



*Edited by Marta Marson and Luca Bortolotti, University of Turin and OEET*

### **The perspectives of emerging economies in Global Value Chains**

The role that GVCs can play in the process of economic development was at the core of the recent 7th OEET workshop on Emerging economies in Global Value Chains: impacts and policy issues.<sup>1</sup> The workshop saw the participation, among the others, of Rabellotti, Giovannetti and Gentile, three OEET members whose works (with co-authors) are collected in this newsletter. Through different methodologies and datasets, the newsletter suggests novel evidences and perspectives to measure the relation between economic development and participation in GVCs.

In the last decades, with the emergence of Global Value Chains (GVCs), the tasks and functions for the production of goods and services have become increasingly specialized and fragmented across different countries. On the one hand, this phenomenon, as well as macro-regional networks, has played a role in boosting growth in many developing and emerging economies. Indeed, while building whole industries from scratch can be hardly achieved by developing countries, entering in specific phases of production is much easier. On the other hand, GVCs can trigger unbalances, inequality, marginalization of the working class (particularly in high income countries) and environmental degradation, creating a context more vulnerable to climate crisis and shocks in international prices and logistics. Moreover, the integration of developing countries in GVCs is often limited and, when it occurs, reserves the larger share of value added to high-income countries.

The first article in this newsletter is by Carlo Pietrobelli, Roberta Rabellotti and Ari Van Assche provides an insightful conceptualization of GVCs policies in terms of task (i.e. functional specialization), linkages (i.e. knowledge spillovers), and firms (i.e. the microeconomic/fine grained approach that is necessary to study and address GVCs related issues). These notions will allow the reader to capture the peculiar changes introduced by GCVs' development. The second article, by Giorgia Giovannetti and Arianna Vivoli, investigates the effects of the restrictions and lockdown measures which followed the covid-19 pandemic on firm performances. After reviewing the literature on this topic, the World Bank Enterprise Surveys data are used to compare the reaction of domestic and international actors. The article formulates then various hypothesis about the different capacity in overcoming the covid shock. Last, the article by Elisabetta Gentile and Gaaitzen J. de Vries, explores how participation in GVC by fifteen developing countries from Asia compares with that of OECD countries. The comparison includes scale of participation and productivity of labour, and further distinguishes between production activities and knowledge intensive activities to identify where the gaps are actually found.

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<sup>1</sup> This contribution summarizes the article by Pietrobelli, Rabellotti and Van Assche (2021) presented at the 7th OEET Workshop (2-3 December 2021, Collegio Carlo Alberto, Turin).

## Global value chain-oriented policies: The trifecta of tasks, linkages and firms\*

by Carlo Pietrobelli<sup>\*</sup>, Roberta Rabellotti<sup>†</sup>, Ari Van Assche<sup>‡</sup>

*The article discusses the nature and scope of global value chain (GVC)-oriented policies and categorizes them according to four different policy objectives: participation, value capture, inclusiveness, and resiliency. The social and economic rationales for state intervention across the different types of GVC-oriented policies are compared and contrasted. Moreover, the instruments and actions at the disposal of governments to reach their policy objectives are discussed. The trifecta of tasks, linkages, and firms explains whether and how GVC-oriented policies differ from traditional public policies.*

The emergence of Global Value Chains (GVCs), characterized by companies' fine slicing of the production process across different countries and specializing in specific tasks, has typified the evolution of the global economy since the early 1990s. GVC trade in intermediate goods and services produced by different actors in different places in the world grew rapidly until the outbreak of the global financial crisis in 2008, and since then it has stagnated, being affected by the recent increase in protectionism and by the abrupt halt caused by the COVID-19 crisis. Nevertheless, according to the 2020 World Development Report (World Bank, 2020) half of world trade is still related to GVCs and accordingly during the last two decades the GVC framework has turned into an influential development paradigm in policy circles. GVCs are a powerful driver for countries' economic growth, increasing productivity, generating employment and improving access to markets, knowledge and technologies. A wide range of governments and international organizations have thus included the GVC framework in regional, national, and global development strategies.

GVCs can boost economic performance through two key mechanisms: functional specialization and knowledge connectedness. First, GVCs give rise to a finer-grained international division of labor than before. This division involves the task rather than the product level and allows countries or regions to functionally specialize in those value chain stages in which they have a comparative advantage, letting domestic resources flow to their most productive use (Grossman & Rossi-Hansberg, 2008). This functional specialization is considered crucial for developing countries that do not have the capabilities to produce complete products. They can embark on a fast track to industrialization by focusing on simpler production stages that suit their existing level of capabilities. It also benefits developed countries which can specialize in high-value-added intangible-intensive tasks such as R&D, management and marketing while de-specializing in manufacturing (Van Assche, 2020).

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\* This contribution summarizes the article by Pietrobelli, Rabellotti and Van Assche (2021) presented at the 7th OEET Workshop (2-3 December 2021, Collegio Carlo Alberto, Turin).

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A second mechanism through which GVCs generate economic growth is by spurring a region or country's global knowledge connectedness. The internationalization of value chains connects local firms with production partners across the globe, and this provides access to foreign knowledge that can strengthen the domestic technological capabilities required to economically upgrade (Ambos et al., 2021; Amendolagine et al, 2019). GVC linkages can help suppliers in developing countries to improve their technological capabilities by exposing them to new information and knowledge that can influence their dynamic learning paths and boost aggregate economic development (Sako & Zylberberg, 2019).

