



# State policies and upgrading in global value chains: A systematic literature review

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**Abstract**

This paper examines the role of state policymaking in a context of global value chains (GVCs). While the literature acknowledges that states matter in GVCs, there is little understanding of *how* they matter from a policy perspective. We address this tension between theory and practice by first delineating the state's *facilitator, regulator, producer* and *buyer* roles. We then explore the extent to which corresponding state policies enable or constrain the following policy objectives: GVC participation; value capture; and social and environmental upgrading. We do so via a systematic review of academic GVC literature, combined with analysis of seminal policy publications by International Organizations. Our findings indicate that state policymakers leverage facilitative strategies to achieve GVC participation and enhanced value capture; with regulatory and public procurement mechanisms adopted to address social and environmental goals. Mixed results also emerged, highlighting tensions between policies geared towards economic upgrading on the one hand, and social and environmental upgrading on the other. Finally, we suggest that effective state policies require a multi-scalar appreciation of GVC dynamics, working with multiple and sometimes competing stakeholders to achieve their developmental objectives.

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## INTRODUCTION

Global value chain (GVC) and global production network (GPN) frameworks are being increasingly adopted by academics and practitioners as a means to understand the global organization of industries and their developmental impact (De Marchi et al., 2020)<sup>1</sup>. Central to these frameworks is the attention given to non-equity-linked trade governed by powerful multinationals – so-called 'global lead firms', who are driving the development of industries worldwide (Gereffi, 2014; Gereffi et al., 2005). These profound changes in the structure of the global economy are heavily impacting the trade and industrial policy domain, which is

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becoming ever more complex. On the one hand, participation in global lead firm-driven GVCs may facilitate learning and enhance the development potential for supplier firms and territories, particularly in developing-country contexts (Gereffi, 2018). On the other hand, the ability to appropriate value and upgrade through GVC participation is not straightforward, considering diverse stakeholder interests and power asymmetries between global lead firms and their fragmented supplier base (Alford & Phillips, 2018; Blažek, 2016; Ponte & Ewert, 2009).

Against the backdrop of a highly liberalized global economy, early GVC studies observed that the role of nation-states was largely restricted to a passive, facilitative role, oriented towards attracting lead-firm investment (Gereffi, 1994). At that time, major international organizations (IOs) including the IMF and World Bank advanced a highly *liberal* interpretation of state roles, reflected most acutely in the 'Washington Consensus', which were restricted to privatization, de-regulation, and promoting the free flow of cross-border trade (Wade, 2003; Mayer & Gereffi, 2019). More recent academic studies, however, propose a more *interventionist* interpretation of nation-states, who are deemed to play an active role in mediating GVCs to protect national policy interests (Mayer & Phillips, 2017). This has given way to more robust theorizing of state roles in GVC/GPN literature (Alford & Phillips, 2018; Horner, 2017; Horner & Alford, 2019; Smith, 2015), which include *facilitative*, *regulatory*, *producer*, and *buyer* functions. From a policy perspective, this more interventionist academic interpretation of states is reflected in an emerging consensus (including among certain branches of more liberally oriented IOs such as the World Bank and OECD) that state policymaking in a GVC order entails a shift in the design and development of policy interventions for local development (ILO, 2006, 2015; UNIDO, 2002, 2011, 2015; UNCTAD, 2020).

Accordingly, in recent years, a core focus of both academic and policy debates has been on the role nation states can and *should* play in mediating GVCs (Alford & Phillips, 2018), to ensure more equitable and sustainable distribution of gains from GVC participation (Ponte & Ewert, 2009); and support the development of supplier capabilities (Guerrieri & Pietrobelli, 2004; Pietrobelli & Puppato, 2016; Pietrobelli & Staritz, 2013, 2018). How to conceive and develop such state policies in order to maximize local value creation and learning

opportunities associated with GVC participation is therefore a key policy issue. This is particularly pertinent in relation to improving social and environmental conditions in GVCs (Dermawan & Hospes, 2018), given these objectives often conflict with economic imperatives (De Marchi, Di Maria, Krishnan, & Ponte, 2019; Krishnan, 2017). However, such policy objectives are complex – needing to balance attracting global lead firm investment and regulating them, to ensure the local accumulation of wealth and knowledge through GVC participation (Alford & Phillips, 2018; Morris & Staritz, 2019). To address these issues, the paper asks: Which policy initiatives, relating to the four state roles (*facilitator*, *regulator*, *producer*, *buyer*), support (or constrain) economic, social, and environmental upgrading in GVCs? In what contexts are those initiatives likely to be implemented?

This paper addresses these challenges via a systematic review of the literature on national policy-making in a GVCs/GPNs context drawing on the state typology by Horner (2017). Such an effort is particularly relevant, given existing GVCs/GPNs frameworks are often misused in the policy arena, causing confusion on how these approaches can be meaningfully applied (Gereffi, 2019; Pietrobelli & Staritz, 2018); and the role of the state in GVCs/GPNs literatures requires further theorization (Smith, 2015). Indeed, scholarly attention has predominantly focused on the state's role in facilitating or regulating GVC participation (Azmeah, 2014a, b; Curran et al., 2019; Pickles et al., 2015), while less attention has been devoted to its producer or buyer roles (Horner, 2017; Horner & Alford, 2019). Accordingly, this paper builds on recent acknowledgement that states matter in GVCs (Alford & Phillips, 2018; Horner & Alford, 2019), by providing a systematic account of *how* they matter from a policy perspective. We do so by operationalizing the state's facilitator, regulator, producer, and buyer roles, and exploring the extent to which different state initiatives enable GVC participation, value capture, and associated upgrading outcomes. In doing so, we extend seminal work by Gereffi and Sturgeon (2013) – by broadening the empirical scope of GVC research; and Pietrobelli and Staritz (2018) – by focusing on national and sub-national policy-makers, as opposed to IOs and donors.

The paper is organized as follows. Section two outlines the principal upgrading and GVC-oriented concepts investigated in the paper. Section three provides a description of the methodology.

Section four presents the evidence emerging from the systematic literature review. Here, we first report on the results of our content analysis, examining the extent to which different state initiatives address GVC-oriented policy objectives and associated upgrading outcomes. Then, we compare cases of upgrading and downgrading to develop insights for the effective design and implementation of GVC-oriented policies. Section five concludes with lessons learned.

### UPGRADING AND GVC-ORIENTED STATE POLICIES

Over the past few decades, the organization of industries and functioning of national economies have been profoundly altered. Production has been unbundled, meaning service and manufacturing activities are increasingly carried out via global inter-firm networks that fall outside the boundaries of a firm (Feenstra, 1998; Mudambi et al., 2018). Multinationals have increasingly externalized activities to maximize efficiency gains, to the point that some firms – the so-called ‘global buyers’ (Gereffi, 1994) or ‘global factories’ (Buckley, 2004; Buckley & Ghauri, 2004) – are only responsible for pre- or post-production activities, without directly engaging in production at any stage (Strange & Humphrey, 2018). Such powerful lead firms coordinate activities of ‘complex and dynamic economic networks made up of inter-firm and intra-firm relationship(s)’ (Gereffi, 2014, p. 10) – spanning between market and hierarchy – termed “global value chains” (Bair & Gereffi, 2001; Gereffi, 1999) or “global production networks” (Coe et al., 2004; Henderson et al., 2002).

Particularly for developing countries, the proliferation of GVCs has represented new, important channels for industrial development and knowledge access (Pietrobelli & Rabellotti, 2011), helping to facilitate value-adding activities and a ‘move up the value chain’ (Ponte & Ewert, 2009: 1638) – termed ‘upgrading’ in GVC literature. Upgrading refers to the strategies that firms, countries, or regions implement to move toward higher value-added activities and increased value capture (Gereffi, 2005), and the learning opportunities arising from the GVC participation (Giuliani et al., 2005; Pietrobelli & Rabellotti, 2011). Different forms of economic upgrading have been identified (Fernandez-Stark & Gereffi, 2019; Frederick & Staritz, 2011; Humphrey & Schmitz, 2002). The two ‘basic’ forms are *product* (moving toward new or more

sophisticated products) and *process* (introducing new or improved methods of production) upgrading. *Functional* upgrading entails the ability to shift towards more value-added activities, such as from basic assembly to more advanced forms of ‘full package’ supply. Though more challenging, this latter form of upgrading provides local suppliers the possibility to generate and sustain value capture over an extended timescale. Other forms of GVC upgrading entail strengthening backward and forward linkages (*supply chain upgrading*) and serving new markets or specializing in a new industry (*channel* and *inter-chain upgrading*, respectively).

