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POLICY BRIEF



# THE POST-COVID-19 FUTURE FOR GLOBAL VALUE CHAINS

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### ABSTRACT

The global economy has seen a trend towards internationalized production through Global Value Chains (GVCs) over recent decades. However, developing regions differ greatly in the nature and extent of GVC integration. Like any production model, GVCs come with benefits and challenges. Narrow specialization and trading in tasks makes it possible to realize important efficiency gains, and to generate income and employment in a wide variety of source economies. But of course, sensible regulation is needed to ensure that GVC development is consistent with broader environmental and social goals. In particular, greater reliance on globalized networks of production and consumption makes it all the more important to ensure that robust social safety nets are in place domestically. While the COVID-19 pandemic put GVCs under stress, the main risk to the model's continued viability is political rather than economic or commercial.

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### INTRODUCTION

There are two 'unbundlings' that have taken place in the modern economy (Baldwin, 2011). The first is the geographical separation of production and consumption, visible in the growth of world trade post-1945: consumers became increasingly less reliant on national sources of supply, while producers became increasingly less reliant on national markets for their output. More recently, the production process itself has undergone a similar disintegration. For much of the 20th Century, goods were largely produced in one place using domestic supply chains (even if shipped somewhere else for final consumption), but the latter part of the 20th Century and the first decades of the 21st have seen an important shift towards the internationalization of production. From domestic supply chains, we have increasingly moved towards global value chains (GVCs), which divide production into distinct units, split across locations according to narrow patterns of comparative advantage. Indeed the 'chain' terminology is something of a misnomer: GVCs, in fact, operate more like networks, in the sense that they are complex and nonlinear, rather than linear chains.

Conceptually, a value chain "describes the full range of activities that firms and workers do to bring a product/good or service from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution, and support to the final consumer" (Frederick, 2016). A GVC, therefore, arises when actors carry out these activities in different countries, rather than within the confines of a single country. As the International Trade Center (2017) points out, many GVCs are regional rather than global in scope, as they focus on firms within a single geographical region covering more than one country. True GVCs are most frequently the domain of very large firms that have the resources to research and coordinate suppliers from all over the globe, but the analysis of GVCs and regional value chains (RVCs) is conceptually very similar, so we combine them into a single analysis here, only drawing a distinction when it has analytical salience.

From an analytical standpoint, the rise of GVCs favours a number of shifts in emphasis in thinking about trade and investment relationships (Cattaneo et al., 2013). On the one hand, **spreading production activities across numerous countries tends to make countries somewhat less relevant** as units of analysis, **and firms somewhat more relevant**. Of course, both remain relevant in an overall sense, but the change in relative emphasis is significant. Similarly, **trade policy usually focuses on industries or sectors** as economic aggregates, **but GVCs make the paradigm of trading in tasks more relevant** (Grossman and Rossi-Hansberg, 2008); the definition of activities becomes finer and incorporates services as goods. Finally, government policies remain important determinants of the location of economic activity, but the role of GVC lead firms means that **private standards assume greater relative importance** than in the past.

As Baldwin (2011) points out, the rise of GVCs has provided developing countries with a new lens through which to view outward-oriented growth. Industrializing countries in the 1970s and 1980s focused on developing full domestic supply chains in key industries, namely final-goods producers supported by ecosystems of input suppliers. Baldwin presents the Republic of Korea as the paradigmatic case. The focus in the 2000s shifted towards joining existing value chains, rather than developing new ones from the ground up. Over time, countries shifted into higher value-added activities. Baldwin (2011) notes that China's use of its external sector to support rapid growth has had some elements of this approach, as has Viet Nam. In the GVC development model, specialization by comparative advantage takes place at the level of narrowly-defined tasks rather than sectors. Similarly, trade in intermediate goods and services takes on increased importance. GVCs operate as finely-optimized complex systems, with inventories reduced to low levels in order to reduce carrying costs, and reliance placed on sophisticated and efficient transport and logistics systems.

While the policy world has seen extensive discussions of GVCs over recent years, the COVID-19 pandemic has lent new salience to this process. On the one hand, the years since the Global Financial Crisis have generally seen slower growth of world trade and GVCs than in the preceding decade or so. But, at the same time, political pressures in some leading economies have suggested that internationalized production may be seen as less desirable from the perspective of the domestic economy and society than was the case in the recent past. This questioning is reinforced by difficulties observed in some supply chains in the early days of the COVID-19 pandemic, when initial shortfalls for products, such as personal protective equipment and hand sanitizer, may have posed risks for public health. Stating these issues by no means prejudges our response to them, but their prominence in public discussions

increases the importance of bringing facts, data, and analysis into the discussion, with the aim of reaching a robust and nuanced understanding of the issues.

Against this background, this brief seeks to provide further evidence about the economic and social implications of GVCs. In addition, it will chart out some forces that may influence GVCs' future development. It explicitly adopts the point of view of developing countries, by which we mean low- and middle-income countries as determined by World Bank data.<sup>1</sup>

The brief proceeds as follows. The next section discusses the measurement of GVC activity and provides some basic information on the nature and extent of GVC integration around the world. We then discuss economic and social impacts of GVCs in more detail. We follow with a focus on trade policy, in particular the question of the extent to which recent moves by some large economies can disrupt GVC development elsewhere. We then turn to the future, by addressing a selection of major issues that will influence GVC development over the medium term. The final section concludes by addressing key findings and policy implications.