The involvement in GVCs adds several layers of complexity to policy making but notwithstanding this increasing complexity, there has been little systematic discussion about how GVC-oriented policies differ from traditional industrial, innovation and international business policies. A recent article by Pietrobelli, Rabellotti and Van Assche (2021), based on a special collection of 11 articles published in the *Journal of International Business Policy* (JIBP)<sup>1</sup> has reflected on the nature and scope of GVC-oriented policies and on how they compare with traditional public policies, addressing two broad sets of questions: *How do GVC policies differ from the public policy efforts of the past? What are the desirable future evolution paths of GVC-oriented policies?*

The novelty of GVC policies comes from the role that is given to the trifecta of *tasks, linkages, and firms*. GVC-oriented policies put the spotlight on the development of fine-grained GVC *tasks* instead of the traditional focus on entire industries. A central aim of GVC policies aimed at increasing participation is to boost functional specialization so that countries can concentrate on those tasks in which they have a comparative advantage. A key goal of policies aimed at value capturing within GVCs is to help countries create and appropriate more value by conducting the existing activities better or by functionally upgrading into higher value-added tasks. In both cases, policymakers are pushed to adopt a more granular view of the type of activities that they should target to promote economic development through structural transformation.

GVC-oriented policies also lay greater emphasis on the role of *linkages* than traditional development policies. A key insight from GVC studies is that a firm's economic performance and the social conditions that it offers to its workers are heavily influenced by its value chain connections. Inter-firm linkages to foreign partners can act as a powerful conduit for accessing foreign knowledge and resources that can be leveraged to improve technological and operational capabilities. Decent work parameters imposed by foreign value chain partners can incentivize firms to improve their local work conditions. Economic shocks to foreign value chain partners can be transmitted to local firms through supply chains. A focal concern of policymakers is thus how to properly regulate, deepen, and strengthen GVC linkages so that they can promote both economic and social upgrading while at the same time guaranteeing a country's economic resilience.

GVC-oriented policies finally elevate the role of *firms*, both lead firms and their suppliers, and a fine-grained microeconomic focus is called for. GVC scholarship recognizes the essential role that lead firms play in defining the terms and conditions of GVC membership and thus considers harnessing their behavior to be a potent approach to accomplish policy objectives. Some GVC-oriented policies in this respect may promote a partnership between public and private actors in which policymakers collaborate with GVC lead firms to upgrade local suppliers, ensure fair treatment of workers, adopt environmentally sustainable business practices, and build resiliency (Gereffi, 2019). Furthermore, GVC-oriented policies

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<sup>1</sup> [https://link.springer.com/journal/42214/topicalCollection/AC\\_9eb89494ad3e7d6588359be369778e11](https://link.springer.com/journal/42214/topicalCollection/AC_9eb89494ad3e7d6588359be369778e11)

recognize the essential objective of supporting suppliers' efforts to enter - and nurture - profitable relationships with lead firms, exploiting the potential offered by these relationships for their own learning and capability development.

The GVC literature's emphasis on the trifecta of *tasks*, *linkages* and *firms* has exposed a new set of market failures that provide a potent narrative for new policy *rationales* (Pietrobelli & Staritz, 2018). The non-rival and partially excludable nature of intangibles – which are at the heart of some of the highest value-added and therefore most desirable tasks in a GVC (e.g. R&D and marketing) – create public good problems that need to be addressed through government intervention (Van Assche, 2020; Jaax & Miroudot, 2021). Market externalities abound in lead firms' willingness to share knowledge through their GVC linkages and the development of suppliers' capabilities to absorb it. Market forces do little to engender social and environmental upgrading and economic resilience. For these reasons, there is a loudening call among GVC scholars for moving beyond the traditional development policies built around the so-called Washington Consensus, which focuses on minimalist state intervention, and to adopt more potent trade, industrial and innovation policies (Neilson, 2014).

Moreover, an increasingly prominent viewpoint is that the global scope of GVCs has hampered countries' capacity to address some key GVC-related market failures. This produces two main consequences: on the one hand supra-national policies and institutions need to be reformed to address the GVC-related market and coordination failures that individual countries' governments cannot fix. The recent G7 proposal for a minimum global corporate tax rate to close cross-border tax loopholes is a good example of this.<sup>2</sup> On the other hand, governments are also being forced to partner up with the private sector to address “governance gaps” (Goerzen et al., 2021). That is, there is a growing call for private actors such as lead firms and non-governmental organizations to play an active role in filling gaps in global regulation and in resolving global public good problems. To reconcile private sector interests, policy makers should take on a brokering role in ‘value chain coalitions’, facilitating dialogues between public and private stakeholders.

The trifecta of *tasks*, *linkages* and *firms* at the heart of GVC-oriented policies also implies that governments need to rely on new *instruments* and actions to reach their policy goals. In some cases, it provides policymakers with new levers in their policy toolbox. Many state-led export credit agencies, for example, have expanded the type of firms to which they can provide trade financing to reflect the growing reality of GVCs (Van Assche & Gangnes, 2019). Whereas in the past they relied on push strategies that provided financing to support the export sales of domestic firms, they now increasingly adopt pull strategies where they give loans and export credits to large foreign companies, insofar this helps facilitate the integration of domestic firms into GVCs. In other cases, existing policy instruments are rendered less potent. For example, GVCs allow firms to circumvent trade policy barriers more easily (Ma & Van Assche, 2014). To avoid a country-specific trade policy, a lead firm must no longer relocate its entire value chain to another country, but only a single value chain stage, often final assembly. Gereffi et al. (2021) indeed found that many firms in the apparel, automotive and electronics sectors were able to bypass trade restrictions related to the US-China trade war by switching production locations, end markets and suppliers.