In the last decade, the concept of upgrading<sup>2</sup> has been extended to cover social and environmental aspects (De Marchi et al., 2020), following increased attention to the adverse impact of globalization on developing economies. Social upgrading is anchored in the International Labor Organization (ILO) framework on ‘decent work’, and defined as the improvement in the rights and entitlements of workers and enhanced quality of employment (Barrientos, Gereffi, & Rossi, 2011a, Barrientos, Mayer, Pickles, & Posthuma, 2011b; Gereffi & Lee, 2016). Social upgrading can be further delineated into two components: measurable standards, which refer to aspects of working conditions that are more easily quantifiable (e.g., wage levels, working hours, employment type); and enabling rights, which are more difficult to measure and refer to complex bargaining processes, such as freedom of association, the right to union representation, non-discrimination and collective bargaining, voice and empowerment (Barrientos et al., 2011a, b). Environmental upgrading entails ‘the process by which economic actors move towards a production system that avoids or reduces environmental damage from their products, processes, or managerial systems’ (De Marchi et al., 2019: 312). It can be further delineated by *process improvements* (i.e., eco-efficiency achieved by reorganizing production systems or using a superior technology); *product improvements* (i.e., developing more sophisticated and environmentally friendly product lines); and *organizational improvements* (i.e., enhancing a firm’s way of doing business, often related with meeting international standards and certifications) (De Marchi et al., 2019).

Several studies have found upgrading to be a highly uneven process, wherein the potential of learning and growth does not always materialize; up and down-grading often coexist (Blažek, 2016; Ponte & Ewert, 2009) and trade-offs between



economic, social, and environmental upgrading play out (Lee & Gereffi, 2015; Milberg & Winkler, 2011; Morris et al., 2016). The possibility for firms and territories to effectively learn and develop from GVC participation depends on the type of coordination mechanism implemented by lead firms and their strategic interests (e.g., Humphrey & Schmitz, 2002; Kaplinsky & Morris, 2001); the absorptive capabilities and technological endowment of the firms (e.g., Morrison et al., 2008; Pietrobelli & Rabellotti, 2011); and the role of the state and institutional context in which local firms are embedded (Coe et al., 2008; Henderson et al., 2002).

Focusing on the latter aspect, the importance of effective policy-making is motivated by the presence of specific market and coordination failures that characterize GVCs (Pietrobelli & Staritz, 2018). An increasing share of GVCs/GPNs studies have explored GVC-oriented policies, i.e., policies that account for the global interconnections among firms and are aimed at improving access to GVCs or capturing higher value shares<sup>3</sup>. As stated by Pietrobelli and Staritz (2018), GVC-oriented policies are quite distinct from more general policies aimed at supporting private sector development. A key specificity is that GVC-oriented policies need to connect and leverage lead firms, accounting for their bargaining power over a fragmented supplier base (Dallas et al., 2019). This requires a different approach relative to industrial policies prevalent in the 1980s and 1990s that focused on raising barriers for developing countries (Morris & Staritz, 2019), toward a multi-scalar perspective, accounting for sector specificities, inter-firm relations, and localized value-creation. According to Pietrobelli and Staritz (2018), GVC-oriented policies are broadly aimed at achieving the following objectives – (i) supporting *participation in GVCs*, to improve supplier firms' ability (especially those based in developing countries) to meet the sourcing demands of global buyers, that are often complex, costly, and require linkages to complementary expertise; (ii) enhancing the *capture of value* produced therein, accounting for power asymmetries between lead firms and supplier firms', potentially hindering the latter's ability to capture sufficient gains from GVC participation; and/or (iii) *improving labor and environmental conditions* (see also ILS, 2006, ILO, 2015).

In early GVC research, and perhaps reflecting the pervasive global economic reality at the time, Gereffi (1994: 10) observed that governments occupied a passive role, facilitating export-oriented

development. A dominant perspective was that state-policy was restricted to promoting an attractive business environment both for global lead firms and local suppliers seeking to integrate into GVCs (Horner & Alford, 2019). This was reflected in the World Trade Organization's (WTO) establishment in 1994, which significantly shrank the developmental policy space afforded to states (Wade, 2003). It is fair to say that other major International Organizations (IOs) including branches of the OECD and World Bank subsequently advanced this *liberal* interpretation of state roles vis a vis GVCs, wherein the role of states is limited to 'promoting well-functioning GVCs and minimizing trade "friction" at borders (i.e., fewer restraints and regulations)' (Mayer & Gereffi, 2019: 578).

Recent observations suggest a more *interventionist* interpretation of nation-states in relation to GVCs, wherein states might play a broader array of roles, to mediate private interests in order to strengthen local development outcomes (Mayer & Phillips, 2017). National policies have been advocated particularly in the realm of social and environmental upgrading, following increasing recognition that lead firms might not be sufficiently committed or able to address such complex issues in their value chains (ILO, 2015; Hossain, 2019; Riisgaard, Lund-Thomsen, & Coe, 2019). Over the past decade, GVC/GPN research highlights that addition to the state's role in actively *facilitating* GVCs, they can also play a central role in *regulating* firm activity; *producing* goods and services destined for GVCs; and *buying* products through public procurement (Alford & Phillips, 2018; Horner, 2017; Horner & Alford, 2019; Smith, 2015). This more interventionist interpretation is reflected also in seminal IO publications on GVCs and decent work by the International Labor Organization (ILO) (2006, 2015), and other agencies calling for more proactive state approaches to GVCs, in order to achieve economic competitiveness, regional and national development (see also UNCTAD, 2020; UNIDO, 2002, 2011, 2015).

Building on the previous discussion, this article focuses specifically on national and sub-national state policy-makers (i.e., regional, provincial, or city-level), and the extent to which they can influence the functioning of GVCs and ability of domestic firms to participate, capture value, and upgrade (Alford & Phillips, 2018; Horner, 2017; Horner & Alford, 2019). In this context, we adopt Horner's (2017) classification, who suggests the



state can act as *facilitator* – by supporting local firms to participate and upgrade in GVCs, through policies such as tax incentives, subsidies, trade policies, and R&D incentives; as *regulator* – by constraining the activities of global lead firms or of local suppliers through quality controls, standards implementation, labor regulation, state marketing boards, and price control mechanisms; as *producer* – by directly engaging in state-owned production activities in competition with other private firms within GVCs; and/or as *buyer* – by directly procuring products and services via state-led value chains, which may comprise distinct economic, social, and environmental standard requirements (Alford & Phillips, 2018; Horner, 2017; Horner & Alford, 2019; Mayer & Phillips, 2017). Which policies, relating to each of these state roles, are more likely to support (or constrain) economic, social, and environmental upgrading? In what contexts are those initiatives likely to be implemented?

### METHODOLOGY

For the purpose of this study, we conduct a systematic literature review (Tranfield et al., 2003) of the evidence emerging from the academic GVC/GPN literature, describing the impact of specific

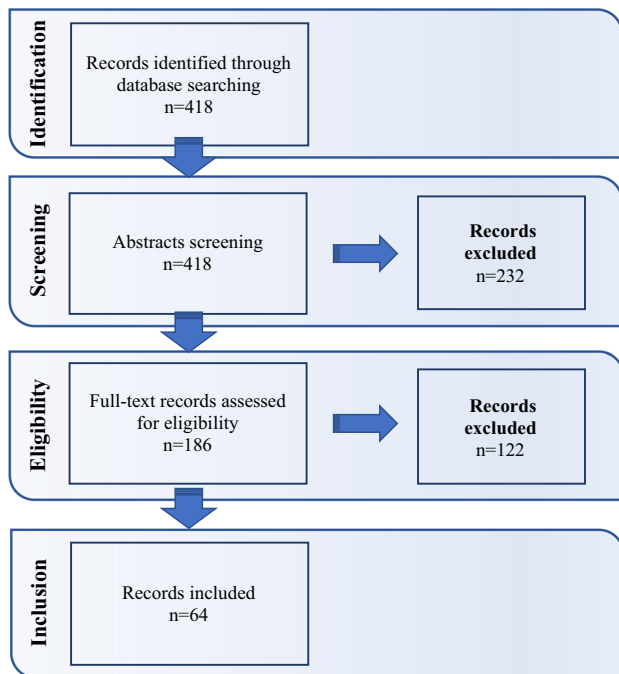


Figure 1 The paper selection process.

state initiatives on GVC-oriented policy objectives and upgrading.