"The COVID-19 pandemic has lent new salience to discussions about the costs and benefits of global value chains"

<sup>&</sup>lt;sup>1</sup> For the World Bank 2021 fiscal year, low-income economies are defined as those with a gross national income (GNI) per capita, calculated using the World Bank Atlas method, of US\$1,035 or less in 2019; lower middle-income economies are those with a GNI per capita between \$1,036 and \$4,045; upper middle-income economies are those with a GNI per capita between \$4,046 and \$12,535; high-income economies are those with a GNI per capita of \$12,536 or more (World Bank, 2021a).

### GLOBAL VALUE CHAINS: A DESCRIPTION OF THE CURRENT STATE OF PLAY

Standard trade data do not give much help in identifying or measuring GVC trade.<sup>2</sup> The reason is that they measure trade on a gross-shipments basis; for example, the recorded value of a mobile phone imported into Japan from China is the full shipped price of the mobile phone. However, if the mobile phone was produced in a GVC, as is typically the case, then it embodies inputs from all around the world: the screen comes from one country, the processor from another, design services from another still, and pre-loaded apps from yet another. Measuring GVC trade would ideally identify all of these instances of value addition separately, so that the number of exports recorded from China to Japan corresponds to the value added by Chinese firms. Meanwhile, one would also 'unbundle' the single transaction to show movements of value added from all of the input-supplying countries to Japan, as well. Finally, an ideal measure would account for the fact that some inputs move across borders multiple times during production, and net such inputs out from the count, something standard trade data do not do. For an individual product, one could conceivably identify the different sources of value added by tracing them through inter-firm linkages in the supply chain,<sup>3</sup> but systematic application of the approach calls for more sophisticated methods.

With this in mind, economists have developed a number of approaches for measuring trade in value-added terms, in essence an attempt to reframe the available data so as to focus on movements of value added rather than the simple gross value movements captured by standard sources. The operations involved are complex, involving a marriage of standard trade data and input-output tables. Given that reporting lags for detailed national accounts—used to construct input-output tables—trade in value-added data typically only become available with a delay of some years from the relevant date. Still, they have already offered important insights into GVC growth and development since research in this area started in earnest in the early 2010s.

The literature discloses two key summary measures of GVC integration that come from trade in value-added data. Backward participation captures the proportion of a country's gross exports accounted for by value added sourced elsewhere; that is, it summarizes the extent to which a country's gross exports embody inputs, both goods and services, sourced from abroad. Forward participation is the mirror image: the pro-

portion of a country's gross exports used by other countries in order to produce their own exports; that is, the extent to which a country's gross exports are embodied in those of other countries. While there are numerous methodologies available to measure these linkages, all with subtle differences, one example suffices to provide a general impression of GVC spread and development. We use the methodology from Borin and Mancini (2019), as it appears in the World Bank (2020). Results are based on the Eora global input-output table, which currently extends to 2015 only, due to the reporting lag referred to above.

Figure 1 provides a first cut of these data, focusing on differences across exporting regions. Experience varies considerably from one region to another, as evidenced, for instance, by different balances of backward and forward linkages in gross exports. The general finding, however, is the same: by 2015, GVC trade, by which we mean the total proportion of backward and forward linkages in gross exports, comprised at least one third of the total in all world regions, and as much as 50 percent or more in some cases. Between 2000 and 2015, the proportion of GVC trade in total exports grew in all regions except Latin America and the Caribbean and North America. The two Asian regions, East Asia and the Pacific and South Asia, both saw increases in the proportion of GVC trade in total exports, particularly in South Asia. Within Asia, nonetheless, GVC trade takes place primarily in East Asia and the Pacific; South Asia sees a more limited amount of this type of interaction, in keeping with the much lower level of regional integration. Moreover, the time period in Figure 1 masks two distinct evolutions: more rapid increase generally took place prior to 2009 rather than following it, in line with a general slowdown of global trade growth post-Global Financial Crisis.

<sup>&</sup>lt;sup>2</sup> See Shepherd (2020) for a review of the methodological issues.

<sup>&</sup>lt;sup>3</sup> For instance, Xing (2020) uses such an approach to show that Chinese firms contribute about 25 percent of the value-added in the iPhone X, with 45 percent coming from Japan, the Republic of Korea and other economies, and a significant proportion from the United States of America, as well.



Source: Borin and Mancini (2019)

An important point to keep in mind is that, while GVC analysis first arose in the context of manufacturing sectors, such as electronics and motor vehicles, the phenomenon itself is actually ubiquitous across sectors, including primary industries and services. While intensities differ, GVCs have the scope to operate in most parts of the economy, in particular with the rise of digital technologies and more liberal policies that make services more tradable than in the past (e.g., Shepherd, Forthcoming 1). Figure 2 provides some evidence to support this point, namely backward and forward linkages for each of the 26 sectors in the Eora database (for the most recent year of available data, namely 2015). It clearly shows that GVC trade is significant in all sectors, even some services typically not provided commercially (where trade values are very low; the data appear in proportional terms, which masks this fact). While manufacturing sectors certainly see the highest proportions of GVC trade, the model is also important in agriculture and mining among primary sectors, and in services sectors, such as wholesale trade, financial or business services, and telecommunications.