Redesigning policy instruments for new GVC realities, however, is often easier said than done. Once the trifecta of *tasks*, *linkages* and *firms* is considered, it becomes clear that policymakers need to take into

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<sup>2</sup> On June 2021 G7 financial ministers have reached an historical agreement to reform the global tax system ([www.reuters.com/business/g7-nations-near-historic-deal-taxing-multinationals-2021-06-05/](http://www.reuters.com/business/g7-nations-near-historic-deal-taxing-multinationals-2021-06-05/) accessed June 8th 2021)

consideration the complementarities between various at-the-border and beyond-the-border policies, e.g. the operation of a GVC makes it necessary to look at trade promotion, innovation and industrial policies to support local suppliers, at training policy to produce the required skills, at infrastructural policy to facilitate exports and imports, at the availability of advisory services in the areas of standards and certifications as well as at labor, social and environmental regulations. Each policy needs to be assessed considering its systemic scope and influence, moving beyond the traditional “silos” approach where each Government Ministry and Agency pursues its own objectives independently. Moreover, the frontier has had to be moved beyond national borders to interact with global buyers, thus overcoming the traditional distinction between policies for the domestic and the foreign market. Therefore, even if many elements of policy were already present long time ago, the advent of GVCs has forced to rethink them in such a deep fashion, that the whole set of policies oriented to GVCs has now become a truly different concept.

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## Unpacking the role of firms' internationalization during the Covid-19 pandemic

by *Giorgia Giovannetti\** and *Arianna Vivoli†*

*This article intends to contribute to the debate exploiting cross-country national representative surveys on the impact of the pandemic conducted by the World Bank Enterprises Surveys. On a sample of firms from 18 countries, including emerging economies, with a before-and-after analysis, we find that international firms have been less impacted by the pandemic with respect to their domestic counterparts. Secondly, unpacking the different ways through which firms can operate in the international market, we find that both the import and the export channel shield firms from the shock, but with no statistically significant difference between the two, while being part of a GVC (a status proxied by being a trader with an internationally recognized high-quality certification) makes the difference. Lastly, international firms are more likely to adapt their business strategies (e.g., starting or increasing business online activities and remote working) to the changing situation and substantially less likely to reduce their temporary workforce.*

Covid-19 pandemic has changed the world we live in, with effects that are going to shape the future of our societies. Economy has been severely hit due to pervasive lockdown measures and disruptions of international supply chains. The pandemic-induced supply and demand shocks, whose magnitude is unprecedented, had disruptive effects on the globalized production process. Nonetheless, already before the Covid-19 outbreak, since the Great Financial Crisis (GFC) of 2008, GVCs and international trade in general were indeed experiencing a slowdown (Antràs, 2020; World Bank, 2020). Other than the recession, several game-changer forces have been playing a fundamental role. First, as maintained by Antràs, (2020), the pace of technological progress, that was one of the keys of the hyper-globalization take-off, remains high but has slowed down compared to the levels reached in the 1980s and 1990s. Second, the advent of new technologies like automation, robotics and 3D printing, might have controversial effects on GVC participation, both negatively (via facilitating re-shoring of firms to high-income countries), as in Rodrik (2018) and positively (via increasing productivity of high-income countries' firms, increasing in turn their demand for intermediate inputs from low-income countries), as in Artuc et al. (2018). Third, political and social turmoil such as the US-China trade war (Bellora and Fontagnè, 2020) or Brexit have also played a role in the slowing down of globalization. Fourth, the economic development induced by GVCs integration of labour-intensive countries, China overall, eroded the wage differentials that made profitable the development of GVCs in the last decades. For all the reasons, and also because we are not over the pandemic yet, trying to disentangle the effect of Covid-19 on the international production process is not straightforward and the debate is very animated.

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This article intends to contribute to the debate exploiting cross-country national representative surveys on the impact of the pandemic conducted by the World Bank Enterprises Surveys. On a sample of 9,555 firms from 18 countries, with a before-and-after analysis, we find that international firms have been less impacted by the pandemic with respect to their domestic counterparts. Secondly, unpacking the different ways through which firms can operate in the international market, we find that both the import and the export channel shield firms from the shock, but with no statistically significant difference between the two, while being part of a GVC (a status proxied by being a trader with an internationally recognized high-quality certification) makes the difference. Lastly, international firms are more likely to adapt their business strategies (e.g., starting or increasing business online activities and remote working) to the changing situation and substantially less likely to reduce their temporary workforce.

### ***Related empirical literature***

Empirically, at the country level, a rapidly growing literature has provided heterogeneous results on whether more integrated countries have been more impacted by the Covid-19 shock; for instance, Bonadio et al., (2020) through a simulation analysis find that actually, one-third of the total Covid-19-induced GDP contractions comes from the transmission of the foreign lockdowns.<sup>1</sup> Similarly, Berthou and Stumpner (2022) finds that country-sector pairs more integrated into the international market suffered more from the pandemic-induced lockdown measures. Conversely, Giglioli et al., (2021) document that countries more integrated into international production suffered lower GDP losses, especially the “upstream” inputs supplying countries, and that, especially in the second wave (from October 2020 to January 2021), they experienced a more pronounced rebound relative to less integrated countries.

At the sectoral level, Giovannetti et al., (2020) show that, with respect to the GFC, this time GVCs have contributed less to the transmission of the shock (also because, differently from the 2008 financial crisis which had impacted the manufacturing sectors, the pandemic has hit harder services, or in general sectors less integrated in the international market and that needed a face to face interaction). With the same data source that we use, but with a sector-level gravity model, Espitia et al., (2021) find that sectors that faster adopted remote working contracted less during the pandemic. Moreover, they find that operating in GVCs increased firms’ vulnerability to shocks suffered by trading partners, but at the same time, it also reduced their vulnerability to domestic shocks.

At the firm level, the evidence is scarce but growing; for instance, Giglioli et al. (2021) find that international Italian firms experienced lower reductions in sales compared to their domestic counterparts, especially during the second wave of the pandemic. de Lucio et al. (2022), using Spanish firm-level data, find that among firms operating in the manufacturing sector, the negative effect of the pandemic was lower if firms participated in GVCs. Building on a cross-country analysis, Borino et al., (2020) find instead that international firms are affected by the Covid-19 crisis more than domestic firms due to their exposure to both domestic and foreign lockdowns; at the same time though, they are less likely to lay off workers and file for bankruptcy and are more likely to adopt countermeasures that continue production such as telework and work from home.