A step-wise approach has been adopted to collect materials following the PRISMA method (Liberati et al., 2009) as summarized in Figure 1. The literature review comprises English-speaking peer-reviewed articles or book chapters that are present in the Scopus search engine, relating to the ‘Social Science’, ‘Business, Management and Accounting’ or ‘Economics, Econometrics and Finance’ subject areas. In order to identify the contributions relevant for the scope of our analysis, we used a combined search string which included words having the root ‘polic’ (i.e., all the words: policy, policies, policy-making, policymaking) and either ‘global value chain’ or ‘global production network’. In total, 418 contributions have been identified using this selection process<sup>4</sup>. To ensure we identified only contributions that fit with the purpose of our analysis, an abstract screening was performed, based on three eligibility criteria:

- (1) *Focusing on state policies* We included only contributions that clearly focused on specific state interventions and policy instruments (e.g., R&D policies, tariffs, public procurement...), excluding articles and chapters that were simply suggesting policy implications or advocating for policy interventions as a discussion of their main results.
- (2) *Adopting a GVC (or GPN) approach* We therefore included only contributions that were clearly referring to at least one of the key pillars of the GVCs/GPNs literatures, i.e., governance, upgrading, power, value capture, embeddedness (Coe et al., 2004; Gereffi, 2019), and focusing on networks of firms related by non-proprietary ties, each being responsible for different yet-interrelated activities. Contributions taking a single firm perspective (i.e., MNEs and their subsidiaries) or the country-level (without considering for differences in industries) were excluded.
- (3) *Being empirical* We only included contributions providing enough information to understand the policy interventions implemented and local up/downgrading dynamics observed. Accordingly, contributions that discussed specific policy interventions (e.g., policies to increase innovation capabilities), or policies for specific industries or countries and regions (e.g., the mining industry in Colombia) were included. Purely theoretical articles or articles not



including enough information to understand policy in a GVC context were excluded.

Overall, 232 articles were excluded because they did not meet one or more of these criteria. In case the abstract was not explicit enough to understand if these criteria were met, we performed a full-article screening. Following this additional screening, a further 122 manuscripts were excluded adopting the same three criteria presented above (see Figure 1); because they were not in English; or it was not possible to access the full text. Finally, 64 contributions were considered in the analysis and are listed in Table A.1 in the Appendix<sup>5</sup>. Table 3 breaks down the contributions reviewed by stage of economic development and sector<sup>6</sup>. As emerges from those tables, the majority of contributions are focused on complex products or traditional manufacturing sectors (32.8 and 26.9%, respectively); 17.9% are focused on natural resource-based GVCs; and only 6% on services. Almost half of the contributions examine GVCs based in upper-middle countries (46.3% of the contributions analyzed), lower-middle and high-income countries are covered by one-quarter of the studies (26.9 and 25.4%, respectively); with relatively fewer studies focused on low-income countries (10.4%). As far as upgrading dynamics are concerned, economic upgrading is reported in 68.7% of the contributions analyzed (38.8% on downgrading); social upgrading in 19.4% (14.9% reporting on downgrading dynamics); with environmental upgrading the least addressed (9.0% of the cases reporting upgrading and 7.5% downgrading). The subsequent discussion will delve deeper into these observations, in relation to each of the four state roles.

Such contributions have been carefully reviewed and coded using the software MaxQDA to provide a systematic and quantitative analysis of the key evidence emerging. A deductive approach to coding has been adopted, accounting for potential within-study bias and expectancy bias that might affect the (systematic) literature review (Durach et al., 2017). The coding process was based on the categories discussed in the theoretical section. Based on the analysis by Horner (2017), we identified different policies connected to a state's facilitator, regulator, producer, and buyer roles. Table 1 identifies exemplary contributions reporting GVC-oriented policies corresponding with these state roles. Following classification provided by Pietrobelli and Staritz (2018), we categorize contributions by the following four policy objectives: (i) enhance GVC

participation; (ii) increase value-capture; (iii) improve social conditions; (iv) improve environmental conditions.<sup>7</sup> Classifications provided by Barrientos et al. (2011a, b), De Marchi et al. (2019) and Fernandez-Stark and Gereffi (2019) guided the coding of upgrading. Tables 2, 3, and 4 report the quantitative analysis performed, in relation to the four state roles analyzed. Table 2 highlights how often, within the sample of academic contributions analyzed, each state role has been oriented toward the four policy objectives discussed above. Table 3 reports on the empirical context of the analysis and Table 4 the different upgrading outcomes.

A key challenge relating to systematic literature reviews is their potential to overlook important contributions which fall outside the selection criteria, and yet may be central to the debate, thus driving sampling bias (Durach et al., 2017). Accordingly, while the quantitative analysis is grounded on academic papers identified via the aforementioned approach, the discussion of such results is also informed by theoretical contributions and relevant gray literature. In particular, to ensure important insights from the gray literature were not overlooked (including seminal IO publications)<sup>8</sup>, we merged multiple strategies. First, we searched for IO publications within the reference lists of articles identified via the systematic review described above. Second, we searched IO websites to scan for relevant publications. Third, we drew upon publications deemed seminal in the academic literature that specifically address the role of IOs for GVC development (Gereffi, 2019; Mayer & Gereffi, 2019). Based on this multi-faceted approach, we identified key landmark IO publications<sup>9</sup>, which have been used to frame the empirical analysis and concluding discussion.

## STATES POLICIES AND UPGRADING AND DOWNGRADING TRAJECTORIES IN GVCs

### State as Facilitator

As reflected in Table 2, in line with Horner (2017), the analysis indicates that the facilitator role has been by far the most addressed in GVCs/GPNs studies. This is further demonstrated by the fact that major IOs, including the WTO (2019; Elms & Low, 2013), UNCTAD (2013, 2017, 2020) and the World Bank (2016, 2020; Cattaneo et al., 2013) all contain trade policy and economic development

**Table 1** GVC-oriented policies in the sample analyzed

	Exemplary contributions
Facilitator	
Incentives	69 (incentives for innovation in China), 196 (incentives to develop wind and solar power industries, cross-country comparison)
Trade facilitations	301 (trade incentives and labor standards in apparel), 199 (China–Vietnam’s textile and garment industry trade facilitations)
Services	13 (services to increase Rwanda coffee farmers capabilities and bargaining power); 523 (supporting offshore service sector in the Philippines)
Knowledge infrastructure	13 (services to increase Rwanda coffee farmers capabilities), 314, 517 (supporting innovation at Penang Export Hub, Malaysia)
Infrastructure	105 (growth corridors in Tanzania, Namibia, Zambia and Zimbabwe), 49 (development of Chongqing notebook computer manufacturing cluster)
Regulator	
Regulatory framework	162 (regulating IP regimes in UK TV broadcasting industry), 190 (social standards in the garment industry, India)
Protective measures	69 (to support development of innovation in China), 313 (to support development of new energy vehicles industry in China)
Producer	
Direct ownership	13 (state-owned production capacity to support higher value added, coffee industry in Rwanda), 527 (state-owned firm and development of liquid crystal display industry, China)
Buyer	
Public procurement	162 (buying local formats to support capabilities development, UK TV broadcasting industry) 315 (strengthening social and environmental standards, furniture industry in Mexico)

Note Examples of papers describing each specific GVC-oriented policy, using the codes reported in Table A.1.

**Table 2** GVC-oriented policies, considering for different policy objectives

	Targeting access and integration	Targeting value capture	Targeting better social conditions	Targeting environmental sustainability
Facilitator	●●●	●●●	○○●	○○○
Incentives	●●●	●●●	○○○	○○○
Incentives to local firms	●●●	●●●		
Incentives to foreign firms	●●●	●●●	○○●	
Trade facilitations	●●●	○○●	○○●	
Services	○○●	●●●	○○●	○○●
Knowledge infrastructure	●●●	●●●	○○○	
Infrastructure building	●●●	●●●	○○●	○○○
Regulator	○○●	○○●	○○●	○○●
Regulatory framework	○○●	○○●	○○●	○○●
Protective measures	○○●	○○●	○○●	○○●
Producer	●●●	●●●	○○●	○○●
Buyer	●●●	●●●	○○●	○○●

Note ●●● = major relevance, ○●● = significant relevance, ○○● = moderate relevance, ○○○ = minor relevance, empty = marginal relevance. Relevance is calculated considering the incidence of records reporting on that objective, within those reporting about the policy reported in row.

Source Author’s own elaboration

recommendations emphasizing the state’s facilitator role.

