities and MNEs to ensure that the curriculum delivers graduates with the skills that firms require, particularly related to sustainability, a GVC-sensitive area of focus.¹⁴¹ In Malaysia, the Penang Skills Centre includes corporate training and education dedicated to meeting the labour needs of business communities.¹⁴²

A partnership between academia and trade is important: University and MNE partnerships for specific training develops the right talent for upgrading needs.

A partnership between academia and trade is important: University and MNE partnerships for specific training develops the right talent for upgrading needs. Siemens in China exemplifies this two-way benefit. Siemens provided scholarships for specific talent development, which enabled the firm to shape human capital in line with their needs.¹⁴³ In 2011, the cooperation expanded with a memorandum of cooperation with China’s Ministry of Education to advance the development of engineering education. This helps to train professionals and reduces the absorptive capacity of local professionals, thus enhancing the potential for upgrading.¹⁴⁴

Toyota undertook similar actions. In 1997, the automotive manufacturer co-created and delivered joint technology courses with Tsinghua University, which has since expanded into joint research activities. Today, the university and Toyota are partners in a research centre on environmental science, energy, auto safety, and materials science.¹⁴⁵ By increasing the absorptive capacity of regions, these partnerships facilitate upgrading.

Human capital – skills training and management development

Learning at work is also foundational in the upgrading process. With respect to process and product upgrading, workers gaining skills while ‘on-the-job’ can increase value-added. Consider the example of fruit and vegetables GVCs. Learning at work facilitated services for packing and processing – such as washing,



Siemens in China provided scholarships for specific talent development, which enabled the firm to shape human capital in line with their needs.

chopping, bagging, branding, and applying bar codes – to take place where the fruit and vegetables are grown. This prevents the value-add from being captured elsewhere.¹⁴⁶

It is important to easily match skills with needs. Regional decisionmakers should understand the global requirements and identify the skills required to meet these needs.

Standards training, itself a basic requirement to compete in high-end markets, represents another element for upgrading. It is important to easily match skills with needs. Regional decisionmakers should understand the global requirements and identify the skills required to meet these needs. They should then facilitate the provision of appropriate skills training.

There is a question around labour mobility. Trade-offs can take place. In Kenya, there are different trade-offs related to focusing on permanent workforce interventions to better capture the gains.¹⁴⁷ Meanwhile, Chile focuses on a moveable workforce. As off-farm labour typically moves across the industry, more benefits derive from the National Labour Skills Certification System. Thus, drivers of increased productivity are shared, maximizing the returns on investment in training.

MNEs are important as a supplier and facilitator of knowledge for skills training and management development. To help developing countries secure access to or build connections with GVCs, foreign agencies provided training related to the adoption of standards, which helps drive rural development.¹⁴⁸ To standardise such skills and management development, Chile has extended tax breaks for companies conducting training through certified training agencies.

Similarly, MNEs play an important role as a demander or requester of knowledge. Ensuring a robust knowledge pipeline can help countries ensure high-quality FDI by supplying 'labour by orders.' For example, Viet Nam is connecting workers with universities, colleges, or skills centers leading to a supply of skilled labour which meets the requirements of foreign investors in certain industries.¹⁴⁹ The goal is for the workforce to have better jobs, higher wages, and most importantly, for FDI flows to become more 'sticky'. The stickiness aims to see FDI stay in a region as MNEs benefit from a steady and abundant supply of high-quality workers.

As previously indicated, shocks are potential junctures for upgrading. With respect to knowledge, Sri Lanka exemplifies the use of a trade shock to upgrade economically, socially, and environmentally.

CASE STUDY 4

Leveraging trade shocks and skills to upgrade Sri Lanka's textile industry¹⁵⁰

In 2005, Sri Lanka's textile industry suffered a shock. The Multi Fibre Agreement (MFA), which imposed quotas on the number of textile exports from developing countries into developed countries, was dismantled. Due to the country's easily trainable workforce, itself a consequence of universal free education, Sri Lankan firms quickly acquired new technical and managerial skills. Subsequently, the apparel industry advanced dynamically through specialisation. Part of this dynamism resulted from the collaborative actions of industrial associations, particularly MNEs who were pivotal in linking Sri Lankan firms to GVCs.