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<sup>1</sup> However, they also find that eliminating the dependence from foreign inputs (e.g., renationalization of international supply chains) would bring no benefit to the supply chains.

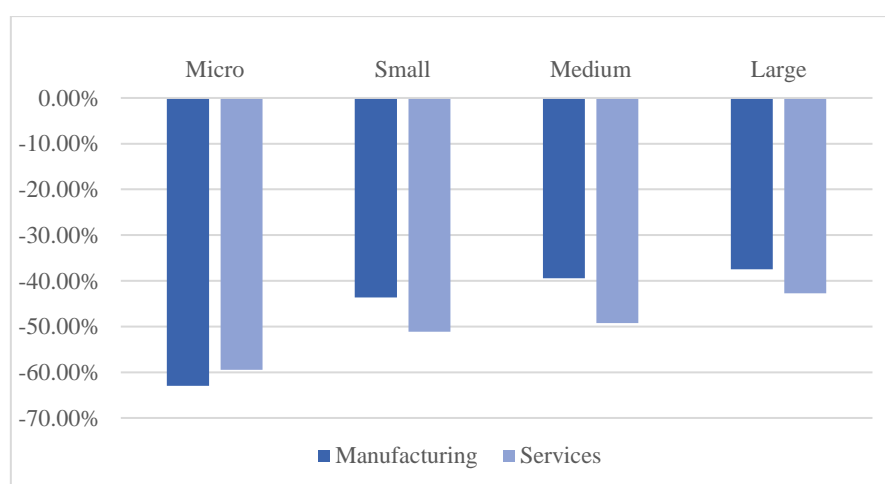


## Data and descriptives

The data used in this study come from the World Bank Enterprise Surveys (WBES) project. From the standard WBES, we use information on firm characteristics as firm performances, employment and international status, for firms operating in the non-agricultural, non-extractive private sectors. As for the information on the impact of Covid-19, we extract information from *ad hoc* designed waves of WBES - the Follow-up. These waves include all the enterprises interviewed in the last available standard Enterprise Survey and report detailed information on firms' response to Covid-19 such as the impact on sales and workforce, and change in business strategies (e.g., business online, remote working, changes in production). Using the common firm identifier, we can merge pre- and post-Covid-19 survey waves to link pre-Covid-19 firms' characteristics with post-Covid-19 response to the shock. To our knowledge, this is one of the very first open access, cross-country, firm-level dataset that offers the opportunity to investigate the impact of the pandemic on the private sector for different countries. Our final sample comprises 9,555 firms from 18 countries<sup>2</sup>.

As for the impact of the pandemic, the shock was pervasive. All countries included in our sample have experienced catastrophic reductions in sales, with the mean reduction in sales around -45.05%. Interestingly, the pandemic seems to have hit harder lower-middle income countries with respect to other income groups: the average change in sales for this subset of countries is -45.19%, compared to a -34.90% for upper-middle income countries and -18.97% for high income countries (an evidence in line with Karalashvili and Viganola, (2021) and with Olczyk and Kuc-Czarnecka, (2021)). Moreover, from Figure 1, we can see how differently from the GFC (and in line with Giovannetti et al., 2020), the Covid-19 crises appears to have hit services – except for micro enterprises – harder than manufacturing (indeed, the sector that reports the higher losses is Hotel and Restaurants, with an average reduction of -59.38%); we can also see how much size matters: the smaller the firm's size, the higher the losses during the pandemic.

Figure 1: Average reduction in sales by size and sector



Source: Authors' elaboration on WBES data. Note: For firm size, we follow the World Bank categorisation: micro firms have 1-4 employees, small 5-19, medium 20-99 and large have 100+ employees.

<sup>2</sup> Countries in our sample belong to three different income groups, according to the World Bank 2021 income classification. Among the lower-middle income countries we have Morocco, Moldova, Mongolia and Zambia, among the upper-middle income countries we have Albania, Bulgaria, Georgia, Jordan and Russia, while among the high-income countries we have Croatia, Cyprus, Czech R., Hungary, Italy, Portugal, Poland, Romania and Slovenia.

Adopting a firm-level perspective, Table 1 presents the differences between domestic and international firms concerning pre-Covid-19 characteristics (panel A) and Covid-19 response (panel B). We define as international all the firms that either export, import or are affiliate (i.e., with at least 10% of foreign ownership). From panel A, we can see that the so-called internalization premia envisaged by the literature are respected (Antràs and Chor, 2021). Being international is associated with better performances: first, international firms are significantly larger and concentrated in the upper part of the size distribution, whereas domestic firms tend to be mostly small (with from 5 to 19 employees); secondly, international firms are also significantly more productive than domestic ones.

In panel B, we report firms' response to the Covid-19 shock. International firms responded slightly better to the pandemic outbreak: a higher percentage of domestic firms were forced to exit the market (5.77%) than their international counterparts (3.79%) after the first wave. Looking at the percentage of firms reporting a reduction in sales, we find a small difference, not statistically significant, between domestic and international firms: overall this seems to suggest that the pandemic shock has been extremely pervasive for both domestic and international firms. However, focusing on average turnover losses, we can see that domestic firms experienced significantly higher losses (-53.11% vs. -49.49%); the same applies when we look at the percentage of domestic and international firms that experienced a reduction in sales that is bigger than their sector-country median (64.60% vs. 59.96%). Also, a higher percentage of domestic firms report to have experienced a decrease in their supply of inputs because of Covid-19, while we detect no relevant differences in the decrease of demand for firms' products. Lastly, international firms report to have started (or increased) adaptive strategies (as business online activities and remote working) significantly more than domestic firms. Given this evidence, what we try to do next in our analysis is to unpack this "international" status, in order to try to understand from which dimensions this international premium is originated.

