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Global value chain resilience: understanding the impact of managerial governance adaptations

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Published Version

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Kano, L., Narula, R. ORCID: https://orcid.org/0000-0002-4266-2681 and Surdu, I. (2022) Global value chain resilience: understanding the impact of managerial governance adaptations. California Management Review, 64 (2). ISSN 0008-1256 doi: 10.1177/00081256211066635 Available at https://centaur.reading.ac.uk/99425/

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To link to this article DOI: http://dx.doi.org/10.1177/00081256211066635

Publisher: University of California Berkley

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Global Value Chain Resilience:

Understanding the Impact of Managerial Governance Adaptations

California Management Review
2022, Vol. 64(2) 24–45
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DOI: 10.1177/00081256211066635
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SUMMARY
While COVID-19 has caused significant short-term disruptions in global value chains (GVCs), in the longer run, the pandemic will not be the primary catalyst in GVC evolution. As GVCs recover from the initial shock, managers will make GVC restructuring decisions guided by long-term strategic considerations. This article describes barriers that lead firm managers may encounter when rethinking location/control decisions for value chain activities and suggests that, in addition to structural changes, managerial governance adaptations are instrumental in enhancing GVCs' long-term resilience. Lessons learned from responding to the pandemic can help managers enhance GVC efficiency in the increasingly uncertain global environment.

KEYWORDS: global value chains, GVC reconfiguration, COVID-19, structural governance, managerial governance adaptations, long-term GVC resilience, internalization theory

In the spring of 2021 (at the time of writing this article), it was almost impossible to pick up a business publication without reading about the COVID-19 pandemic and its pervasive impact on our highly interconnected world economy. Much of the discussion concerns changes to global value chains (GVCs), defined as governance arrangements that utilize, within a single structure, multiple governance modes for distinct, geographically

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dispersed, and finely sliced parts of the value chain.[1] A large number of studies[2] and business reports[3] predict a systemic and radical change in how GVCs are organized, in terms of ownership and location strategies selected by lead multinational enterprises (MNEs). It has been argued that GVCs will likely have a smaller geographical footprint, reshore more activities, and consequently reduce their reliance on outsourcing. We agree that some changes may transpire—and, in fact, are already underway. However, we take umbrage with the projected urgency, magnitude, pervasiveness, and visibility of these changes, as well as the degree to which many scholars and analysts regard the COVID-19 pandemic as their primary driver. While the pandemic has undoubtedly caused significant short-term disruptions in GVCs due to supply and demand shocks, we assert that in the longer run, endogenous factors matter more in reshaping GVCs. A variety of other (arguably equally significant) structural as well as managerial considerations interact with pandemic-related factors to shape GVC configurations.

Adopting internalization theory as our conceptual lens, we posit that lead firm managers will—in the long term—select, adjust, and retain GVC configurations that are the most efficient.[4] Importantly, shorter-term transient effects should not be mistaken for longer-term trends. As they recover from the initial shock caused by the sudden onslaught of the pandemic, managers are likely to make decisions about GVC restructuring guided by long-term strategic considerations. GVCs consist of a constantly evolving network of actors, and GVCs survive when they are continually able to adapt to multiple socio-economic environments and market conditions. The pandemic represents an admittedly significant and globally pervasive shock, but the key advantage of a GVC over a vertically integrated firm is that the network involves a multitude of different actors, and it is therefore designed with a certain degree of resilience to overcome exogenous events, even in instances where individual firms within the GVC (be it the lead firm or its suppliers) may not be so resilient.

Large-scale global crises and disruptions are not uncommon and have included earthquakes, tsunamis, nuclear disasters, and global financial meltdowns. However, COVID-19 has delivered a broader, more intense, and prolonged shock to today's GVC economy and has created acute awareness that future crises are unpredictable, yet inevitable. As a result, we expect that lessons learned from responding to the pandemic can be useful for addressing a more generic set of future challenges and that much of the post-COVID governance adaptations will be aimed at building resilience into GVCs to safeguard against future shocks.