Sri Lanka's upgrading trajectory benefitted from two additional aspects. As MNE retailers never took hold in Sri Lanka at a considerable scale, the country's regions accumulated more specialised and technical know-how to produce goods of relatively higher complexity. Consequently, the technical expertise enabled the labour force to product upgrade more efficiently.

Second, global partnerships between universities in Sri Lanka with peers in the United Kingdom fostered higher-end knowledge. The country's main technical college, the University of Moratuwa, offered diploma-level design courses in textile technology, in collaboration with the London School of Fashion Design. Similarly, the Joint Apparel Association Forum collaborated with the Chartered Institute of Marketing in the UK to offer a post-graduate diploma in marketing.

These factors facilitated Sri Lanka to carve out product niches at the upper end of the value chain. It also helped the industry reach strong CSR standards and comply with internationally agreed employment practices. Supported by collaboration with industry and governments, the labour force was able to meet buyer demand for variety and thrive in the post-MFA environment.

As with education, MNEs can play a crucial role in modernising management training. One example is joint programmes, where foreign partners provide substantial parts of the curriculum and teaching staff, in addition to international accreditation. Such facilitation helps to upgrade the workforce.

Foreign companies have also been pioneers of on-the-job training in corporate universities. Consider the launch in 1993 of Motorola University, a facility the telecommunications firm established to provide management and technical training for its personnel, clients, and suppliers. As proof of the project's success, the facility inspired many others. By 2005, Motorola had 21 university arrangements which offered management courses ranging from Executive Master of Business Administration (EMBA) to Doctor of Business Administration (DBA). Their peers Ericson and Siemens also followed suit.¹⁵¹

An ongoing dialogue with foreign investors is critical to deliver skills, training, and management development. This will help regional decisionmakers to discover what policy supports are needed to create partnerships and facilitate long term investments.

Aviation giant Boeing also worked to extensively enhance skills and accreditation in China to increase standards and training. The MNE enhanced professional training for almost 50,000 aviation professionals in China and created the Boeing academy, a central platform for training. The spill-over effects were also positive, with foreign firm competition pushing Chinese local firms to also invest in management development and upskill their workforce.

An ongoing dialogue with foreign investors is critical to deliver skills, training, and management development. This will help regional decisionmakers discover what policy supports are needed to create partnerships and facilitate long term investments.¹⁵²

Otherwise, countries risk following the fate of Viet Nam's textile and garment sector. The sector boasted a large volume of exports, but it stuck in labour-intensive and low value-added production. The industry needed to boost technical training for its labour force and facilitate investment into technical learning. Limited training at the management level and unsuccessful technology transfer from MNEs had caused a bottleneck and inhibited movement into more profitable GVC segments. Many local textile producers gave up on upgrading their competitiveness.¹⁵³

Labour markets

With workers learning from each other and each other's firms, fluid labour markets help knowledge spill-over. This fluidity can aid upgrading as human capital is shared across a region. Additionally, some spatial inequalities can be mitigated through labour freedom. Less regulation can increase the effects of domestic value-added as the labour market turnover facilitates knowledge spill-over; rather than remaining with certain individuals, foreign value-added is shared across the economy.¹⁵⁴ Evidence from Europe also shows that greater labour flexibility in a host country, whether in absolute or relative terms, is associated with larger FDI flows.¹⁵⁵ But for firms to invest in training their employees, they require a degree of security. This important aspect of a firm's absorptive capacity works best when employees enjoy permanent contracts. The firms have a greater incentive to invest in firm-specific knowledge and skills that will facilitate employee development and firm specialisation.¹⁵⁶

Many of Asia's workers are in the informal sector, with some 85% and 47% of employment in rural and urban areas informally employed.¹⁵⁷ This case study shows the impact of a labour market approach to human capital.

CASE STUDY 5

A labour market approach to increasing human capital in Mewat, India¹⁵⁸

With more informal economies, the place-based approach allows the benefits of workers to spread beyond individual firms and across the labour market. In Mewat, India, the relational contract in place at the bottom of the value chains brought particular labour market benefits.

The case adds to growing evidence that company-led initiatives are necessary but insufficient for certain types of upgrading. They do not always link corporate growth with sustainable social upgrading in the global economy. In Mewat, the network in place encouraged exporters to take responsibility for training workers in the regions; these upgrading skills were necessary for the products they were outsourcing. In short, firms would receive what they had prepared workers for.