*Table 1: Descriptive statistics of the estimation sample*

	Domestic	International	Difference
<b>Panel A: Internationalization premia</b>			
Dimension			
- Micro (1-4)	2.31%	1.45%	-0.86**
- Small (5-19)	56.41%	39.08%	-17.33***
- Medium (20-99)	28.83%	34.48%	5.65***
- Large (100+)	12.46%	24.99%	12.53***
Total	100%	100%	
Total employment (ln)	2.90	3.48	0.58***
Revenue per worker (ln)	10.94	11.41	0.43***
<b>Panel B: Response to Covid-19</b>			
% of firms permanently closed	5.77%	3.79%	-1.98%**
% of firms with turnover losses	70.66%	69.97%	-1.07%
Average turnover losses	-53.11%	-49.49%	-3.61%***
% of firms with turnover losses wrt the country-sector	64.60%	59.96%	-4.64%***
% of firms decreasing supply of inputs	61.74%	56.42%	-5.32%***
% of firms with decreased demand	66.41%	64.22%	-2.19%
% of firms adopting smart working	23.25%	35.07%	11.82%***
% of firms adopting business online	22.53%	25.59%	3.06%***
Total 9,555	3,475	6,080	

Note: \*, \*\*, \*\*\* indicate when the difference in outcomes between the two groups is statistically significant respectively at 10%, 5% and 1%.

## ***Key findings***

Our results are the following: first, we differentiate the impact of internationalization between being a trader and being part of a multinational. What emerges is that the average beneficial effect of internationalization is mainly driven by traders, while being an affiliate has no (additional) impact; this holds for the manufacturing sector and for countries in the high- and upper-middle income groups, while we detect no statistical difference between international and domestic firms in services and in lower-middle income countries. This fact can be probably linked to the sectoral-specific participation to trade (indeed manufacturing firms are generally more involved in the international production than services), but also because services (especially those that require *vis-à-vis* interactions, e.g., tourism and restaurants) have been particularly hit by mobility restrictions and lockdown measures. We suppose that for firms in services the impact has been so devastating that not even being part of an international network has shielded firms from the shock.

Secondly, we unpack the ‘trader’ status by looking separately to the import and to the export channel. Interestingly, both being an importer and being an exporter is associated with a better performance compared to domestic firms, but we find no statistically significant differences between the two modes of internationalization. In other words, both foreign supply and demand have helped in reducing turnover losses, but we detect no relevant differences in terms of magnitude between the two mechanisms. At the same time, being part of a GVC (a status proxied by the possession of an internationally-recognized certification) substantially improves firms performance. This result may depend on the fact that, for the capital good-intensive nature of GVCs, the pandemic may have hit firms in GVCs less, because Covid-19 (and lockdown measures) hit harder industries that require face-to-face interactions, that usually are less internationalized (as in Giovannetti et al., 2020). But it can also be, as in de Lucio et al. (2022), that international trade between firms in GVCs resisted better to the pandemic outbreak, because of the stickiness of inter-firm relationships of firms in GVCs. Unfortunately, for now we cannot test this hypothesis for data availability constraints.

Lastly, international firms have been also faster in adapting their business strategies to the changing situation, a fact that could be associated with their overall better performance during the pandemic. Specifically, firms integrated in the international markets responded significantly stronger than domestic ones to the changing situation; indeed, they significantly started (or increase) business online activities and remote working, a stylized fact also confirmed by Webster et al. (2021). Last but not least, internationalized firms have been less prone than their domestic counterparts to reduce their temporary workforce as a reaction to Covid-19.

More research is needed, especially on the underlying mechanisms, but our work is one of the first firm-level, cross-country studies on the effect on the pandemic on international firms on a large number of countries at different level of economic development; our results contribute to the debate bringing evidence against nationalistic views, pointing to the centrality and robustness of the international production networks, as they appear to have suffered less than firms operating only in the domestic markets, probably also due to the of international firms’ higher reactivity to shocks.

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## Is participation in global value chains driving income convergence in developing Asia? A task-based accounting approach\*

by Elisabetta Gentile<sup>†</sup> and Gaaitzen J. de Vries<sup>‡</sup>

*In 2019, Asia's global value chain (GVC) participation—defined as the share of gross exports of value added used for further processing through cross-border production networks—was 67.4%, making it a key global player. Yet, income per capita in developing Asian economies is still about one third of the level in OECD countries. Why is income per capita convergence incomplete? We investigate this question by measuring jobs and income in the GVCs of final manufactured products. We combine new data on occupational tasks with multi-regional input-output tables to examine fifteen developing Asian economies from 2000 to 2018. The accounting framework conveys diversity in what drives convergence. Various economies, such as Bangladesh, Cambodia, Viet Nam and the PRC, achieved a rapid expansion in the scale of production activities within GVCs. Several economies, including the PRC, Thailand, and Viet Nam, increased productivity in knowledge-intensive activities, suggesting full income convergence is underway.*

Participation in global value chains (GVCs) is widely viewed as a powerful driver of growth, productivity, and job creation. The ‘East Asian miracle’—which saw the region grow faster than any other during the second half of the 20th century—is presented as evidence of this link (Gereffi 1999). However, with the 21st century came the concern that, while developing Asia has been successful in increasing employment in labor-intensive production activities and emulating production techniques, the switch from imitation to innovation is more difficult yet necessary to avoid a middle-income trap (Bulman, Eden, and Nguyen 2017).

We use a task-based GVC accounting approach to examine how the scale of participation, the productivity level of the activities performed, and the types of activities carried out along the value chain drive income convergence. Our findings aim to shed light on why, as of 2018, GDP per capita in developing Asian economies is about one third the level in Organisation for Economic Co-operation and Development (OECD) member countries.