Source: Borin and Mancini (2019)

Asia has considerable experience in GVCs in a range of sectors. Standout examples include transport equipment, electronics, and textiles and apparel. Specialization varies from country to country, but in a global context, Asian countries have enjoyed notable success in these sectors. From a future standpoint, evolutions in consumer preferences towards environmentally-focused goods, such as electric vehicles or green energy products like solar cells, mean that existing value chains may need to retool to produce distinct, but related, goods. Given the continent's history in the sectors in question, it would appear relatively well-positioned to take advantage of new opportunities in these areas.

### ECONOMIC AND SOCIAL IMPACTS OF GVCS: WHAT DOES THE EVIDENCE SAY?

Having established that the GVC model plays an important part in global trade in most regions and sectors, attention now turns to the economic and social consequences of that model. At the outset, it is important to be clear about how to assess this question. The counterfactual benchmark is vital: Namely, what would the economic and social consequences be of restricting GVC trade relative to its actual observed levels? Stating the question in this way makes clear that it is not enough to highlight a particular negative consequence of GVC participation and to assume that restricting GVC development would eliminate that consequence; it could just as easily make it worse. So, the analytical question relates to the way in which the evidence shapes up as to the impact of a marginal change in GVC integration: Would it improve economic and social outcomes, or would it worsen them?

From an economic perspective, the effects of GVCs are best understood as a particular case of the gains from trade and specialization. All of the standard arguments apply: trade results in lower prices and more variety for consumers, and larger markets for producers. But because GVCs also result in substantial changes to input sourcing, they also offer the prospect of productivity gains at the firm level, stemming from their ability to source the best inputs available globally. Despite the difficulty of teasing out causal effects, the anecdotal evidence is compelling. Hoekman and Shepherd (Forthcoming), comparing country-level productivity changes between 1980 and 2000 with those between 2000 and 2017, shows that productivity grew faster during the second period rather than the first in most low- and middle-income countries. Breaking down the same data by region shows that all countries in South Asia and 86 percent of countries in East Asia and the Pacific likewise saw stronger productivity growth between 2000 and 2017 than between 1980 and 2000, within the limits of the available data by country. So, the spread of GVCs at least coincides with a pick-up in productivity growth in the developing world, and the available evidence looking at GVC linkages specifically, such as Alfaro-Urena et al. (2020) on Costa Rica, shows that the link is indeed causal.

This increase in the rate of productivity growth has translated into a substantially changing world economy, with low- and middle-income countries now occupying a greater share of world exports than two decades ago. While the rise of large countries like China and India has played an important part in this development, it has had a much wider reach: **Between 2000 and 2018, 56 percent of low-income countries, 51 percent of lower-middle-income countries, and 46 percent of upper-middle-income countries increased their share in world exports** — meaning that their exports grew at a faster rate than world exports as a whole, and this during a period of unusually rapid global trade integration (Hoekman and Shepherd, Forthcoming).

A large literature using micro-data has arisen showing that firms that engage with the international economy, including through GVC linkages, tend to be larger and more productive than firms that focus on the domestic market only, and that they also pay higher wages to their workers than domestically-focused firms (e.g., Brambilla et al., 2017). Recent literature also shows that internationally engaged firms in developing countries tend to employ more women than firms that focus on the domestic market only (e.g., Shepherd, 2018; Rocha and Winkler, 2019). Results like these suggest that international engagement can have benefits for workers through increased employment rates and higher wages, which, in turn, can translate into gains in human wellbeing and enhanced capability.

How does this technical literature sit with other work that emphasizes the sometimes-poor working conditions in some GVC sectors, such as apparel? Saxena (2020) brings together a collection of contributions looking at GVC governance in light of the Rana Plaza disaster in Bangladesh, while Blattman and Dercon (2017) use an experimental approach to highlight the limited benefits of factory work in Ethiopia relative to other opportunities, such as self-employment. From a social perspective, civil society should concern itself about ensuring safe and sanitary working conditions in firms of all types, including those linked to GVCs. But there is no evidence suggesting that internationally-engaged firms perform systematically worse on this metric than do firms that serve the domestic market only. From a causal perspective, the culprit is more likely to be lax standards or lack of enforcement, rather than internationally linked status. Indeed, international linkages could conceivably prove an advantage, to the extent that lead firms have the ability to propagate superior standards throughout their supply chains and take steps to monitor compliance (e.g., UNCTAD, 2012). International initiatives to improve such standards, boost compliance capabilities, and monitor performance offer key steps in supporting better working conditions in low- and middle-income countries around the world, including in Asia. Historically, lowand middle-income countries have generally sought to avoid linkages between trade and labour standards in forums, such as the World Trade Organization (WTO), and this stance has caused friction with high-income countries. The development of private-sector standards and the availability of financial and human resources to support compliance have improved prospects relative to the pre-GVC era and with arguably less risk of countries becoming locked out of international trade as a result of labour issues. Clearly, finance for firm upgrading in developing countries remains a key priority in this area.