Through visits and determining the skills that could be rapidly upgraded, the MNE actively contributed to the strengthening of regional capabilities. Unusually, this upgrading took place even before the orders were committed. The skills were further enhanced during on-the-job learning.

This set up allowed training to take place during times of reduced orders and around specific seasons, specifically during the slack season. This scenario highlights the possibility of upgrading even in the most informal segments of global production and value chains.



The Mewat case adds to growing evidence that company-led initiatives are necessary but insufficient for certain types of upgrading.

Certification bridges the information gap between buyer and seller, indicating an expected level of quality in global markets. It is a clear potential route for many types of upgrading.

Regulation and frameworks – Standards and certification

Standards and certification represent an important route for upgrading. Certification bridges the information gap between buyer and seller, indicating an expected level of quality in global markets. It is a clear potential route for many types of upgrading. Meanwhile, standards provide a set of instructions on how to formalize informal arrangements. In doing so, local production becomes global.

In Viet Nam, a study examined the role of local institutions and global value chains in the shrimp export industry. According to the findings, local food safety compliance improved following the introduction of market requirements and certification on food safety to local institutions - thanks to global buyers and GVC governance.¹⁵⁹ The result: product upgrading.

In Uganda, a trial comparing 'organic by default' and certified organic smallholder coffee farmers showed that certification brought, on average, a net revenue increase of 75%. This is equivalent to almost 13% of average total household revenue. Crucially for the upgrading story, the revenue increase is due to farmers engaging in higher value activities and climbing the value chain – specifically, incentives encouraged farmers to engage in the processing of the crop, over and above production. The processing enabled farmers to access guaranteed price premiums.¹⁶⁰

Such certification is important in higher income countries too. Evidence from Italy shows that geographical indicators accrediting product exports bring positive local economic benefit. For example, rural municipalities with geographical indicators experience two notable things. First, the area enjoys population growth. Secondly – and importantly for upgrading – they experience economic reorganisation towards non-farming sectors, which frequently involve high value-added activities, a consequence of upgrading.



Certification bridges the information gap between buyer and seller, indicating an expected level of quality in global markets. It is a clear potential route for many types of upgrading.

These certifications protect unique agricultural products from unfair competition and signal to global markets a product's uniqueness, enabling producers to establish global-local linkages. In rural areas with limited public expenditure, such a dynamic enables communities to preserve traditional practices while welcoming new global opportunities.¹⁶²

Across Asia, MNEs are bringing international standards which impact the development of upstream and downstream activities. Aligning with international standards helps suppliers increase their potential to engage in international supply chains. A pattern emerges, with MNEs leveraging FDI, identifying local suppliers and working together to move into international standards. In the 1980s, Coca Cola modernised its entire sector after entering China's market. The company transmitted competitive business practices through its supply chains;¹⁶² beneficiaries included distributors taking part in supply chain upgrading.

Other companies in China were also introduced to international standards by foreign companies. This example of process upgrading is best shown by the first commercial development project by property developer Wanda. The developer, now international, learnt by doing. Wanda spent years delivering according to the international specifications of Walmart, which adhere to standards much higher than was typically observed in China.¹⁶³ The result: significant process upgrading.

Legislation and frameworks

The softer policies surrounding standards and certification can be complimented by legislation and frameworks. Legislation around openness is critical – limited restrictions matter for facilitating GVC-sensitive policy.

A 10% liberalisation of FDI measures could increase FDI between home and host economies by 2.1%, on average. Economies that had the highest restrictions could see a doubling of FDI stock if they could meet the OECD's benchmarks for openness.

According to a study of more than 60 countries taking place from 1997 to 2016, a 10% liberalisation of FDI measures could increase FDI between home and host economies by 2.1%, on average. Economies that had the highest restrictions could see a doubling of FDI stock if they could meet the OECD's benchmarks for openness.¹⁶⁴

Restrictions towards foreign equity as well as screening mechanisms are those that deter FDI the most. This avoidance is most acute in the services sector and affects some regions more than others. Yet manufacturing, which is typically more open to foreign investment, is also negatively affected by an economy's overall strictness.¹⁶⁵ In addition to specific industries that gain market access from openness, downstream sectors may also benefit from better access to high quality inputs and services domestically. As such, recently the Philippines' Board of Investment removed the nationality and local equity requirement from its investment legislation. It remains to be seen whether this will have the effect experienced elsewhere.