Very often, these come in the form of *trade agreements* at bilateral (e.g., US–Vietnam – Ngo, 2017) or regional levels (e.g., the Africa Growth and Opportunity Act – Aberg & Becker, 2019), aimed at both improving access to GVCs and, to a lesser

extent, supporting value-added activities. Interestingly, such arrangements are also often used to support the achievement of social outcomes, rather than solely economic. The US–Cambodia Bilateral Textile Trade Agreement, for example, grants an increased garments export quota, in exchange for compliance with the ILO Better Factories project

**Table 3** GVC-oriented policies in the sample, considering for industries and countries analyzed

	Countries				Industries			
	Low income	Lower-middle income	Upper-middle income	High income	Services	Natural resource based	Complex products	Traditional manufacturing
Facilitator	ooo	oo●	o●●	oo●		ooo	o●●	oo●
Incentives	ooo	ooo	o●●	oo●			o●●	ooo
Trade facilitations	oo●	o●●	o●●	oo●			oo●	o●●
Services	oo●	oo●	oo●	oo●	ooo	oo●	oo●	oo●
Knowledge infrastructure		ooo	●●●	oo●	ooo		o●●	
Infrastructure building	ooo	oo●	o●●	oo●		ooo	oo●	ooo
Regulator		oo●	o●●	oo●		oo●	oo●	oo●
Regulatory framework		oo●	●●●	oo●		oo●	oo●	oo●
Protective measures		oo●	o●●	oo●		oo●	o●●	oo●
Producer	oo●	ooo	o●●		ooo	ooo	o●●	ooo
Buyer			●●●	oo●	oo●	oo●	o●●	oo●
Overall	ooo	oo●	●●●	oo●		oo●	o●●	oo●

Note ●●● = major occurrence, o●● = significant occurrence, oo● = moderate occurrence, ooo = minor occurrence, empty = marginal occurrence. Occurrence is calculated considering the incidence of papers focused on specific countries or industries, within those reporting about the policy reported in row. One paper might address more than one country/industry.

Source Author's own elaboration

**Table 4** GVC-oriented policies, considering for different upgrading outcomes

	Economic							Social		Environmental		
	Upgr.	Product	Process	Functional	Supply chain	Channel	Inter-chain	Downgr.	Upgr.	Downgr.	Upgr.	Downgr.
Facilitator	●●●	oo●	ooo	oo●	ooo	ooo	oo●	o●●	ooo	ooo		
Incentives	●●●	oo●	oo●	oo●	ooo	ooo	oo●	o●●	ooo	ooo		
Trade facilitations	●●●	oo●	ooo		oo●	oo●	oo●	oo●	oo●	oo●		ooo
Services	●●●	oo●	ooo	ooo	ooo	ooo	oo●	o●●	oo●	ooo	ooo	
Knowledge infrastructure	●●●	oo●	oo●	oo●	ooo	ooo	oo●	o●●				
Infrastructure building	●●●	ooo	ooo	oo●	oo●	ooo	oo●	oo●	ooo	ooo		
Regulator	●●●	oo●	ooo			ooo	ooo	o●●	oo●	ooo		
Regulatory framework	●●●	oo●	ooo				ooo	o●●	oo●	oo●	ooo	ooo
Protective measures	●●●	ooo				oo●	ooo	●●●		ooo		ooo
Producer	●●●	o●●	ooo	oo●			ooo	o●●	ooo		ooo	
Buyer	●●●	●●●	oo●	oo●		oo●	oo●		oo●		oo●	

Note ●●● = major occurrence, o●● = significant occurrence, oo● = moderate occurrence, ooo = minor occurrence, empty = marginal occurrence. Occurrence is calculated considering the incidence of records reporting on that upgrading outcome, within those reporting about the policy reported in row. As for the sub-categories of economic upgrading, occurrence is calculated considering the incidence on records reporting economic upgrading in the context of the policy reported in row; not in all cases it was possible to disentangle across sub-categories of upgrading.

Source Author's own elaboration.

(Rossi, 2015). The vast majority of such agreements cover traditional manufacturing sectors; they are

developed mostly by national governments in lower/upper-middle income economies.



Another highly diffused instrument adopted by national policymakers is to provide *incentives, subsidies or favorable taxes*. Grants targeting local producers are often aimed at securing increased local value capture, raising local technological capabilities (e.g., upgrading the production techniques of coffee farmers in Rwanda – see Behuria, 2019); supporting the development of new industries (such as in the case of high-speed rails in China – see Băzăvan, 2019); or even facilitating geographical delocalization (as in the case of the Chongqing region in China, where logistics subsidies were offered to local and foreign firms, to aid the creation of a supply base in the area – see Gao et al., 2019). Incentives targeting foreign firms are primarily oriented towards enhancing GVC participation, by attracting FDI. Tax incentives or allowances are often aimed at attracting global lead firms to relocate production or research and development facilities in-country (e.g., Markiewicz, 2019; Yang, 2014), to support the development of local knowledge endowments. Such initiatives have been developed by countries as diverse as China, Colombia, and Costa Rica, with the aim of attracting and retaining FDI in high-technology sectors, and to encourage global lead firms to establish R&D activities in-country (Gao et al., 2019; Kergroach, 2019). Several cases also report specific incentives to support the opening of higher value-added markets (e.g., Alam & Natsuda, 2016; Moazzem & Sehrin, 2016). Interestingly, we also observed examples of leveraging tax liabilities and incentives to support better social conditions (e.g., Behuria, 2019; Pedersen et al., 2019). Incentives are particularly apparent in the context of complex products, and in upper-middle countries.

National policy-makers also initiate policies to strengthen *infrastructure* capacity, an initiative that encompasses all four GVC-oriented policy aims considered (Pietrobelli & Staritz, 2018). Such initiatives can involve improvements to logistical infrastructure (e.g., roads, airport, ports, etc.) spanning national borders (e.g., Dannenberg et al., 2018; Gao et al., 2019); telecommunication infrastructure (Riain, 2004; Yeung, 2019); and productive infrastructure involving the creation of industrial parks and warehouses, to help develop specific industries (e.g., Felker, 2009; Gao et al., 2019; Ngo, 2017). The case of the SAGCOT corridor in Tanzania is particularly interesting, as such investment clearly reflects a value-chain approach aimed at connecting actors working at different scales of the GVC (see Dannenberg et al., 2018). Several

examples in this respect are found across both lower- and upper-middle economies, especially in the context of complex products.

In relation to complex products, and particularly in the context of upper-middle economies, national policy-makers invest to support their country's *knowledge infrastructure*. Such investments are often aimed at enhancing local skill development, value capture, and promoting broader GVC participation. Such policies involve the development of vocational projects, providing hands-on training to workers and potential entrepreneurs (e.g., Athukorala, 2017; Kergroach, 2019; Tessmann, 2020), or creating stronger links with education institutions, including universities and specialized research centers (e.g., Gao et al., 2019; Rasiah et al., 2016).

*Services* to support local firms are found to be particularly helpful in targeting value capture (Kleibert, 2015; Wentink et al., 2017). These policies can range from the provision of technical advice and services to support product exports, to the establishment of specific instruments – such as in the case of the Rwandan farmers, wherein local government established a coffee washing station to support product and process upgrading – explicitly aimed at integrating suppliers into GVCs (see Kergroach, 2019). Another interesting case in this regard is the South African fishery industry: cooperatives were formed to provide an array of services to upgrade local firm capabilities, reinforce backward and forward linkages, and support increased value capture by strengthening suppliers' collective bargaining power (see Wentink et al., 2017). Advisory services also support the achievement of social goals, as reported by Rossi (2015) and Tewari (2017) in the cases of textile and apparel GVCs, where factory-level meetings and self-help groups were used to provide basic knowledge and skills to workers. As reflected in Table 3, the array of services described here oriented towards GVC facilitation encompass a variety of industrial and geographical contexts.

In the majority of cases analyzed wherein the state has played a *facilitating* role, a variety of economic upgrading outcomes have been identified, particularly regarding product or inter-chain upgrading (see Table 4). This is especially apparent in relation to strengthening links between research institutions and local companies (*knowledge infrastructure*), to enable local firms to enter new industries and adopt more value-added activities (e.g., Băzăvan, 2019; Butollo & Ten Brink, 2018). A case



in point is the Penang Export Hub, where a state-program was launched specifically to support firm innovation, access to markets and advanced technologies in the electronics sector to boost local R&D capabilities (see Athukorala, 2014; Athukorala, 2017). Similar upgrading trajectories are observed when incentives are introduced. Interestingly, GVC facilitation (particularly via the introduction of *services*, see Table 4), is also associated with enhanced social conditions, principally in the form of improved measurable standards as opposed to enabling rights (e.g., Azmeh, 2014a, b; Rossi, 2015). For example, in Mewat (India) increased child education rate, higher incomes, and better working conditions were achieved via the formation of self-help groups (SHGs), through which local residents – especially women – were taught basic economic skills and on-the-job training (see Tewari, 2017). In several of the instances analyzed, and particularly in the case of incentives, downgrading dynamics were also observed.