This analysis shows the importance of keeping counterfactuals in mind when assessing the development impacts of international engagement, including through GVCs: the appropriate yardstick is whether a marginal decrease in international engagement or, equivalently, an increased focus on the domestic market would promote human development through higher wages or better working conditions. No empirical evidence exists for such a link, with the policy literature sometimes distracted by comparisons between desired working conditions and those observed, rather than those observed and those potentially observable with a change in the variable of interest.

An additional set of considerations relates to the distributional impacts of trade opening. But these issues are again not specific to GVCs but, rather, a particular manifestation of standard trade economics. Trade economists have long accepted that a marginal increase in openness benefits some people in the domestic economy but harms others, for instance through unemployment or lower incomes, based on the distribution of comparative advantage by sector (e.g., Stolper and Samuelson, 1941). However, the size of the gains from opening is large enough to fully compensate those who lose. Although the point is well-established, it is rarely put into practice. Adjustment assistance for displaced workers remains woefully inadequate, even in many high-income countries. In low- and middle-income countries, this inadequacy signals broader difficulties in creating effective social safety nets. The answer, however, is not to restrict trade but instead to work on the institutional and political economy issues that have made it difficult to protect people properly from the negative consequences of either economic policy changes or, more broadly, the vicissitudes of life. As economies continue to become more reliant on trade linkages, including through GVCs, the point becomes increasingly salient and urgent (Hoekman and Shepherd, 2020). From a human development perspective, distributional issues play a key role, as they do from a political economy standpoint. But policymakers need to be careful to avoid kneejerk responses that do not pay sufficient attention to the underlying economic mechanisms. Focusing on developing general redistribution policies as well as social safety nets is both more efficient and effective in the medium to long term in promoting human development objectives than is restricting trade and investment flows.

"While intensities differ, GVCs have the scope to operate in most parts of the economy, in particular with the rise of digital technologies and more liberal policies that make services more tradable than in the past"

### TRADE POLICY, RESILIENCE, AND GVCS: HOW FRAGILE AND WHAT SOLUTIONS?

Indeed, concerns over distribution have partly driven recent changes in trade policy in the United States, which has imposed duties unilaterally against China. A fair reading of the literature on the 'China shock,' namely the huge increase in imports from China in the 2000s, would be that adjustment costs proved higher than had generally been believed, and that unemployment of displaced workers has lasted longer than expected (Autor et al., 2016); but at the same time, increased demand for United States' exports, particularly in services, created more jobs than those lost in manufacturing (Feenstra and Sasahara, 2018). Nonetheless, a part of public opinion in the United States has focused on trade as the vector not only of manufacturing job losses, but also of rising inequality. All of this led to the imposition of unilateral tariffs against China under the Trump administration. The disconnect between expert analysis and a section of public opinion in the United States and other countries highlights the way in which international economic linkages intersect with broader geopolitical questions, which are outside the scope of this brief.

An additional issue that has arisen during the COVID-19 pandemic relates to the fragility of GVCs themselves. Anecdotally, important goods underwent shortages in the early days of the pandemic, with standout examples in personal protective equipment and hand sanitizer (APIC, 2020). To some extent, restrictive trade policies amplified the shock, as producing countries restricted exports (Park, 2020). Given the above context, concerns over ensuring supply continuity of critical goods have transformed into a discussion about the merits of 're-shoring,' or the shortening of GVCs to emphasize a greater amount of local content.

These interlinked dynamics give rise to two important empirical questions, which, as yet, have no conclusive answers in the literature. First, how easily can the spread of GVCs be undone through the imposition of unilateral trade policies, such as tariffs? And second, how desirable is it—from a supply-chain resilience point of view—to use such measures to bring about a substantial re-shoring of some activities currently undertaken through GVCs?

Shepherd (Forthcoming 2) uses a global trade model with GVCs to provide an answer to the first question.

The unilateral tariffs, to which China responded in kind, are very high relative to baseline levels, up to 25 percent ad valorem in some cases. The trade policy shock is therefore very large. However, while there is some unravelling of GVC linkages, there is by no means a wholesale disintegration of the model, at least in terms of the proportion of gross exports accounted for by GVC trade. While GVC trade shrinks substantially in absolute terms, so, too, do other kinds of trade, so that the change in terms of proportions appears much smaller. Shepherd (Forthcoming 2) estimates that the tariff shock represents between three- and five-years' worth of undoing GVC growth at the previous trend rate in the affected countries. The effect is far from negligible, but, given the very large shock involved, the analysis shows that in the absence of policies designed specifically to disrupt production sharing-for instance, by targeting foreign input use rather than trade in general - it is extremely costly to radically alter the prevalence of GVC trade.

The flipside of this analysis appears in Shepherd and Helble (Forthcoming), who use the same trade model to examine the impacts of two mega-regional trade agreements on GVC trade. They look at the Regional Comprehensive Economic Partnership (RCEP) and the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP), both of which involve a number of economies in Asia. They find that lowering trade barriers through these agreements has significant potential to boost GVC trade. For CPTPP countries, the agreement produces the equivalent of 12 years of additional GVC integration, based on the rate observed between 2000 and 2018. For RCEP, the figure is around five years. Importantly, GVC integration increases with countries outside the agreements as well. From this perspective, continued efforts to move forward on regional integration seem likely to support, rather than disrupt, existing GVC structures.