These FDI-related frameworks can help signal the type of investment a country desires. If used appropriately, they can counterbalance some inequalities. Cambodia offers an example. Firms there receive a VAT exception for their GVC processes if they actively target unemployed youth, who often suffer unemployment levels above the national average. Attempting process or product upgrading through machinery purchases are also tax deductible.

The economic benefit of a lower-middle income country developing stronger intellectual property (IP) rights depends on the ability of local actors to purchase, absorb, and deploy the new technology. If these local actors do not exist, then strong IP rights extend little benefit.

Openness to knowledge, namely intellectual property rights (IPR), is also important. From the perspective of MNEs, IPR is critical with respect to investment. But from a regional perspective, the importance is tied to its potential for absorbing knowledge. The economic benefit of a lower-middle income country developing stronger IPR depends on the ability for local actors to purchase, absorb, and deploy the new technology it brings. If these local actors do not exist, then strong IPR extends little benefit. If they do exist, then the size of the economic benefit depends on the extent to which IPR increases the cost of technology. Another factor: whether alternatively copying technology would be cheaper or more rewarding than developing capacity. Brazil exemplifies such a trajectory. Closed off with protective policies, Brazil did not participate in developing knowledge, particularly in the ICT sector. In contrast, South Korea sought to become part of an international supply chain. As a result, knowledge creation and learning flourished, and made way for several upgrading options.¹⁶⁶

Finally, competition rules in place are also important. Strong legal frameworks ensure a level playing field for foreign and domestic firms. In doing so, such frameworks can incentivise domestic firms to increase productivity, innovate, and improve the quality of their products.

Innovation and Research & Development

Driving FDI in R&D can offer particularly impactful benefits for upgrading. Evidence shows that foreign invested R&D was critical in China,¹⁶⁷ spurring innovation in Chinese firms and stimulating domestic entrepreneurship. MNEs involved local firms into global R&D networks in a way that no Chinese company could do.¹⁶⁸ This again drives knowledge enhancement and opened upgrading opportunities.

Building a regionally specific innovation area helps carve out a niche, or fine-grained specialism. This specialization should use the above knowledge, technology transfer, and learning, allowing firms and regional governance to work in parallel to drive development.



Evidence shows that foreign invested R&D was an important driver of innovation in China, spurring innovation in indigenous Chinese firms and stimulating domestic entrepreneurship.

GVC-sensitive vertical engagement

GVC-sensitive vertical engagement represents more active public policy. It is a response to prepositions that knowledge is in the air and unconsciously learned. Instead, we argue that knowledge must be actively sought by regions seeking to strategically couple their local assets with MNE aspirations. For emerging economies, some academic research favours vertical industrial policies.¹⁶⁹ Recent studies of India advocates this approach.¹⁷⁰

In aggregate, productivity spill-over is shown to be higher when foreign firms are targeted by investment promotion agencies and related efforts.

Investment promotion agencies

Investment Promotion Agencies (IPAs) are a powerful tool to help steer the upgrading journey. In aggregate, productivity spill-over is shown to be higher when foreign firms are targeted by IPAs and investment promotion efforts.¹⁷¹ In Indonesia, firms with 10% or more foreign ownership enjoyed better annual sales and productivity. Viet Nam's firms with similar ownership also performed better in employment.¹⁷² In addition to fielding investment, IPAs can link with GVC-sensitive horizontal engagement and are useful in steering on-the-job training to match specific needs.¹⁷³

The spatial scale of IPAs is important. At the national level, some IPAs can misdirect their policy efforts and do not capture the full potential gains from trade. There is evidence that national or centralised IPAs are not as powerful at generating FDI. Instead, they might be privy to elite capture, merely allocating FDI – and not to the most efficient or equitable locations.

Regional IPAs are particularly useful in less developed areas where market and institutional failures are typically stronger. In fact, IPAs influence FDI direction more than other policies targeting general economic improvement.