We analyze the prevailing GVC trends, which have been either intensified or induced by COVID-19, with the objective of identifying managerial responses that are likely to generate the most value for GVCs and increase longer-term GVC resilience to external shocks. Our core argument builds on distinguishing between structural GVC governance, such as the ownership, control, and location of GVC activities (i.e., the what, where, and who decisions) and managerial governance—namely, "more fine-grained mechanisms within a broader governance structure, some of these being relational in nature, that encourage repeated, observable patterns of behavior by targeted units and

individuals" (i.e., the how decisions).[5] To date, most of the scholarly discussion on GVC's response to the pandemic has focused on large-scale changes in location and control of value chain activities; however, finer-grained governance changes that do not involve these two dominant GVC variables are equally important. The raison d'être of the GVC requires the continual refining of strategies in intra-GVC collaboration with suppliers and other stakeholders, the sharing of knowledge, and maintaining the flexibility needed in order to upgrade GVC competences—in other words, activities that belong to the domain of managerial governance. The emphasis on managerial governance represents a dynamic take on GVC reconfiguration and the essential interdependence between the lead firm and suppliers, whose role continues to evolve.

Internalization Theory and GVC Governance

Internalization theory posits that economic actors select and retain the most efficient governance mechanisms to organize economic exchange.[6] In the context of a GVC, this means that, over the long term, lead firm managers and their strategic partners will make decisions about the structure and strategy of the network in a way that results in the most efficient, economizing mix of internal and external contracts and locations. Efficiency[7] is achieved by aligning governance decisions with attributes of transactions (such as micro-level attributes, including individual characteristics of decision makers involved, as well as macro-level attributes, including technological, institutional, geographic, cultural characteristics of relevant environments, and industry features). Efficient governance is defined as a system that is comparatively superior at allowing the lead firm to: economize on bounded rationality of all actors involved in transactions[8]; economize on bounded reliability[9]; and create a context conducive to value creation in the network.[10]

Importantly, GVC efficiency is served through both *structural* governance decisions—that is, decisions on who performs which transactions, who owns or controls activities, where activities are performed, and how the network is organized—and *managerial*/strategic governance decisions, namely, decisions pertaining to learning and knowledge transfer in the GVC, relationship management, resource recombination, contractual details, coordination and monitoring, and other managerial routines/practices deployed within the GVC. The latter are less observable, more difficult to measure, and, consequently, less prominently featured in international business literature[11]—however, we argue that it is the managerial governance responses that are likely to be instrumental in enhancing GVCs' long-term resilience.

From an internalization theory perspective, the pandemic triggered macro-level shifts in both home and host countries, requiring lead MNEs to adapt their governance choices to respond to new internal and external drivers and constraints, including resource constraints, work environment changes, supply disruptions, demand fluctuations, regulatory restrictions, and home country pressures for supply chain sovereignty. However, as the long-term

impact of the pandemic unfolds, the efficiency of extant governance tools will be tested. If the adjustments prove inefficient—that is, if they restrict information flows (create bounded rationality challenges), fail to secure commitments (create bounded reliability challenges), and inhibit innovation and value creation in the network—lead MNEs will correct them by engaging in further governance adaptation and by introducing comparatively more efficient governance practices.[12] That is, governance adaptations (both structural and managerial ones) implemented to deal with the immediate disruptions associated with COVID-19 will only be retained if they continue to be aligned with the lead MNE's and suppliers' internal and external contexts.

It is important to stress that contemporary internalization theory does not equate efficiency with the least sum of transaction costs at a given moment in time. Efficient governance refers to a system of structural and managerial tools that allows the GVC to operate in a cost-effective, reliable, and value-enhancing way. This means that, in order to achieve long-term GVC efficiency, certain short-term sacrifices to cost effectiveness may need to be made, for example, by investing in supplier development and capability upgrading, sharing an equitable proportion of value with partners, and/or maintaining slack resources.[13] The disruptions associated with the pandemic have shined a spotlight on *reliability* as a particularly salient factor of the efficiency bundle. GVC governance adaptations will therefore include structural changes and managerial routines to enhance lead firms' economizing and value creation capacity.[14] These adaptations, however, started over a decade ago, as a response to a "new normal"[15] business environment resulting from socio-political, institutional, and technological developments.