From the perspective of re-shoring, OECD (2020) uses their own global trade model to look at the impacts of shifting to more domestically-focused supply chains. They find that, far from decreasing volatility, this, in fact, increases it. The result should not be surprising given that most economic shocks are not perfectly correlated across countries, so diversifying suppliers allows countries to effectively diversify risk. Having a purely domestic supply chain means that, if a shock hits the local economy, it has no shock absorber, and this results in increased volatility.

Despite these results, the issue of supply chain resilience remains an important one, in particular when GVCs produce public health or safety necessities. Indeed, there is evidence that the private sector has already taken steps to improve resilience in light of the vulnerabilities exposed by the COVID-19 pandemic. But these efforts focus on diversification, supplier redundancy, and technology, rather than large scale re-shoring (McKinsey Global Institute, 2020). While the issue may call for policy intervention at some point, the case for a broad-based policy response appears weak as long as the private sector has undertaken steps that may go at least some way towards remedying the problem. In time, there may be a case for greater regulation of some GVCs on the grounds of ensuring public health, but such needs will require caseby-case assessment rather than general approaches. In any case, any intervention will need to balance the efficiency advantages of GVC production against other social objectives.

Experience with past shocks offers a useful guide to potential redesign of GVCs in the immediate future, without wholesale changes to the business model. The floods in Thailand in 2011 led to a global shortage of some electronics components, particularly hard drives. However, technological change combined with private-sector reassessment of risk has led to an effective diversification of suppliers, with countries specialized in alternative technologies, such as solid-state, drives effectively assuming part of the global market (Reuters, 2016). Despite the strategic importance of the sector and the size of the shock, public policy changes in importing markets ultimately did not become necessary to deal with the aftermath of the 2011 floods.

### FUTURE ISSUES: SERVICES, DIGITALIZATION, AND AUTOMATION

Hoekman and Shepherd (2020) argue that the world economy has seen a rise in the proportion of services as a component of overall economic activity, at the same time that services have, through technological and regulatory change, become more tradable. WTO law recognizes four modes of trading services: a lawyer in Buenos Aires can advise a client in Seoul by email; the client can travel from Seoul to Buenos Aires, then return home; the Argentinean law firm can establish a subsidiary in the Republic of Korea and use it to sell services to the client; and, finally, the lawyer can travel temporarily from Buenos Aires to Seoul. These four modes of supply for internationally-traded services are difficult to measure, even 25 years after their inclusion in the WTO legal framework. They do not fit easily with standard approaches to tracking trade data.

Statisticians at the WTO have developed an experimental dataset that uses advanced techniques and the available data to provide a first, approximate picture of trade in services by mode of supply. Figure 3 shows that services trade has grown steadily over recent years, with mode 3 (entry through a foreign subsidiary) the dominant one. Both points are important, the first because world trade growth overall has been relatively muted since 2009, the second because discussions on the tradability of services often ignore this mode of supply. Under the WTO's four modes of supply, there is no longer any such thing as a 'non-tradable' service; high costs or other impediments may make such trade rarer, but the structure in principle allows for the trading of all service activities. Figure 3 shows that this kind of trade is robust and quite comparable in importance to the global economy to total merchandise trade. Moreover, we showed above that a substantial proportion of this trade takes place through GVC structures, now an important fixture in many services sectors.

The rise of the services economy has caused concern among some economists and policymakers, who emphasize the special role manufacturing has played in successful development stories (e.g., Rodrik, 2015). They argue that manufacturing has three characteristics that make it particularly desirable from a development point of view: it generates positive spillovers;



Source: WTO TISMOS database (2021)

it supports productivity growth through competitive pressures coming from world markets, since manufactured goods are easily tradable; and it creates large numbers of jobs for workers with limited education. Such an argument implicitly assumes that services do not possess these characteristics.

But as Helble and Shepherd (2019) point out, services in fact constitute a very large economic aggregate with a huge amount of heterogeneity across subsectors. When examined in detail, the data do not always support the contention that manufacturing has the three characteristics listed above while commercial services do not. With increasing trade in services, as shown above, competitive pressures that can promote productivity upgrading have correspondingly intensified. While measurement remains challenging, there is evidence that some services sectors have seen rapid rates of productivity growth, on par with some manufacturing sectors, and, in particular, that the two sectors have closely linked productivity rates due to the increasingly strong input-output relationship between them (Hoekman and Shepherd, 2015). Indeed, Shepherd (2019) shows that productivity growth in services served as an important, but under-recognized, aspect of the development of 'Factory Asia' in the 1990s and 2000s; revealed productivity growth rates in the rapidly-industrializing Asian countries proved only slightly below those seen in their booming manufacturing sectors. In addition, Winkler (2019) shows that service firms can generate positive spillovers at the local level in much the same way as occurs in manufacturing, though firm characteristics appear as an important mediating factor.