### State as Regulator

A number of cases demonstrate how national policymakers can influence value capture (and, to a lesser extent GVC participation), via its regulatory role – imposing restriction on foreign or local firms (see Table 2). To put these observations into wider context, and as reflected in our review of the gray policy literature, recent shifts in trade policy following a notable backlash against economic globalization (Horner & Alford, 2019) reaffirm the increased significance of the state's regulatory role. The ILO's (2015) 'Value Chain Development for Decent Work' policy report seeks to move beyond pro-poor growth and urge policymakers to consider the effects of interventions on working conditions, such as through effective state regulation and supportive enforcement mechanisms. UNCTAD's (2017) 'World Investment Report' also highlights a notable shift towards investment restrictions and regulations concerning foreign takeovers, relative to those in place in the 1990s.

Indeed, the state is often engaged in designing and implementing *regulation* that affect product price and quality (e.g., Gao et al., 2019; Tessmann, 2020), labor and environmental standards (e.g., Alford, 2016; Hossain, 2019; Yoshida, 2017). Such regulations are primarily aimed at supporting value capture and alternative value appropriation structures in GVCs. For example, having understood the power imbalance in the TV format GVC, the UK government implemented terms of trade between

broadcasters and producers, creating an IP regime to support localized value appropriation and development of the TV broadcasting industry (Chalaby, 2017). Other cases describe such goals being achieved by removing certain intermediary agents in the chain (e.g., Tewari, 2017; Wentink et al., 2017). Our analysis indicates that such regulatory interventions occur primarily in natural resource-based and traditional manufacturing industries, and in the context of upper-middle countries (Table 3).

*Protective measures* against foreign firms – mostly introduced in the context of complex product GVCs and in upper-middle countries (see Table 3) – are often aimed at value capture and upgrading a local supply base until 'domestic companies become strong enough to resist international competition' (Băzăvan, 2019: 4). These policies can take the form of tariffs applied to imports, local content requirements, or restrictions on foreign investment. Such policies are significantly impacting the geographies of GVCs/GPNs and relationships within and among firms, both at a local and international level (e.g., Azmeh, 2015; Curran et al., 2019). The Chinese experience of new energy vehicles is interesting in this regard, as such restrictions have prompted global lead firms to 'team up' with local producers, to accelerate transfer of state-of-the-art technologies developed in the USA and Europe (see Yeung, 2019).

The stringency of the *regulatory framework* is found to be especially effective in supporting product upgrading (see Table 4). The setting of quality or price standards (e.g., Behuria, 2019) and/or banning specific (low-value) technologies (e.g., Butollo & Ten Brink, 2018), can foster shifts in local production toward higher value-added products. State regulation has also been associated with improved social conditions, requiring or supporting the adoption of internationally or locally developed certification schemes (Behuria, 2019; Schouten & Hospes, 2018); and through stricter enforcement of labor regulation (e.g., Braun-Munzinger, 2019; Hossain, 2019). However, downsides have also been documented, with protective regulatory measures often contributing to concurrent downgrading and upgrading outcomes, including environmental degradation. Such mixed outcomes have been attributed to enforcements problems (see Yoshida, 2017), or the unintended consequence of introducing measures that protect certain individual firms as opposed to achieving overall competitiveness.

### State as Producer

We observed very few instances of states leveraging their role as *producer* to enact GVC-oriented policies, either in the systematic literature review or concurrent analysis of IO publications, with those observed primarily occurring in the context of complex products (Table 3). State-owned enterprises are often reported in the analysis of Chinese (Defraigne, 2017; Liu & Yang, 2013; Zhu, 2015) or more generally in East Asian GVCs (e.g., Ngo, 2017), wherein national or sub-national policy-makers leveraged the *producer* role to support the technological development of local industries and innovative capabilities. Such a role is primarily implemented to achieve value-capturing opportunities relative to ensuring GVC participation (Table 2). The case of Rwanda coffee making described by Behuria (2019) provides an interesting explanation of why GVC-oriented policies differ from traditional Private Sector Development policies. To support the move toward higher-value coffee, the Rwandan state invested in coffee roasting, processing factories and retail outlets. The development of the whole chain locally, initially supported by sub-national government investments, sustained the effective diversification of final markets, as well as the process and functional upgrading of local firms.

A vast majority of the papers on the state's role as *producer* suggest it is linked to product upgrading (see Table 4). For example, in the Chinese liquid crystal display industry, municipal governments heavily invested in local companies to support indigenous innovation and the development of higher-value-added products (Yang, 2014). Similar outcomes have been reported in a different empirical context, such as coffee production in Africa described above (Behuria, 2019). However, a number of papers also highlighted that such a role can be counterproductive if not implemented effectively, in some cases resulting in economic downgrading. This is due to the fact that while state-owned companies can be locally competitive and benefit from special local market conditions, they do not necessarily develop the skills needed to enter more competitive, foreign markets (see e.g., Chen & Xue, 2010).

### State as Buyer

Our review also found that few studies examined the state's role as *buyer* in relation to GVC-oriented policies, perhaps due to the fact that public sector procurement is a new and emerging focus of GVCs/

GPNs research (Hughes et al., 2019). The few examples observed were primarily in the context of complex product GVCs located in upper-middle or high-income economies (Table 3). This state role is often established to support the development of new industries, as in the case of the LED lighting products or electric vehicles in China (see Butollo & Ten Brink, 2018; Yeung, 2019), or the furniture sector in Mexico (see Klooster & Mercado-Celis, 2016). Furthermore, in a significant number of cases analyzed, the state's *buyer* role was aimed at achieving improved environmental performance at a local level (Table 2). Such evidence is in line with the increased emphasis on (social and environmental) responsibility that governments, especially in developed countries, are placing on their purchasing activities (see Hughes et al., 2019).

In relation to upgrading, the few papers addressing the state's role as *buyer* report that such action has been beneficial for economic, and particularly product, upgrading. Particularly when local producers have not yet achieved the standards required to serve foreign markets in new, value-added products, public procurement can play a pivotal role in strengthening their competitiveness (e.g., Chalaby, 2017; Gao et al., 2019). More specifically, public procurement can accelerate domestic firms' ability to achieve economies of scale and develop advanced production technologies, while enabling own-brand development, initially for local and then subsequently foreign markets (see e.g., Butollo & Ten Brink, 2018). As evidenced in Table 4, the state's buyer role can also be particularly effective in strengthening social and environmental standards, requiring the adoption of Ethical Sourcing Policies – as in the case of Transport of London described in Martin-Ortega and O'Brien (2017); or by ensuring sustainable inputs (certified wood) are used in manufactured products, such as the case of school furniture production in the Oaxaca region (see Klooster & Mercado-Celis, 2016).

### CO-EXISTENCE OF UPGRADING AND DOWNGRADING: TENSIONS AND TRADE-OFFS

As summarized in Table 4, a large number of contributions analyzed observe some form of economic upgrading. Other than a general increase in employment and number of local firms<sup>10</sup>, *product* and *process* are the types most commonly reported, with social and environmental upgrading relatively less documented. Furthermore, while numerous cases indicate that state policies can enable local

economies to leverage increased gains from GVC participation, often mixed results emerge, involving either cases of degraded local conditions, or a failure of policies to achieve their full growth potential. This is particularly evident in cases where the state acts as *producer* and *regulator* (and especially when implementing protective measures). Several reasons motivate the co-existence of economic up and downgrading dynamics. In the case of trade facilitation or protective regulatory measures, economic upgrading outcomes are found to be heterogeneous across firms: some firms are favored by policy initiatives, whereas others (often the smallest ones or those located in rural areas) are left behind (Martinez-Covarrubias et al., 2017; Yoshida, 2017)<sup>11</sup>. A similar dynamic is observed in relation to social upgrading, where heterogeneities at the worker level also emerge (Plank & Staritz, 2016). Numerous contributions also report that some forms of economic upgrading have been achieved (e.g., increased export shares and local firm access to GVCs), but others (e.g., higher local value content) have not (e.g., Azmeh, 2015; Pavlínek, 2016). Furthermore, downgrading might temporally follow upgrading, as positive, short-term policy outcomes are not necessarily maintained over time (e.g., Azmeh, 2014a, b; Pedersen et al., 2019).

Interestingly, the three types of upgrading are also found to trade-off one another, as predicted by Barrientos et al. (2011a, b), and De Marchi et al. (2019). For example, social and economic up and downgrading are often found to coexist (e.g., Braun-Munzinger, 2019; Dannenberg et al., 2018; Plank & Staritz, 2016), with observable tensions between economic and environmental upgrading another clear case in point (e.g., Azmeh, 2014a, b, 2015; Braun-Munzinger, 2019; Dannenberg et al., 2018). To briefly recount two pertinent examples, in the textile GVC in China, pollution reduction achieved through stringent state policy has led to the closure of several local companies unable to meet new environmental standard requirements (see Braun-Munzinger, 2019). In contrast, increasing industrialization driven by the development of a growth corridor in Tanzania, has been coupled with a degradation of soil conditions due to deforestation, a reduction in biodiversity and precarization of employment (see Dannenberg et al., 2018).