While this is not the case with all national IPAs, it does contrast with the regional level. With subnational IPAs, systematic evidence from Europe shows that, because proximity reduces the information gap between investor and regional assets, regional IPAs are effective at generating FDI.¹⁷⁴ Regional IPAs are particularly useful in less developed areas where market and institutional failures are typically stronger. In fact, IPAs influence FDI direction more than other policies targeting general economic improvement. Knowledge intensive sectors and less experienced or occasional investors particularly feel this influence.¹⁷⁵ Arguably, aftercare is more important for repeat foreign investing enterprises (FIEs). Hence it is clear that there remains a role for collaborating with national IPAs to boost regional development, and in the case of Indonesia, their investment promotion overseas offices.¹⁷⁶ These policies would allow the large variation in socio-economic contexts and trajectories of areas in Indonesia to be better served by GVCs and FDI.

Special Economic Zones (SEZs)

Often prescribed to stimulate job creation and promote industrial development, special economic zones (SEZs) are an increasingly popular policy instrument. Today, 147 countries have an SEZ policy.¹⁷⁷ Asia hosts the majority of SEZs and accounts for almost 80% of the 6,000 SEZs worldwide. SEZs in China dominate the field and comprise half of Asia's share.

Yet, the track record of SEZs is mixed. In 2014, less than a quarter of the 625 SEZs formally approved in India were operational.¹⁷⁸ At a deeper level, sometimes bottlenecks or poor public policy impede the SEZs' ability to help firms upgrade or bring socio-economic benefit.

The case of Myanmar's first SEZ Thilawa illustrates this quandary. Initially, the connection with MNEs brought new skills to domestic workers,¹⁷⁹ facilitating functional upgrading. These trained and higher skilled workers then prompted a secondary benefit: the sharing of expertise with other workers. Skills dissemination was most important for managers, who later spread the benefit of the SEZ to the rest of the economy. By early 2018, firms in the SEZ had created some 5,000 jobs. In Myanmar, the most important benefit of working at the SEZ consisted of employees learning new skills.

Respondents to a survey of managers showed that human resource management skills were the most important skills that were learned by doing.¹⁸⁰ However, the SEZ struggled to reach its potential. Infrastructure bottlenecks saw long commuting times that put off highly skilled workers. Similarly poor local linkages translated to a low share of inputs sourced from indigenous firms outside the SEZ. Consequently, upgrading outside of the SEZ was limited in the short term.

In Myanmar, proposed policy improvements include a greater understanding of local worker characteristics, so that workers can be matched better with the skills required by investors. While it is tempting to use regulatory concessions, they should not be used as a substitute for improving the broader investment climate.

Public policy can counter these developments. While there is no best practice for SEZ policy, it is useful to learn from others. In Myanmar, proposed policy improvements include a better understanding of local worker characteristics, so that workers can be matched better with the skills required by investors.¹⁸¹ While it is tempting to use regulatory concessions, they should not be used as a substitute for improving the broader investment climate. As described above, they can aid if embedded in national development strategies. These strategies can include the accompanying measures to generate wider spatial impact on the local economy outside the SEZ. Such measures, many evidenced in Viet Nam, include supplier development, matchmaking services between firms, and engagement of local education initiatives to provide the needed training for SEZ development.¹⁸²

Furthermore, in China, local incentives mattered. The country's first four SEZs were granted fiscal and foreign exchange privileges. These benefits facilitated locally generated funds, which subsequently helped to develop the localities.¹⁸³



Despite their popularity, the track record of SEZs is mixed. The case of Myanmar's first SEZ Thilawa illustrates this quandary.

Local linkage units

Local linkage units (LLUs), also known as local content units (LCUs), can act as powerful tools to build and embed a region with GVCs, driving potential upgrading.¹⁸⁴ These units serve as a flexible alternative to executing laws and legislation. They are relational rather than rigid, and work with MNEs to help facility linkages for upgrading or supply chain spill-over. As with IPAs, LLUs can account for subnational value chain positioning and upgrading directionality. In addition, they are useful for lagging regions. Described by some as a matchmaking service, LCUs can ally with MNEs to integrate local firms in the supply chains.¹⁸⁵

Arguably, some Asian countries have incorporated this approach into their strategies. As part of its plan to reskill and upskill the workforce, the Philippines have included strengthening local linkages into domestic and global value chains.¹⁸⁶ As with SEZs, exercise caution, particularly if LLUs become too rigid and the units move from 'relational' to 'requirements'. Previously, the Philippines and its automobile sector had in place local content requirements which were sometimes backed by policies of mandatory deletion. These specified that certain components must be deleted from imported intermediate goods to allow local production to make up the difference. While attempting to be a rich source of backward linkages, this restrictive policy did not lead to international competitiveness.¹⁸⁷ Instead it contributed to the Philippines' problems in vehicle production, with the country facing issues of economies of scale and a weak domestic supply base. In contrast, Indonesia has arguably dealt better with the Japanese automobile assemblers dominant in both countries.