There are important points of similarity in the modern world economy between manufactured goods and commercial services. Where the distinction appears most problematic is in terms of the third point above, namely jobs. Anecdotally, jobs in high-productivity services sectors tend to require a relatively high level of education. The premature deindustrialization thesis "International initiatives to improve workplace safety, social protections and other standards, boost compliance capabilities, and monitor performance offer key steps in supporting better working conditions in lowand middle-income countries around the world"

> therefore carries most weight regarding the large number of jobs needed in low- and middle-income countries — jobs that the service sector must create going forward.

Many forces underpin this increased importance of services. One deals with preferences: as incomes rise, consumer spending tends to shift towards services. However, technological change is also an important part of the equation. Recent decades have seen manufacturing firms using more and more services inputs, sourced both commercially in the market and internally through employment of service-performing workers. Surveys by Low and Pasadilla (2016) indicate that in the Asia-Pacific region, manufacturing firms could, on average, see around half of their total costs accounted for by services inputs. This proportion will likely increase given the trend towards more automation in manufacturing, with its accompanying demand for engineers and technicians. The same holds true for digitalization, where one can understand the transformation of physical goods into disembodied information as a shift from goods to services.

While these kinds of technological changes have real potential to bring about changes in global trade, they have important implications from an empirical perspective. On the one hand, there is evidence that automation can pose genuine problems on the score of employment, although it may benefit some workers as well (Acemoglu and Restrepo, 2019). Yet anecdotally, countries with higher levels of automation than the US, such as Japan, continue to perform strongly when it comes to employment.

From a trade perspective, a key issue relates to the interplay between these new technologies and comparative advantage. Industrializing countries have traditionally used their low labor costs to compete effectively in world markets. The GVC model too depends to some extent on this initial entry point. But does that comparative advantage disappear with large-scale automation? Freund et al. (2019) examine whether or not this has happened with the rise of 3D printing in the market for hearing aids. While this development could have led to a re-shoring of production from Mexico and other countries, the data suggest that it has had less empirical importance in general; indeed, exports of physical hearing aids from other countries may even have increased. So, this one piece of evidence suggests that in some circumstances, technological change that appears to undercut a labour-cost advantage may not lead to decreased trade and GVC integration.

Shepherd (Forthcoming 3) offers another example that gives reason for scepticism. He examines the case of e-books: This technological change should have allowed countries to abandon trade in physical books in favor of trade in data files only. Again, the data do not support this contention. There is little evidence that increased uptake of e-books caused a decrease in trade in physical books.

Of course, low- and middle-income countries will not automatically and necessarily benefit from these technological changes. There is good reason for concern about exclusion and marginalization, but, for the moment, the data do not suggest those effects are widespread. More broadly, these changes make clear that low- and middle-income countries need to continue investing in their own technological capacity, as well as in their human capital. Doing so will not only avoid potential dislocation should the analysis here prove unduly optimistic, but will also position them to move up into higher value-added activities within existing GVCs. Indeed, these priorities align with the need to create jobs in services sectors, which typically require higher levels of qualification, at least in comparable internationally integrated sectors. Continued investment in both basic and further education will play a vital role in strong employment performance, which, in turn, helps reduce poverty.

### CONCLUSIONS AND POLICY IMPLICATIONS

By 2021, GVCs have become a well-established feature of the global economic landscape. The COVID-19 pandemic initially placed them under stress, but they have also provided part of the response, from producing and distributing large quantities of personal protective equipment, to developing and distributing vaccines. There is thus no simple answer about the impact of the pandemic on GVCs, but **it seems premature to diagnose a wholesale failure of the system, or to forecast a large-scale shift to other means of production.** 

On the other hand, the pandemic has brought to the forefront a number of issues that have already been identified within the GVC model, from the need to engage a wide range of countries in promoting widespread development, to the importance of resilience to shocks. Technological change, such as the rise of the services economy with accompanying digitalization and automation, certainly poses challenges for low-income countries still in the early stages of industrialization. They will need to adapt to these new realities, but the general model of joining GVCs, rather than developing full domestic supply chains, still offers important potential advantages. Critically, developing capacity to produce and use services and new technologies will shape the ability of firms to join and move up in GVCs. From a policy perspective, it will be important to invest heavily in human capital development through education and training systems, as well as to ensure basic service provision, including internet connectivity. While low labor costs represent a source of comparative advantage, increasing incomes necessarily undermine it and make it all the more important to shift towards a skill-based labor market.

In addition, ensuring openness to trade and investment flows, along with developing social safety nets and redistribution mechanisms, will help align human development and economic objectives but will also ensure continued support for this development model in a political economy sense. Low- and middle-income countries face a key challenge: learning from success-

ful examples of rapid income growth and sustained poverty reduction, including those that have made strategic use of GVC integration in the service of broader development objectives. Viet Nam is perhaps the best example in point; it has engaged rapidly with GVCs in a broadening list of sectors and has succeeded in reducing poverty and moving a significant number of people into the global middle class (World Bank, 2018). Of course, backsliding on these advances poses a real risk given the size of the economic shock associated with the COVID-19 pandemic. But there is nothing to suggest that restricting movements of goods, services, and capital across borders will aid in recovery. Rather, it is likely that supporting an open, rules-based trading system remains a key economic policy objective, particularly for smaller low-and middle-income countries, as it provides them with a source of external demand to aid in the recovery effort. Ensuring openness to services as well as goods has emerged as a policy priority for many of these countries, in particular those that suffer from geographical disadvantages, such as being landlocked. Borchert et al. (2017) show that policy barriers in 'connectivity services,' such as telecommunications and transport, serve to increase the isolation of geographically disadvantaged countries from world markets.