The focus of our study is not manufacturing industries in developing Asia, but rather the set of activities carried out in the region for final manufactured products produced anywhere in the world. For example, an Asian firm might be involved in business processing, such as data entry, accounting, or call centres, for a final manufacturing product from a firm in France. This is the concept of “manufactures GVC income” or simply GVC income, introduced by Timmer et al. (2013). Indeed, activities in GVCs of manufactured products can be performed by firms classified in any sector of the economy. That is why the use of input-output linkages is required to explicitly account for interdependence among firms. Similarly, GVC jobs are defined as jobs related to activities that are directly and indirectly involved in the production of final manufactured goods. This is not the classic definition of manufacturing jobs, because

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\* This contribution summarizes the conceptual framework adopted and the main findings of a research contribution presented at the 7th OEEET Workshop (2-3 December, Collegio Carlo Alberto, Turin).

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it includes jobs in non-manufacturing activities if they contribute to final manufacturing output.

In a value chain, pre- production activities are carried out by workers with occupations relating to R&D and design; production activities are the tasks carried out by workers with occupations involved in the physical transformation process; and post- production activities are carried out by workers with occupations relating to branding, marketing, and logistics. To keep the analysis manageable, we merge pre- and post- production activities into one category that we call knowledge-intensive activities. That is because both pre- and post- production activities have higher value added than production activities and require higher-skilled workers.

Based on the framework introduced by Buckley et al. (2020), an economy can increase GVC income through three main drivers. The first is an increase in the scale of activities carried out for GVCs of final manufactured products (i.e., the number of jobs involved in those activities). The second is increasing the productivity levels of those activities through either process upgrading (better organization of the production process or using improved technology) or product upgrading (improving quality or design or adding new features). The third is functional upgrading; this is the reallocation of jobs from low to high value-added activities within GVCs. The highest value creation generally occurs in more upstream processes (e.g., R&D and design) or more downstream processes (e.g., marketing) rather than in the middle (e.g., assembly) (Shih 1996). Most of this value added stems from intangibles, such as brands, basic R&D, design, and the digitalization of organizational processes.

Two datasets underpin this quantitative exercise. First, the Multiregional Input–Output (MRIO) Database of the Asian Development Bank, which comprises national input-output tables connected by means of bilateral international trade flows. Each table provides a comprehensive summary of all transactions in the global economy between industries and final users of goods and services across countries in a given year. Second, the Occupations Database, introduced in Reijnders and de Vries (2018), which provides information on employment and relative wages by occupation–country–sector–year. The original occupations database includes 40 economies, including the People’s Republic of China, India, Indonesia, and Taipei,China. For the analysis in this article, an additional 11 developing Asian economies<sup>1</sup> have been added to the set. Finally, the data was broken down by workers involved in production activities, i.e., the physical transformation process of manufactured goods, and knowledge-intensive activities, i.e., pre- and post-production tasks.

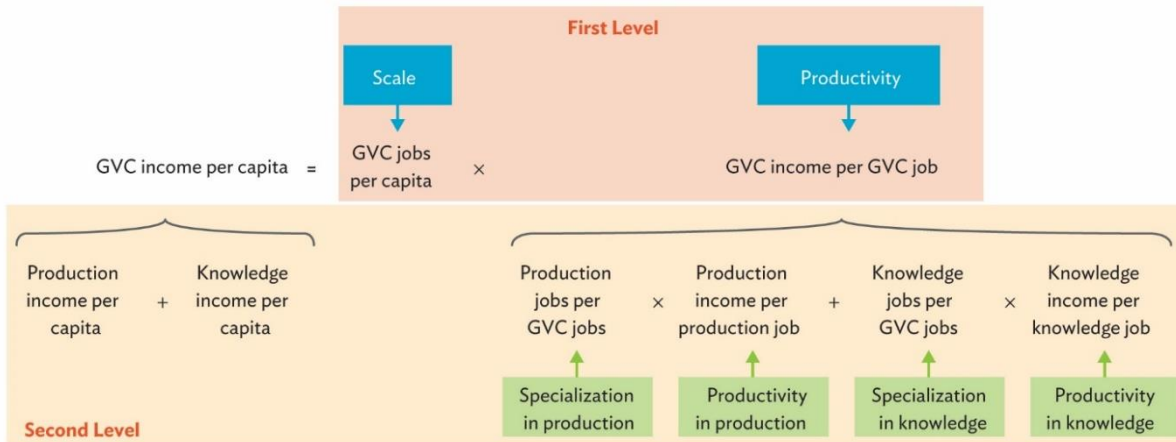
Figure 1 shows that GVC income per capita can be disaggregated at two levels. In the first, GVC income per capita is expressed as the product of scale (GVC jobs per capita) and productivity (GVC income per GVC job). An increase in scale means that a rising share of the population is involved in GVCs; an increase in GVC income per GVC jobs means that workers performing those jobs are getting more productive. Figure 2 shows the results of the first-level disaggregation, where scale and productivity are divided by the OECD average. Panel *a* shows that in 2000, nine out of the 15 developing Asian economies had a scale ratio above 1, implying they had more GVC jobs per capita than the OECD average. That increased to 12 in 2018—and the ratio for India, Indonesia, the PRC, Taipei,China, and Thailand was above 2, which highlights the active involvement of workers from Asia in manufacturing GVCs. The scale ratio for the aggregate of the 15 economies was 1.34 in 2000 and 2.10 in 2018. This suggests the GVC income gap between developing Asia and the OECD is not due to the overall scale of their involvement in GVCs. Panel *b* shows the gap in GVC income between developing Asia and the OECD

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<sup>1</sup> Bangladesh, Cambodia, Fiji, Kyrgyz Republic, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand, and Viet Nam.