## THE MEDIATING ROLE OF POLICY DESIGN AND IMPLEMENTATION

The analysis provided above indicates which state roles are more likely to achieve economic, social, and environmental upgrading or downgrading. However, it also disclosed heterogeneities in the results – some policymakers have been more effective than others. It is clear that designing and implementing GVC policies is challenging; ineffective design or implementation of a given policy might prevent states from reaping the full benefits of original policy aims or result inadvertently in downgrading outcomes. By comparing the cases of failures and successes and drawing from the theoretical literature, we identify six aspects specifically relating to GVC-oriented policies that policymakers should consider to effectively achieve economic, social, or environmental upgrading – that cut across the four state roles (see also Kaplinsky, 2014; Kaplinsky & Morris, 2016).

Regarding the design phase, GVC policies should stem from an *accurate understanding of a given GVC's functioning and address all the relevant actors in the chain*; including specific segments of the chain (e.g., input producers), firms populating the segments, and even typologies of workers. Segments of the chain not considered in policies could become bottlenecks (see for example the case of Rwanda coffee GVC detailed in Behuria, 2019). Limits to upgrading could also arise in the event there are not enough local firms specialized in, or having the resources to take advantage of policies introduced (see e.g., Yeung, 2019). Finally, (social) upgrading policies could be inefficient if they are addressing only certain workers' employment conditions (i.e., regular workers and not precarious workers, see Alford, 2016 and ILO, 2015). In line with Morris and Staritz (2019), this discussion points to the importance of equipping governmental officials with the skills to map GVCs, assess their power imbalances and governance structures, and identify upgrading opportunities. Recently published academic articles (Whitfield & Staritz, 2020; Whitfield et al., 2020) and IO policy reports (UNCTAD 2020; World Bank, 2020) further reaffirm the importance of nation-states developing industrial and sectoral policies that account for the specificities of cross-border GVC linkages and the ongoing significance of global lead firms. This requires that national policymakers adopt a GVC mapping methodology detailed in Fernandez-Stark



and Gereffi (2019) and Frederick (2019), which has been widely adopted by IOs despite not always being correctly applied (Gereffi, 2019; Mayer & Gereffi, 2019).

Furthermore, a key challenge in the design of GVC-oriented policies lies in the *need to acknowledge, mediate, and prioritize among different interests, which are dependent on the particular characteristics of a GVC*, accounting for the degree of GVC integration, level of economic development, and specific industry dynamics. It is important for national policymakers to be aware that, even within the same countries, actors at different nodes of the GVC can have diverse interests, for example regarding trade facilitation interventions. The other side of this coin is the fact that GVC-oriented policies will impact firms differently, depending on their position and integration in GVCs (e.g., Butollo & Ten Brink, 2018; Dannenberg et al., 2018; Kerroach, 2019; Moazzem & Sehrin, 2016).

Other important and (potentially) conflicting interests to be acknowledged are those among global lead firms and national policymakers (Abdulsamad & Manson, 2019; Pavlínek, 2016; Pietrobelli & Staritz, 2018), which might prevent policy effectiveness. In the Ivorian Cashew Industry, the resistance of lead firms to pay a premium price for quality products supported by local government initiatives prevented local farmers from capturing more value added, despite strong policy efforts put in place (Tessmann, 2020). Similar resistance can be found in the implementation of (labor) standards (Alford, 2016; Schouten & Hospes, 2018). A key challenge, therefore, is that global lead firm strategies fall outside the scope of national policies and jurisdictions. However, analysis based on this review indicates that policymakers can leverage various strategies in order to implement effective strategies in the context of such geographical constraints (see e.g., Chalaby, 2017).

One of the key elements to ensure the effective design of GVC-oriented policies is the *involvement of multiple actors in the design (and implementation) of GVC-oriented policies*. Policies in a GVC order demand an 'understanding of trans-scalar interactions' across private, public and civil society actors, and regimes (Alford, 2016: 56; Paus et al., 2008). Most of the cases in which policies have successfully achieved improved social standards have involved IOs, states, NGOs, firms' association, and even (lead) firms (e.g., Hossain, 2019; Rossi, 2015; Tewari, 2017; see also ILO, 2015). Almost all of the cases considered involving combinations of public,

private, and civil society stakeholders have contributed to positive economic upgrading outcomes (e.g., Behuria, 2019; Pedersen et al., 2019). Similarly, evidence indicates that the combined and coordinated engagement of different institutional actors *within* the state at national level (e.g., both the Ministries of Agriculture and of Industry, as in Tessmann, 2020; or both ministries of Woman and Child Development and of Rural Development, as in Tewari, 2017) or across geographical jurisdictions (e.g., central, provincial, municipality authorities, as in Dong & He, 2018; Gao et al., 2019), can result in effective GVC-oriented policy outcomes.

Lessons from failing cases suggest that the implementation stage is decisive: policymakers should *ensure the required resources and capabilities are available* at the local level – for example, by providing tailored support to help domestic firms enhance value capture through GVC participation (Paus & Gallagher, 2008; Rutherford & Holmes, 2007; Wentink et al., 2017), or understanding the specific (labor) standards required by global lead firms (see Smith et al., 2018; ILS, 2006; ILO, 2015). Particularly when local authorities are involved, national governments should provide sufficient (economic) resources to implement intended policies and support firms operating across all value chain segments (e.g., Gao et al., 2019; Schouten & Hospes, 2018). Specific capabilities and knowledge required to capture increased benefits through GVC participation also need to be appropriately coordinated, targeted, and monitored to ensure they reach their intended recipients (e.g., Ngo, 2017; Schouten & Hospes, 2018). For example, in the context of the Mexican complex products GVCs analyzed by Durán (2019), governments heavily invested in universities to support local skill development and improve the R&D efforts of OEMs, yet with limited success due to weak links between firms and universities, along with the inability of local agencies to effectively transfer academic expertise to enterprises. This lesson highlights that implementation of GVC-oriented policies requires a deeper understanding of the particular resource constraints and needs of production contexts connected to GVCs, accounting for macro, meso, and micro levels of analysis, which requires state policymakers to broaden their expertise.

Finally, it is worth mentioning that to effectively mediate *participation in GVCs and/or capture more of the value produced therein, requires a mix of state policies alongside domestic firm efforts*. In almost all the cases reviewed, more than one policy initiative





has been simultaneously introduced (e.g., Ker-groach, 2019; Pietrobelli & Puppato, 2016), with the mix often changing over time (e.g., Hsu, 2011; Rutherford & Holmes, 2007). While analyzing what is the best sequence or combination of policies to support upgrading and GVC participation falls outside the scope of this article, it is important to highlight that such complex and systemic outcomes cannot be achieved through one policy intervention alone. Synergies could arise across policies (for example among industrial and labor policies, as described in Braun-Munzinger, 2019); and the implementation of one policy might later require the introduction of another (for example, the strengthening of the local supply base driven by the provision of incentives requires investments to strengthen knowledge infrastructure – see e.g., Pavlínek, 2016). While the scope of this article is on the role of national policymakers, it is important to stress that state policies are not the sole contributors to up or downgrading outcomes: firms' capability endowment and their entrepreneurial effort are essential in supporting effective participation or upgrading in GVCs. In line with Morrison et al., (2008) and Giuliani, de Marchi, & Rabellotti (2017), the cases reviewed in this article suggest that larger and more capable firms are better equipped to exploit opportunities deployed by GVC-oriented policies, to improve their position in the chain, highlighting that the impact of policies might be uneven across firms (Behuria, 2019; Dannenberg et al., 2018; Pedersen et al., 2019; Plank & Staritz, 2016; Yoshida, 2017).

## CONCLUSION

An increasing body of research indicates that state policies are crucial in the context of GVCs. This is reflected both in more robust theorization of the different roles states play in recent academic literature (Alford & Phillips, 2018; Horner, 2017; Horner & Alford, 2019; Mayer & Phillips, 2017; Smith, 2015), alongside an increasing appreciation among IOs of a need for state policies tailored to the specificities of coordinated production that distinguish GVCs from other forms of industrial organization (ILO, 2015; Mayer & Gereffi, 2019; UNCTAD, 2020; UNIDO, 2015; World Bank, 2020; WTO, IDE-JETRO, OECD, VIBE, & World Bank, 2019). In some respects, this reflects a move away from traditional liberal vs interventionist 'one-size-fits-all' debates regarding the role states can and should play, towards a more targeted appreciation

of the particular global-local linkages that exist between lead firms, suppliers and a host of other stakeholders linked to GVCs. Our 'cut' into these debates has been to operationalize and systematically explore the extent to which policies falling under four defined roles of the state – facilitator, regulator, producer, and buyer – are connected to enhanced GVC participation, value capture, economic, social, and environmental up or downgrading.