Accounting for trade in intermediates—a key feature of the GVC model—makes clear that the economic losses from protectionist trade policies are higher than previously thought (Ossa, 2015). Using trade policy to attempt to re-shore substantial portions of GVC activity would therefore involve major economic costs, in particular since the evidence suggests that production-sharing is relatively robust under trade policy changes, at least in proportional terms when it comes to tariffs. As such, while unilateral actions by large countries undoubtedly pose real challenges to the rules-based multilateral trading system, they do not appear to have fundamentally changed the ability of GVCs to operate as they have become accustomed to do in recent years. Similarly, it would not be appropriate to frame GVC-related policies too strongly in reference to the COVID-19 pandemic and accompanying economic shock. The shock is an unusual one in that it brought strongly-correlated country-level shocks, at least in the early days of the pandemic. More commonly, country-level economic shocks are much less strongly correlated; in this case, the ability to diversify risk by relying on multiple suppliers in multiple countries becomes an advantage of the GVC system, not a negative feature. While the private sector continues to reassess its approach to resilience—looking in particular at building in redundancies that can better respond to major economic shocks-the public sector does not yet have an obvious mandate to impose a particular vision of risk management from the outside. Of course, a much stronger case exists for using public-sector resources to maintain inventories of critical equipment in circumstances where the private sector cannot do so optimally. But that would involve forward-looking

purchase arrangements between governments and GVCs, not policy involvement in the planning decisions of GVCs as such.

While the pandemic has posed real challenges to economies in all regions and at all development levels, the widespread availability of safe and effective vaccines should support a return to more favorable conditions. Against that background, there is every reason to expect that GVCs will continue to play an important role in global trade, and that developing countries will continue to successfully adopt outward-oriented growth strategies.

> "Economic, social and trade policies need to respond to technological change, invest in human capital, ensure trade and investment flows, develop social safety nets, and make GVCs resilient to future shocks"

### LIST OF FIGURES

Figure 1: GVC trade by exporting region, percent of gross exports, 2000 (a) and 2015 (b)

Figure 2: GVC trade by sector, percent of gross exports, 2015

Figure 3: Total world exports of services by mode of supply, 2005-2017 (US\$ billion)

#### REFERENCES

Acemoglu, D. and Restrepo, P. 2019. "Automation and New Tasks: How Technology Displaces and Reinstates Labor." *Journal of Economic Perspectives*, Vol. 33, No. 2, pp. 3-30.

Alfaro-Urena, A., Manelici, I. and Vasquz, J. 2020. "The Effects of Joining Multinational Supply Chains: New Evidence from Firm-to-Firm Linkages." https://3768255ebb38-4e95-9575-269a322cc0d4.filesusr.com/ugd/ c7b5dd\_50cb1a69cd824e5aa3abf6e7d6a23f63.pdf.

Association for Professionals in Infection Control and Epidemiology (APIC). 2016. "National survey shows dire shortages of PPE, hand sanitizer across the U.S." 27 March. https://apic.org/news/national-survey-shows-dire-shortagesof-ppe-hand-sanitizer-across-the-u-s/.

Autor, D., Dorn, D. and Hanson, G. 2016. "The China Shock: Learning from Labor-Market Adjustment to Large Changes in Trade." *Annual Review of Economics,* Vol. 8, No. 1, pp. 205-240.

Baldwin, R. 2011. "Trade and Industrialization after Globalization's Second Unbundling: How Building and Joining a Supply Chain are Different and Why it Matters." NBER Working Paper, No. 17716.

Blattman, C. and Dercon, S. 2017. "The Impacts of Industrial and Entrepreneurial Work on Income and Health: Experimental Evidence from Ethiopia." https://papers.ssrn. com/sol3/papers.cfm?abstract\_id=2843595.

Borchert, I., Gootiiz, B. and Mattoo, A. 2017. "Services Trade Protection and Economic Isolation." *World Economy*, Vol. 40, No. 3, pp.632-652.

Borin, A. and Mancini, M. 2019. "Measuring What Matters in Global Value Chains and Value Added Trade." Policy Research Working Paper, No. 8804, Washington D.C., World Bank.

Brambilla, I., Depetris Chauvin, N. and Porto, G. 2017. "Examining the Export Wage Premium in Developing Countries." *Review of International Economics,* Vol. 25, No. 3, pp.447-475.

Cattaneo, O., Gereffi, G., Miroudot, S. and Taglioni, D. 2013. "Joining, Upgrading, and Being Competitive in Global Value Chains: A Strategic Framework." Policy Research Working Paper, No. 6406. Washington D.C., The World Bank.

Feenstra, R. and Sasahara, A. 2018. "The 'China Shock', Exports, and US Employment: A Global Input-Output Analysis." *Review of International Economics,* Vol. 26, No. 5, pp.1053-1083.