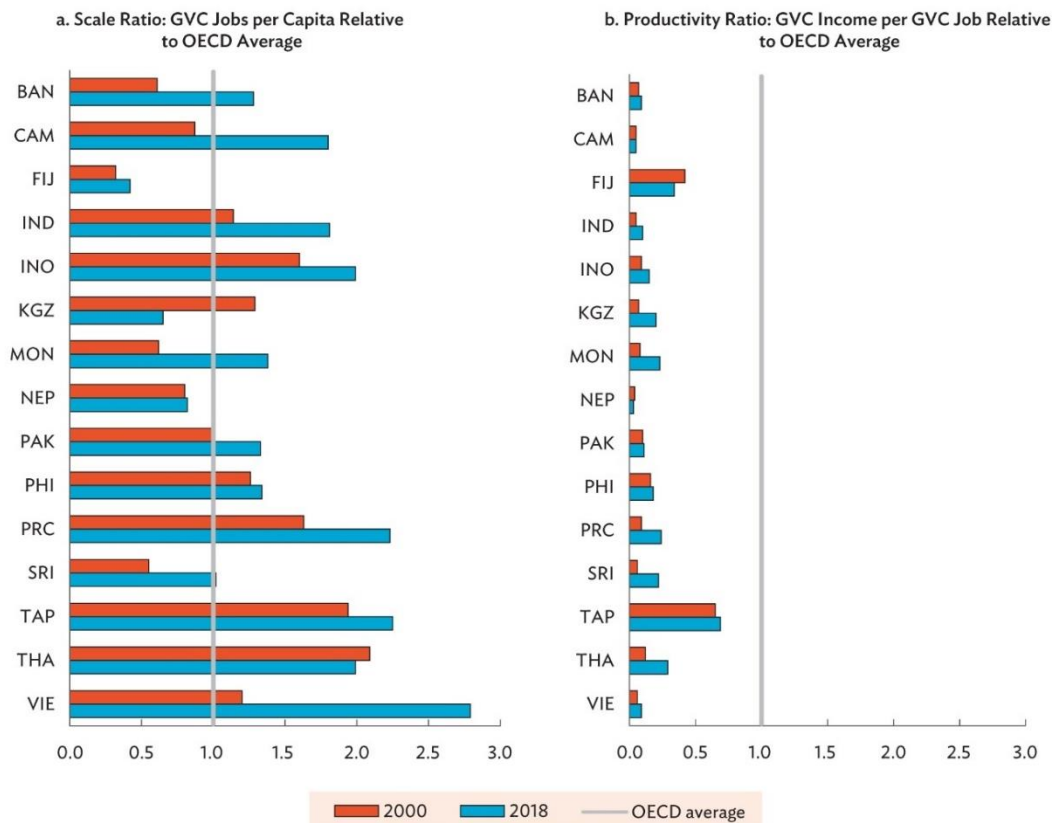
is mainly accounted for by differences in productivity. In 2000, developing Asia's productivity ratio was about 9% of the OECD's average. Although productivity has increased rapidly since then, it started from a low level, such that it was still at only 16% of the OECD average in 2018.

Figure 1: Disaggregating GVC Income per Capita



Source: Authors based on Elisabetta Gentile and Gaaitzen J. de Vries. 2021. Is Participation in Global Value Chains Driving Income Convergence in Developing Asia? A Task-Based Accounting Approach. Unpublished.

Figure 2: Scale Ratio and Productivity Ratio in 15 Developing Asian Economies, 2000 and 2018



BAN = Bangladesh, CAM = Cambodia, FIJ = Fiji, GVC = global value chain, IND = India, INO = Indonesia, KGZ = Kyrgyz Republic, MON = Mongolia, NEP = Nepal, OECD = Organisation for Economic Co-operation and Development, PAK = Pakistan, PRC = People's Republic of China, PHI = Philippines, SRI = Sri Lanka, TAP = Taipei, China, THA = Thailand, VIE = Viet Nam.

Notes:

- In panel a, the scale ratio is calculated as GVC jobs in final manufacturing products per capita relative to the OECD average. In panel b, the productivity ratio is calculated as real GVC income in final manufacturing products, expressed at 2011 constant purchasing power parity and divided by GVC jobs in final manufacturing products, relative to the (unweighted) average of 29 OECD countries.
- The 29 OECD countries are Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, Poland, Portugal, the Republic of Korea, Slovenia, Spain, Sweden, Turkey, the United Kingdom, and the United States.

Source: Elisabetta Gentile and Gaaitzen J. de Vries. 2021. Is Participation in Global Value Chains Driving Income Convergence in Developing Asia? A Task-Based Accounting Approach. Unpublished.