GVC Reconfiguration Trends: A Brief History

In the past few years, we have witnessed significant restructuring and reshaping of the global economic system,[16] with a number of interrelated macro-level forces affecting GVC governance. These forces have been identified in recent GVC research as geopolitical tensions, renewed protectionism, growing costs of doing business in emerging markets (i.e., increasing labor and transportation costs, as well as costs of compliance), increased pressure for social and environmental regulation compliance/full chain responsibility, and digitization and automation.[17] Together, these trends have created substantive risks to GVCs, whose very existence was enabled by liberalization and deregulation of international trade.[18] However, these macro-level developments also presented new opportunities for coordination and control of dispersed activities through continued technological transformation.[19]

Over time, lead firms have responded by structural changes to their GVCs so as to maintain efficiency in the face of macro-level shifts: reshoring and retreating from global to regional geographic scope[20]; vertically integrating (at least partially) in an effort to control quality and ensure compliance with sustainability requirements[21]; and diversifying manufacturing locations to

TABLE 1. Dimensions of Governance Adaptations.

Extant Macro-Level Trends Reinforced by COVID-19	GVC-Level Governance Adaptation	
	Structural Governance	**Managerial Governance**
• Geopolitical tensions • Renewed protectionism • Growing labor/ transaction costs • Greater pressure for "full chain responsibility" • Digitization/ automation	• Reshoring • Regionalization of value chains • Partial vertical integration • Diversification of inputs • Modularization • Platformization	• Inter-firm: Strategic supplier management - Rethinking contracts - Lead MNE-supported supplier upgrading and value sharing • Extra-GVC: Broad-based stakeholder management and corporate diplomacy • Intra-firm: Resource recombination - Investment into IT and advanced analytics - Entrepreneurial retooling

Note: GVC = global value chain; IT = information technology; MNE = multinational enterprise.

lessen dependence on markets such as China.[22] These reconfigurations have been partially enabled by technological advances and data sharing. Advanced labor-saving technologies acted to change the locus of production and permitted lead MNEs to substitute capital for labor, leading to production shifts away from low-wage countries.[23] Enhanced connectivity made GVCs more localized, fragmented, modularized, and closer to end users.[24] New technologies also facilitated *platformization*, whereby lead MNEs rely on digital technology for their business models.[25] Dominant macro-level forces and associated GVC responses are summarized in Table 1.

While these trends pre-dated the pandemic, it has been argued that COVID-19 has created significant supply and demand disruptions, accelerated de-globalization of trade, and, consequently, will precipitate the above-mentioned pre-existing GVC reconfiguration trends geared toward greater risk aversion, supply chain sovereignty, and, more generally, limited globalization.[26] There are, however, caveats associated with this prediction.

First, the ability of lead MNEs to implement efficiently such ownership and location changes is tempered by a number of significant barriers. Efficient reshoring, for example, requires access to specialized knowledge and manufacturing infrastructure, which may not be readily available. In fact, few locations possess the right combinations of skill, infrastructure, low wages, and scale capabilities. Learning from the examples of organizations that have tried to make structural GVC changes and failed is important. For instance, when Apple Inc. announced its plan to move some of the manufacturing and assembly of computers out of China and back into the United States around 2012, the company—very soon after going forward with partial reshoring—found that skill shortages and infrastructure limitations made reshoring ultimately inefficient, particularly for differentiators such as Apple, which often rely on the ability of suppliers to quickly produce vast quantities of custom parts.[27] Sustained industry-wide outsourcing to

lower-wage locations over a long period of time has seen a reduction in home market capacity, which is difficult to reverse in the short term.