Aftercare

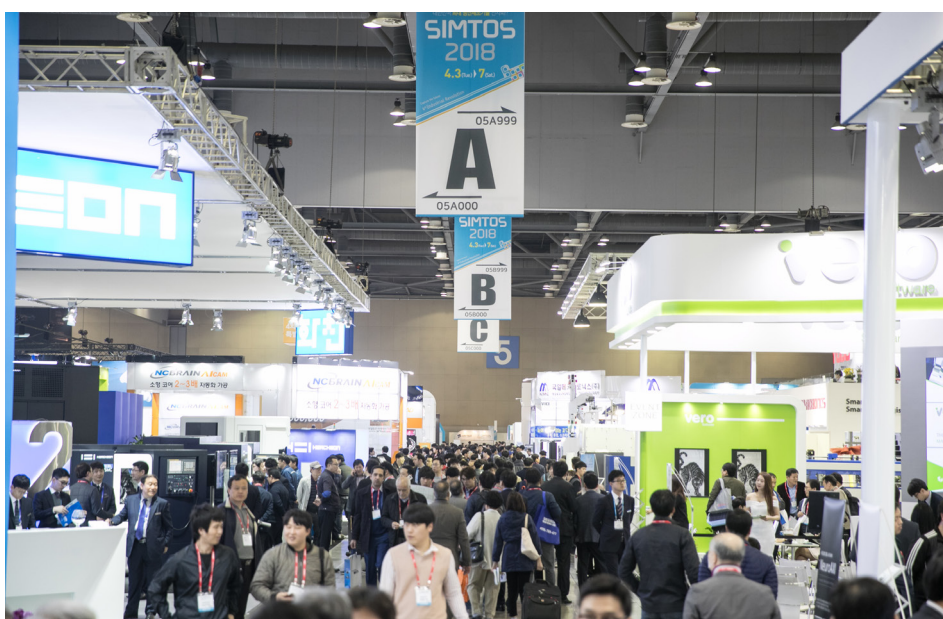
Aftercare services can be useful for existing MNEs who are or could be repeated investors in a country or region. Evidence from the Republic of Korea shows reinvestment from MNEs occupies 70% of total inbound FDI to the country.

IPAs can be useful policy tools for overcoming information barriers for occasional investors. Similarly, aftercare services can be useful for existing MNEs who are or could be repeated investors in a country or region. Evidence from the Republic of Korea shows reinvestment from MNEs occupies 70% of total inbound FDI to the country.¹⁸⁸ Subsequently, if a host country provides effective aftercare, there is a higher likelihood of leveraging future flows. With scarce resources, there is a trade-off between focusing on attracting reinvestment and embedding existing GVCs, rather than building connections to potential new partners. Accordingly, it takes more time and effort to find new investors than engaging previous suppliers of FDI. Korea's Foreign Investment Ombudsman and Aftercare organisation estimates that it takes five times more time per won (₩) for new investment than reinvestment.¹⁸⁹ With respect to upgrading, there are considerations other than time. Potentially, reinvestment is more likely to lead to vertical upgrading investment.

Korean officials contend that investment incentives do not play a major role and are insufficient to attract FDI. It is rather the support that matters and contributes to an improved investment climate.

This understanding makes aftercare useful, either as part of IPAs or in parallel with them. In the case of the Republic of Korea, they do work together; the Foreign Investment Ombudsman and Aftercare organisation works within Invest Korea under the Korea Trade-Investment Promotion Agency (KOTRA). Both organisations are interconnected and are believed to contribute to the sustainable growth of the country's economy. In line with this narrative of care, those involved in KOTRA believe that investment incentives do not play a major role and indeed are insufficient to attract FDI. It is rather the support that matters and contributes to an improved investment climate.