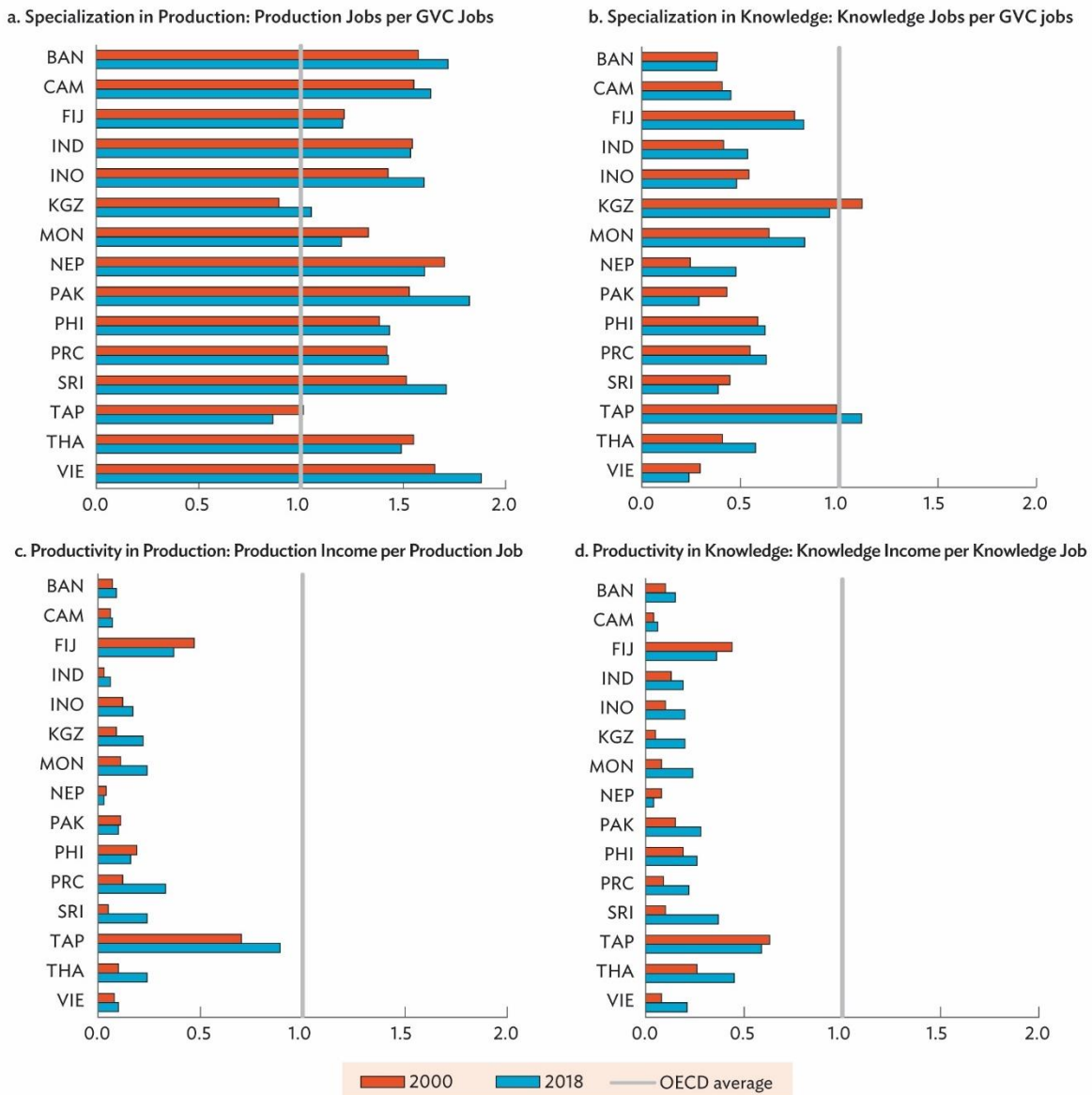
The second level of the disaggregation shown in Figure 1 sheds light on functional upgrading. Productivity is disaggregated into the weighted sum of production income per production job (productivity in production) and knowledge income per knowledge job (productivity in knowledge). The weights are the share of production jobs to total GVC jobs (specialization in production) and the share of knowledge jobs to total GVC jobs (specialization in knowledge). An increase in the share of knowledge jobs to total GVC jobs is an indication that the economy is specializing in knowledge-intensive activities. Similarly, an increase in the share of production jobs to total GVC jobs would be an indication that the economy is specializing in production activities.

Figure 3 presents the results of the second-level disaggregation of the productivity ratio shown in Figure 1 into the specialization-in-production ratio, the productivity in production ratio, the specialization-in-knowledge ratio, and the productivity in knowledge ratio. Panel *a* clearly shows that GVC income convergence was mainly driven by an expansion of GVC jobs in production, whereas the share of knowledge-intensive jobs is roughly 50% of the OECD average, with the exception of Fiji and Taipei, China. These reflect a global division of labor whereby more knowledge-intensive jobs are in advanced economies and more production jobs are in developing Asia. Yet knowledge-intensive jobs increased in developing Asia from 2000 to 2018. Panels *c* and *d* show that most developing Asian economies in the sample increased productivity in both production and knowledge-intensive activities from 2000 to 2018.

In sum, while exporting through GVCs is often seen as a panacea for weak industrialization trends in developing economies, the reality is more complex. Even in developing Asia, which has seen a massive increase in the scale of production activities, productivity convergence and functional upgrading have been slow and far from guaranteed, as shown by the diversity of outcomes across the 15 economies examined here. However, we also show the importance of upscaling in driving income convergence and that the volume of the activity matters just as much as the domestic share of the value of the product in driving income convergence.



Figure 3: Specialization and Productivity Ratios by Activity in 15 Developing Asian Economies, 2000 and 2018



BAN = Bangladesh, CAM = Cambodia, FIJ = Fiji, GVC = global value chain IND = India, INO = Indonesia, KGZ = Kyrgyz Republic, MON = Mongolia, NEP = Nepal, PAK = Pakistan, OECD = Organisation for Economic Co-operation and Development, PRC = People's Republic of China, PHI = Philippines, SRI = Sri Lanka, TAP = Taipei, China, THA = Thailand, VIE = Viet Nam.

Notes:

1. In panels a and b, the specialization in production (knowledge) ratio is calculated as GVC jobs in production (knowledge-intensive) activities in final manufacturing products divided by total GVC jobs, relative to the (unweighted) average of 29 OECD countries. In panels c and d, the productivity in production (knowledge) ratio by activity is calculated as real GVC income of production (knowledge-intensive) activities in final manufacturing products, expressed at 2011 constant purchasing power parity and divided by GVC jobs in production (knowledge-intensive) activities, relative to the (unweighted) average of 29 OECD countries.

2. The 29 OECD economies are Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, Poland, Portugal, the Republic of Korea, Slovenia, Spain, Sweden, Turkey, the United Kingdom, and the United States.

Source: Elisabetta Gentile and Gaaitzen J. de Vries. 2021. Is Participation in Global Value Chains Driving Income Convergence in Developing Asia? A Task-Based Accounting Approach. Unpublished.

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