Frederick, Stacey. 2016. "Concept & Tools." Durham, North Carolina, Duke University. https://globalvaluechains.org/ concept-tools. Grossman, G. and Rossi-Hansberg, E. 2008. "Trading Tasks: A Simple Theory of Offshoring." *American Economic Review*, Vol. 98, No. 5, pp.1978-1997.

Helble, M. and Shepherd, B. 2019. *Leveraging Services* for *Development: Prospects and Policies*. Manila, Asian Development Bank.

Hoekman, B. and Shepherd, B. 2017. "Services Productivity, Trade Policy, and Manufacturing Exports." *World Economy*, Vol. 40, No. 30, pp.499-516.

Hoekman, B. and Shepherd, B. Forthcoming. *The Future of Global Trade*. New York, United Nations.

International Trade Center (ITC). 2017. *Small and Medium Enterprises Competitiveness Report: The Region—A Door to Global Trade*. Geneva, International Trade Center.

Low, P. and Pasadilla, G. 2016. *Services in Global Value Chains: Manufacturing-Related Services*. Singapore, World Scientific.

Organisation for Economic Co-operation and Development (OECD) 2020. "Shocks, Risks, and Global Value Chains: Insights from the OECD METRO Model." http://www.oecd. org/trade/documents/shocks-risks-gvc-insights-oecd-metromodel.pdf.

Ossa, R. 2015. "Why Trade Matters After All." *Journal of International Economics*, Vol. 97, No. 2, pp. 266-277.

Park, C.-Y. 2020. "Global Shortage of Personal Protective Equipment amid COVID-19: Supply Chains, Bottlenecks, and Policy Implications." Brief, No. 130, Asian Development Bank.

Reuters. 2016. "Thai hard disk drive exporters see silver lining in cloud storage – for now," 24 April. https://www. reuters.com/article/thailand-technology/thai-hard-diskdrive-exporters-see-silver-lining-in-cloud-storage-for-nowidUSL3N176035.

Rocha, N. and Winkler, D. 2019. "Trade and Female Labor Participation: Stylized Facts Using a Global Dataset." Policy Research Working Paper, No. 9098. Washington D.C., The World Bank.

Rodrik, D. 2015. "Premature Deindustrialization." *Journal of Economic Growth*, Vol. 21, pp.1-33.

Saxena, S. 2020. Labor, Global Supply Chains, and the Garment Industry in South Asia: Bangladesh After Rana Plaza. London, Routledge.

Shepherd, B. 2018. "Global Value Chains and Women's Labor: Firm-Level Evidence." Economic Research Institute for ASEAN and East Asia. Shepherd, B. 2019. "Productivity and Trade Growth in Services: How Services Helped Power 'Factory Asia'." In *Leveraging Services for Development: Policies and Prospects*, M. Helble and B. Shepherd (Eds.). Manila, Asian Development Bank.

Shepherd, B. 2020. "Measuring Participation in Global Value Chains and Developing Supportive Policies: A User Guide." New York, UNESCAP. https://www.unescap.org/resources/ gvc-analysis-guide.

Shepherd, B. Forthcoming 1. "Global Value Chain Integration and Trade in Value Added: The Case of Tourism in Asia." Asian Development Bank.

Shepherd, B. Forthcoming 2. "Come Undone: Tariffs, Trade Wars, and Cross-Border Production Sharing."

Shepherd, B. Forthcoming 3. "Death by Digital? The Impact of E-Readers on Books and Publishing."

Shepherd, B. and Helble, M. Forthcoming. "GVC Trade Growth and Development: Evidence from CPTPP and RCEP." 2021 GVC Development Report, Asian Development Bank.

Stolper, W. and Samuelson, P 1941. "Protection and Real Wages." *Review of Economic Studies*, Vol. 9, No. 1, pp.58-73.

The World Bank. 2018. "Vietnam continues to reduce poverty, according to WB report." https://www.worldbank. org/en/news/press-release/2018/04/05/vietnam-continuesto-reduce-poverty-according-to-world-bank-report. The World Bank. 2020. *World Development Report 2020: Trading for Development in the Age of Global Value Chains.* Washington D.C., The World Bank.

The World Bank. 2021. "World Bank Country and Lending Groups." https://datahelpdesk.worldbank.org/ knowledgebase/articles/906519-world-bank-country-andlending-groups.

United Nations Conference on Trade and Development (UNCTAD). 2012. *Corporate Social Responsibility in Global Value Chains*, Geneva, United Nations.

Winkler, D. 2019. "Productivity Spillovers from Services Firms in Low- and Middle-Income Countries: What is the Role of Firm Characteristics and Services Liberalization?" In *Leveraging Services for Development: Policies and Prospects*, M. Helble and B. Shepherd (Eds.). Manila, Asian Development Bank.

World Trade Organization (WTO). 2021. "Trade datasets." https://www.wto.org/english/res\_e/statis\_e/trade\_ datasets\_e.htm.

Xing, Y. 2020. "How the iPhone Widens the US Trade Deficit with China: The Case of the iPhone X." *Frontiers of Economics in China*, Vol. 15, No. 4, pp.642-658.

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