For this purpose, we implemented a systematic review of the academic literature on policy-oriented GVCs, which have been coded and subject to quantitative analysis, to provide a broad overview of the issues at stake. While such an approach is not free of limitations, it has enabled us to make an important contribution on the complex relationship between state roles, policy effectiveness, and up/downgrading in GVCs. The analysis suggests that when enhancing GVC participation is the goal, policymakers often adopt facilitative strategies to invest in the development of (knowledge) infrastructures or in the provision of incentives. With regards to ensuring local firms are better able to retain a higher share of the value produced, facilitative measures such as enhancing access to services and knowledge infrastructure gain more relevance. When social or environmental goals are the target, regulatory measures and provision of services are preferred, with trade agreements often leveraged to achieve social objectives. Our analysis also highlights which initiatives are more likely to be associated to specific types of upgrading trajectories, with economic (and particularly *product* and *process*) being the type most commonly reported, and social and environmental relatively less documented. While our analysis suggests that state policies can enable local economies to leverage increased gains from GVC participation, we observed numerous examples of mixed results (particularly in relation to the state's *producer* and *regulator* roles), including either degraded local conditions or a failure to achieve intended policy outcomes. In the case of trade facilitation or protective regulatory measures, economic upgrading outcomes were found to favor some firms, with others left behind. We also observed trade-offs across the three types of upgrading under review; social and economic up and downgrading were often found to coexist, with observable tensions between economic and environmental upgrading also documented. Finally, we discussed the challenges related to the design and implementation of

**Table A.1** The contributions considered in the systematic literature review

Code	Authors	Year	Title	Countries analyzed	Sectors analyzed	Up/Down-grading		
						Economic	Environmental	Social
1	Tessmann	2019	Global value chains and policy practice: The making of linkages in the Ivorian cashew industry	LM	NRB	↑□		
13	Behuria	2019	The domestic political economy of upgrading in global value chains: how politics shapes pathways for upgrading in Rwanda's coffee sector	LI	NRB	↑	↑	↑
25	Kergroach	2019	National innovation policies for technology upgrading through GVCs: A cross-country comparison	UM; HI		↑		
42	Durán	2019	Globalization and the scrambling process of catching up in Mexico	UM		↑		↑
47	Aberg, Becker	2019	The world is more than a stage: foreign policy, development, and spatial performativity in Ethiopia	LI		↑		
48	Braun-Munzinger	2019	Chinese CSR standards and industrial policy in GPNs	UM	TM	□	↑	↑
49	Gao et al.	2019	Governance capacity, state policy and the rise of the Chongqing notebook computer cluster	UM	CP	↑		
59	Mayer, Phillips	2019	Global inequality and the Trump administration	UM	NRB; CP; TM	□	□	□
60	Markiewicz	2019	Stuck in second gear? EU integration and the evolution of Poland's automotive industry	HI	CP	↑		
69	Băzăvan	2019	Chinese government's shifting role in the national innovation system	UM	S; CP	↑□		
75	Pedersen et al.	2019	Mining-sector dynamics in an era of resurgent resource nationalism: Changing relations between large-scale mining and artisanal and small-scale mining in Tanzania	LI		↑□		
79	Hossain	2019	Rana Plaza, disaster politics, and the empowerment of women garment workers in Bangladesh	LM	TM			↑□
103	Heron et al.	2018	Global Value Chains and the Governance of 'Embedded' Food Commodities: The Case of Soy		NRB		↑	
105	Dannenberg et al.	2018	Spaces for integration or a divide? New-generation growth corridors and their integration in global value chains in the Global South	LI; LM; UM	NRB	↑	□	□
111	Abramova, Garanina	2018	Russian MNEs Under Sanctions: Challenges for Upgrading in GVCs (Cases of Energy and IT Industries)	UM	NRB; CP	↑□		
113	Athukorala, Ekanayake	2018	Repositioning in the global apparel value chain in the post-MFA era: Strategic issues and evidence from Sri Lanka	UM	TM	↑	↑	↑
122	Butollo, Ten Brink	2018	A great leap? Domestic market growth and local state support in the upgrading of China's LED lighting industry	UM	CP	↑		



Table A.1 (Continued)

Code	Authors	Year	Title	Countries analyzed	Sectors analyzed	Up/Down-grading		
						Economic	Environmental	Social
123	Thoburn, Natsuda	2018	How to conduct effective industrial policy: a comparison of automotive development in the Philippines and Indonesia	LM	CP	□		
145	Schouten, Hospes	2018	Public and private governance in interaction: Changing interpretations of sovereignty in the field of Sustainable Palm Oil	LM	NRB		↑	
158	Dong, He	2018	Linking the past to the future: A reality check on cross-border timber trade from Myanmar (Burma) to China	LM	NRB	□	□	
162	Chalaby	2017	Can a GVC-oriented policy mitigate the inequalities of the world media system? Strategies for economic upgrading in the TV format global value chain	HI	S	↑		
163	Yoshida	2017	Local institutions and global value chains: Development and challenges of shrimp aquaculture export industry in Vietnam	LM	NRB	↑□		
178	Araújo, Flaig	2017	Trade restrictions in Brazil: Who pays the price?	UM		□		
179	Chiarini et al.	2017	Access to knowledge and catch-up: Exploring some intellectual property rights data from Brazil and South Korea	HI		↑		
190	Tewari	2017	Relational Contracting at the Bottom of Global Garment Value Chains: Lessons from Mewat	LM	TM			↑
196	Nahm	2017	Renewable futures and industrial legacies: Wind and solar sectors in China, Germany, and the United States	UM; HI	CP	↑		
199	Ngo	2017	Industrial Development, Liberalisation and Impacts of Vietnam-China Border Trade	LM	TM	□		
203	Wentink et al.	2017	Co-governance and upgrading in the South African small-scale fisheries value chain	UM	NRB	↑□		
223	Martin-Ortega, O'Brien	2017	Advancing respect for labour rights globally through public procurement	UM; HI				↑
243	Pietrobelli, Puppato	2016	Technology foresight and industrial strategy	UM; HI	CP	↑		
254	Rasiah et al.	2016	Epilogue: implications for promoting firm-level technological capabilities	LM; UM	CP	↑□		
256	Alam, Natsuda	2016	The competitive factors of the Bangladeshi garment industry in the post-MFA era	LM	TM	↑□		
258	Moazzem, Sehrin	2016	Economic Upgrading in Bangladesh's Apparel Value Chain during the Post-MFA Period: An Exploratory Analysis	LM	TM	↑		↑□
266	Pavlínek	2016	Whose success? The state-foreign capital nexus and the development of the automotive industry in Slovakia	HI	CP	↑□		

**Table A.1** (Continued)

Code	Authors	Year	Title	Countries analyzed	Sectors analyzed	Up/Down-grading		
						Economic	Environmental	Social
271	Azmeh	2015	Transient global value chains and preferential trade agreements: Rules of origin in US trade agreements with Jordan and Egypt	LM; UM	TM	↑□	□	
301	Rossi	2015	Better work: Harnessing incentives and influencing policy to strengthen labour standards compliance in global production networks	LI; LM	TM	↑		↑
307	Athukorala, Veeramani	2019	From import substitution to integration into global production networks: The case of the Indian automobile industry	LM	CP	↑		
308	Ofreneo	2016	Auto and car parts production: can the Philippines catch up with Asia?	LM	CP	□		
313	Yeung	2019	'Made in China 2025': the development of a new energy vehicle industry in China	UM	CP	↑□		
314	Athukorala	2017	Global productions sharing and local entrepreneurship in developing countries: Evidence from Penang export hub, Malaysia	UM		↑		
315	Klooster, Mercado-Celis	2016	Sustainable Production Networks: Capturing Value for Labour and Nature in a Furniture Production Network in Oaxaca, Mexico	UM	NRB; TM	↑	↑	↑
316	Plank et al.	2016	Social up- and downgrading of apparel workers in Romania: fast fashion, post-socialist transformation, Europeanization, and the global economic crisis	HI	TM	↑		↑□
317	Smith et al.	2018	Labor Regimes, Global Production Networks, and European Union Trade Policy: Labor Standards and Export Production in the Moldovan Clothing Industry	LM	TM			□
318	Alford	2016	Trans-scalar embeddedness and governance deficits in global production networks: Crisis in South African fruit	UM	NRB			□
328	Intarakumnerd et al.	2016	Global production networks and host-site industrial upgrading: the case of the semiconductor industry in Thailand	UM	TM	↑□		
330	Plank, Staritz	2015	Global competition, institutional context and regional production networks: Up- and downgrading experiences in Romania's apparel industry	UM	TM	↑□		□
501	Azmeh	2014	Trade regimes and global production networks. The case of the Qualifying Industrial Zones (QIZs) in Egypt and Jordan	HI, UM, LI	TM	↑	□	↑□
502	Azmeh	2014	Labour in global production networks: Workers in the qualifying industrial zones (QIZs) of Egypt and Jordan	HI, UM, LI	TM	↑		↑□