There is some evidence that regional or local government institutions providing aftercare bring larger benefits, although they are not as powerful as IPAs. In Wales, the role of regional aftercare units in repeating investment was only marginally important. The levers to change or influence the horizontal conditions, such as labour markets, were more important.¹⁹⁰ Instead of regional units, Ireland had a national provision. While centralised, it was integrated with other policy issues of importance to MNEs. However, due to centralisation, the aftercare unit was unaware or had limited expertise of local conditions, and hence was deemed somewhat unresponsive.¹⁹¹ The power of aftercare may indeed emanate from its integration of other elements of investment promotion. This approach was preferred in a study of South African IPAs, where local governments and integration across ‘all spheres’ of government were deemed most appropriate to provide investment aftercare.¹⁹²



Korea's Foreign Investment Ombudsman and Aftercare organisation estimates that it takes five times more time per won (₩) for new investment than reinvestment.

7. Conclusion

This paper blends conceptual theory, fine grained empirical data and public policy to highlight why and how decision-makers can engage with GVCs, driving dynamic specialisation with upgrading through FDI. Much of the analysis is backward looking for today's value chains. There is merit in looking forward - to understand GVC sensitive engagement for the value chains of tomorrow.

GVC sensitive engagement for VCs of tomorrow

To do so, it is worth returning to where the paper started. Bangalore as the region provides an indication of GVC sensitive engagement for future value chains. Just as the 1898 pandemic saw the city dynamically change, the ongoing 2020 pandemic will see the city dynamically change again. The changes will reflect the two major global shifts, that of a climate-friendly recovery and increasing digitisation. Both will see Asian countries and regions requiring new approaches to upgrading through FDI.

Bangalore is fortunately well placed to manage the changes and uncertainty. Since 2016 it was indexed as either the second or first 'most dynamic city' in the world.¹⁹³ The following two sections look at how Bangalore and other areas in Asia can manage these changes.

Green global value chains

Climate change and sustainability

New GVC sensitive policies will increasingly have and require a specific environmental lens. Increasing sustainability with upgrading through FDI is achieved through firms reacting to citizens, markets reacting to citizens, and governments reacting to them all.¹⁹⁴ Bangalore will need to find new ways to build, embed, and reshape green global value chains (GGVCs). To expand, the computer and information services, core to the region's development, may take existing specialisations for further dynamic development. For example, by increasing the engagement on green biotechnology and designing more environmentally-friendly and cost-effective alternatives to industrial chemicals. Similarly with goods, such as broadcasting equipment – the most exported machinery nationally. Increasingly there will be an economic advantage if regions design, produce, distribute and service the equipment in more sustainable ways. Lower carbon production leveraging renewable energy is one way. But so is fundamentally changing the design part of value chains to include eco-steel. Another way is to reduce consumption by including more options for maintenance and repair.

Across Asia, national and sub-national governments would benefit from environmentally upgrading through FDI and finding new greener ways of delivering their specialisms. Smart policies can guide this process. Cambodia has soft public policy in place with the design of a specific supplier database for sustainable investment. Ghana recently put in place a special recognised category for sustainable FDI, with a recognised 'green channel' or targeted government engagement before investment, complimenting a 'green (red) carpet' for aftercare. Thailand has similarly recognised the potential benefit of GGVCs, with

decisionmakers observing that the bio-economy – specifically using renewable biological resources – would generate higher value add of 8-11% compared to 7% in traditional agricultural tasks.¹⁹⁵

These are the kinds of opportunities that the value chains of tomorrow can bring. The opportunity is considerable, if successful countries and regions can find new micro-specialisations for economic and environmental gains. If they fail, the cities and regions who have economic advantage today, may lose it tomorrow.

Digitisation of global value chains

Digitisation & automation

The global pandemic and its consequences drove unexpected and sudden increases in digitisation. The impact has been two-fold. GVCs will likely expand with technologies like artificial intelligence, big data and cloud computing driving efficiencies, from product development, planning, and production. In contrast and importantly for developing countries in Asia, without proactive public policy the widening digital divide between developed and developing economies may impact the latter's ability to build connections to GVCs.¹⁹⁶ As production becomes more digitised, developing economies may face limited opportunities for future offshoring.¹⁹⁷

Beyond GVCs themselves, digitisation will affect upgrading. It is well understood GVC subsidiaries can functionally upgrade through knowledge intensive production related tasks. Digitisation can drive this process as it can facilitate achieving comparative advantage – crucial for value capture.¹⁹⁸ Consider evidence from India on the impact of digitalisation on product upgrading. Data from 2001 to 2015 shows that an increase in digital capability of GVC firm positively and significantly impacts product sophistication. More sophisticated products enables firms to upgrade and climb the value chain. Digital leaders produce 4 to 5% more sophisticated goods than laggards.¹⁹⁹ A different study from India during a similar time period shows that digitisation significantly impacts firms' participation



New GVC sensitive policies will increasingly have and need a specific environmental lens.

in GVCs; it promotes firms in low technology industries and those of smaller scale into the GVC.²⁰⁰ It is therefore no surprise that many believe emerging technologies will be the driver of global economic recovery.²⁰¹

Bangalore is aware of technology's importance. Yet, one of their responses – the Bangalore-BIAL Information Technology Investment Region – was put on hold due to lack of connectivity, which dampened interest from MNEs. Across Asia, decisionmakers need to address their digital foundation and digital direction. There are new spatialisations to realise. There is also more possibility to be left behind.

A new public policy momentum

Coupled with growing demands for climate change mitigation and adaption, technological change had called into question consolidated models of GVC participation well before the pandemic. Covid-19 has accelerated pre-existing trends and magnified their impacts while triggering public policy shifts. Efforts to support recovery and develop new forms of socio-economic resilience have mobilised an unprecedented amount of resources across advanced economies. Policy tools previously considered unviable in the mainstream policy discourse have momentum and political support. For the first time, the Recovery Plan of the European Union (known as Next Generation EU) has created a pool of common debt shared among EU nations to lower borrowing costs for weaker members and raise funds to support policies for climate neutrality and the digital transition.

The dramatic economic impact of the Ukraine war has provoked calls to extend the Recovery Plan. The EU example shows the shift in global public policy today. This momentum offers unique opportunities for the design and implementation of evidence-based policies of the type discussed in this report – policies that align sustainable development, technological change, and international openness. Internationally open and inclusive development policies that can bring tangible benefits across communities are powerful antidotes against geopolitical fragmentation. They can also enable cooperative solutions to local and global challenges.

In this evolving global context, a new generation of GVC-sensitive policies can allow Asian economies to play a critical proactive role. To support this process with sound concepts and evidence, an ambitious and innovative research agenda to identify what tools work on the ground (and under what conditions) is urgently needed.

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Riccardo Crescenzi is a Professor of Economic Geography at the London School of Economics and is the current holder of a European Research Council (ERC) Grant. He is also an Associate at the Centre for International Development, Harvard Kennedy School of Government, Harvard University.

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Riccardo has served as the Rapporteur of the High Level Expert Group on Innovative Cities established by the European Commissioner of Research and Innovation. He has also provided academic advice to, amongst others, the European Investment Bank (EIB), the European Parliament, the European Commission, the Inter-American Investment Bank (IADB), the Asian Infrastructure Investment Bank (AIIB), the OECD and the World Bank. Riccardo is currently part of the National Infrastructure Commission of Italy recently established by the Government to plan investment in sustainable mobility until 2050.

His research is focused on regional economic development, innovation, Foreign Direct Investment (FDI) and multinationals and the analysis and evaluation of European Union policies. His 5-year ERC research project looks at the location strategies of FDI around the world, at their impacts on the host economies and at the evaluation of policies for the attraction and retention of FDI.



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Oliver Harman is a Cities Economist for the International Growth Centre's (IGC) Cities that Work initiative based at Blavatnik School of Government, University of Oxford and Associate Staff at London School of Economics. He is also a Clarendon Scholar studying the financing and governance of Sustainable Urban Development in low-income and fast-growing cities. In these roles, he attempts to help bridge the gap between research and policy translating economic literature into clear urban policy guidance for emerging country city governments.

Oliver engages with local government Ministries and Mayoral teams primarily across sub-Saharan Africa, South Asia, Latin America & Caribbean and Europe. Examples include local government reform in Guyana, urban resilience and waste management in Ghana, municipal finance in Malawi, Senegal, Somaliland and sustainable urbanisation in Bangladesh. His three thematic interests include financing sustainable urban development, global value chains for regional upgrading and climate change in cities.

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