Table A.1 (Continued)

Code	Authors	Year	Title	Countries analyzed	Sectors analyzed	Up/Down-grading		
						Economic	Environmental	Social
513	Lee et al.	2014	The role of the state as an inter-scalar mediator in globalizing liquid crystal display industry development in South Korea	HI	CP	↑		
517	Athukorala	2014	Growing with global production sharing: The tale of Penang export hub, Malaysia	UM	CP	↑		
519	Liu et al.	2013	Strategic coupling of local firms in global production networks: The rise of the home appliance industry in Shunde, China	UM	CP	↑		
523	Kleibert	2014	Strategic coupling in 'next wave cities': Local institutional actors and the offshore service sector in the Philippines	LM	S	↑		
527	Yang	2011	State-led technological innovation of domestic firms in Shenzhen, China: Evidence from liquid crystal display (LCD) industry	UM	CP	↑		
530	Hsu	2011	State Transformation and Regional Development in Taiwan: From Developmentalist Strategy to Populist Subsidy	HI		↑		
604	Riain	2004	The politics of mobility in technology-driven commodity chains: Developmental coalitions in the Irish software industry	HI	S	↑		
623	Paus, Gallagher	2008	Missing links: Foreign investment and industrial development in Costa Rica and Mexico	UM	CP	↑ □		
624	Rutherford, Holmes	2008	The flea on the tail of the dog': Power in global production networks and the restructuring of Canadian automotive clusters	HI	CP	↑ □		
625	Smith et al.	2008	Reconfiguring 'post-socialist' regions: Cross-border networks and regional competition in the Slovak and Ukrainian clothing industry	HI	TM	□		
627	Felker	2009	The political economy of Southeast Asia's techno-glocalism	UM		↑ □		
636	Ernst	2010	Upgrading through innovation in a small network economy: Insights from Taiwan's IT industry	HI	CP	↑ □		
637	Chen	2010	Global Production Network and the Upgrading of China's Integrated Circuit Industry	UM	CP	↑ □		

Note When blank, it means that the policy initiative was not tackling any specific industry and or information on upgrading are not reported  
*HI* high income, *UM* upper-middle income, *LM* lower-middle income, *LI* low income, *TM* traditional manufacturing, *NRB* natural resource-based, *CP* complex products, *S* service; ↑ upgrading, □ downgrading or no-upgrading



**Table A.2** Landmark publications on GVCs from international organizations

International Organisation	Year	Title
World Bank	2010	Global Value Chains in a Postcrisis World
	2016	Making Global Value Chains Work for Development
	2019	World Development Report, The Changing Nature of Work
	2020	Trading For Development in the Age of GVCs
WTO	2011	Trade patterns and GVCs in East Asia: from trade in goods to trade in tasks
	2013	Global value chains in a changing world
OECD/WTO	2013	Aid for Trade at a glance: connecting to value chains
	2019	Aid for Trade at a glance: economic diversification and empowerment
OECD/WTO/World Bank	2014	GVCs: Challenges, opportunities and implications for policy
	2017	Measuring and Analysing the impact of GVCs on Economic Development
	2019	GVC Development Report: technological innovation, supply chain trade and workers in a globalised world
UNCTAD	2013	World Investment Report
	2017	World Investment Report
	2020	World Investment Report
UNIDO	2002	Innovation and Learning in Global Value Chains
	2011	Diagnostics for Industrial VC Development: An Integrated Tool
	2015	GVCs and Development: UNIDO's Support towards Inclusive and Sustainable Industrial Development
ILO	2006	Decent work in the global economy: a research strategy
	2015	Value Chain Development For Decent Work

state policies, suggesting good practice that should inform every policy maker, irrespective of the type of state role played in relation to GVCs.

Our analysis highlights that developing effective GVC-oriented policies is a demanding task, which requires in-depth understanding of coordinated, cross-border production that differentiate GVCs from other types of industrial organization (Mayer & Gereffi, 2019). Building on recent acknowledgement that states matter in GVCs (Horner & Alford, 2019), we have provided a systematic account of *how* they matter from a policy perspective, as demonstrated through our discussion under the facilitator, regulator, producer, and buyer roles.

Strategies were implemented to address the most significant sources of bias found in systematic literature reviews, particularly regarding sampling, selecting, and expectancy bias (Durach et al., 2017). Nonetheless, we acknowledge the study has some limitations worth noting when interpreting the results. First, our analysis is based on policies already identified and discussed within the academic literature, and therefore cannot provide a complete account of all initiatives undertaken at the global level. Second, the analysis drew solely

from English language-based articles – the most common language for academic publications on the topic. Third, while accounting for seminal contributions from the gray literature, the present analysis was only able to scratch the surface of what is a vast body of IO publications. While we are aware our methodological approach is not free of limitations (see e.g., Durach et al., 2017), we have worked hard to overcome the most significant pitfalls and maximize the benefits of such a review, resulting in a rigorously developed and non-subjective overview of the literature.

Based on our analysis, it is clear that states have a central role to play in mediating GVCs and capturing the social, economic, and environmental gains from domestic firm and industry engagement. Yet, it is also clear that governments require a multi-scalar appreciation of wider commercial GVC dynamics, working with multiple (and sometimes competing) stakeholders to achieve their developmental objectives. There is little doubt that understanding and informing effective state policy in an era of GVCs is an increasingly active research agenda, and one that can and should continue to be co-developed with the academic community.



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## NOTES

<sup>1</sup>While acknowledging the important differences across GVCs and GPNs literatures (see Bair, 2009 for a broader discussion), in this context we consider both as synonymous, given similarities in how the state is conceived (Horner, 2017; Smith, 2015). While it was not initially at the center of GVC theorization – which rather focused more on private governance (Smith, 2015) – it has been one of the pillars considered in subsequent GVC analyses, as supported by the systematic review of the GVCs literature by De Marchi et al. (2020). The state and, more generally, the institutional context of global production, have been a more predominant element in the GPN literature, which has highlighted the ‘strategic coupling’ in the agency and resources of local institutions and of multinationals grounded in that locality (Coe et al., 2004; Yeung, 2009).

<sup>2</sup>In relation to environmental upgrading, Krishnan (2017) and De Marchi et al., (2019) distinguish between upgrading as *process* and *outcomes*. In this paper, we refer specifically to upgrading outcomes; i. e., the policies that are associated with improved economic results and/or social or environmental conditions.

<sup>3</sup>Following Horner (2017) and Wade (2016), this paper adopts the term ‘GVC-oriented policies’ to refer to all policies that have been developed taking into account the specificities of the GVC, including those that might, even unintentionally, impact on firms’

ability to participate in, and appropriate value from, GVCs.

<sup>4</sup>The systematic literature review was conducted up to and including 2019. This was the last full year that the authors’ were able to examine at the time the review took place. Publications from 2020 onward are therefore not included.

<sup>5</sup>The article is informed and framed by a much larger number of contributions, including those that are solely theoretical. However, given the scope and aims of the systematic review, only contributions that met the conditions summarized in Figure 1 are included in the empirical analysis that follows.

<sup>6</sup>Here and in the following discussion, we refer to the World Bank classification of countries for the 2020 fiscal year, which distinguish among high, upper-middle, lower-middle, low-income countries. The full list is available here: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>. For the classification of industries, we draw on Giuliani et al. (2005), who distinguish between traditional manufacturing, natural resource-based, complex products and services industries. See also Table A.2 in the Appendix.

<sup>7</sup>Pietrobelli and Staritz (2018) consider social and environmental conditions under the ‘broader objectives’ definition. Here, social conditions refer to what the authors’ term ‘poverty reduction’, ‘quality of employment’ and ‘gender quality’.

<sup>8</sup>Following Gereffi (2019) and Mayer and Gereffi (2019), we considered as relevant International Organizations (IOs): ILO, WTO, OECD, World Bank, UNCTAD, and UNIDO.

<sup>9</sup>The full list of publications is available in Table A.2 in the Appendix.

<sup>10</sup>Please note that not all papers had enough information to classify the specific type of economic upgrading.

<sup>11</sup>While it falls outside the scope of this article, it is important to highlight that such a heterogeneous impact of policies is also connected with the different endowment of firms’ resources and capabilities, as discussed in the final section of this paper.

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## APPENDIX A

### ABOUT THE AUTHORS

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