Second, the magnitude of risks created by macro-level shifts differs across industries, as does the lead MNE's ability to adapt its GVC structure in response. These risks are particularly salient in labor-intensive manufacturing GVCs, where lead MNEs rely on efficiencies of offshore operations in low-cost countries. Lead MNEs in these industries, such as textiles and apparel, have been gradually shifting production away from China to countries such as Bangladesh, Vietnam, Ethiopia, and Turkey,[28] in response to rising labor costs[29] in China, and the emergence of skilled low-cost suppliers outside of the Chinese market. However, geographic reconfiguration can be financially prohibitive in capital-intensive GVCs, which are characterized by significant, irreversible capital investments made over a number of years. Relocation is also challenging in knowledge-intensive GVC activities (e.g., R&D, marketing) tied to specialized skills residing in particular suppliers and/or locations providing differentiated outputs that are not so easily replaced. Similarly, GVCs operating in extraction or natural resource-intensive industries will find relocation difficult given the location-boundedness of the resources sought.[30] GVCs tied to product markets in host countries are also difficult to reconfigure. For instance, lead MNEs in automotive GVCs are bound by "obligated embeddedness"[31] in fast-growing emerging markets (notably, China), whereby governments pressure MNEs to set up local operations in order to serve these markets.[32]

Admittedly, the pandemic reinforced the ongoing macro-level shifts and introduced new, immediate shocks. Restrictions on travel and transportation, along with the physical closure of businesses, led to sudden and severe supply bottlenecks. Global demand patterns shifted, partially reinforcing supply-side shocks.[33] Demand for non-essential consumer goods and services that require in-person contact fell, while demand for essential everyday commodities, from food and cleaning supplies to toilet paper, rose dramatically.[34] Shortages in medical and personal protective equipment also ensued. Yet, GVC-level barriers to structural reconfiguration remain even in the face of these unique disruptions. Simply put, factory closures in China due to COVID unsurprisingly led to supply disruptions for many companies; yet, despite these disruptions, companies such as Apple, for instance, do not have the capability to efficiently reshore production in 2020 any more than they did in 2012 when first attempting to reshore.

Policy reactions by home and host governments—such as new trade and investment restrictions or incentives to localize production of strategic supplies—do not remove barriers to efficient changes in ownership and location of activities. In strategic industries—renewable energy, dual-use (military and civil) technology, computing and artificial intelligence, as well as pharmaceuticals and medical equipment—some vertical integration and reshoring may be attempted, following national security requirements of lead MNEs' home countries. But structural reconfigurations are costly, and thus they beg the all-important question of "who" is going to cover the additional costs.[35] For example, repatriation

and internalization of geographically dispersed pharmaceutical GVCs are hardly feasible, despite pressure and incentives by governments to increase domestic production of key pharmaceuticals and medical equipment.[36] Where relocation and internalization are costly and lengthy—such as in pharmaceutical GVCs—vertical integration and reshoring may stall and disrupt the supply of critical goods to the domestic economy and thus fail to serve the greater "common good" purpose it was meant to accomplish. Case in point, PhRMA, an association of American pharmaceutical researchers and manufacturers, is pushing back against the pressure to shorten and localize pharmaceutical value chains, citing tremendous cost and time requirements for setting up new pharmaceutical facilities, which would likely result in inefficiencies. PhRMA puts forward a strong argument that attempting to reconfigure well-established, technologically complex pharmaceutical GVCs may in fact disrupt, rather than secure, the supply of medicine to the United States and to the rest of the world.[37]

Lead MNEs may seek to safeguard against large-scale future bottlenecks by lessening their dependence on dominant suppliers or locations. GVCs that are not tied to particular supplier capabilities will likely become even more fragmented. This fragmentation will, in turn, create orchestration challenges. Fragmented and specialized GVCs are often more efficient but may also be more fragile in times of crisis, particularly when challenges to cooperation are posed. From an internalization theory perspective, only efficient structures are sustained over time: if predicted reconfigurations offset the gains derived from operating a GVC, they will not last. How, then, can lead MNEs increase the robustness and resilience of their GVCs to prepare for likely future disruptions and to respond to increasingly nationalist government policies?

We propose that, in instances where structural GVC reconfigurations are not economically feasible, lead firms can engage in managerial governance adaptations, which provide a "countervailing force"[38] to GVC disruptions introduced by exogenous trends and reinforced by the pandemic. Such adaptations target managerial processes associated with intra- and extra-GVC economic exchange and may include, inter alia, rethinking of contract details, upgrading of competences, redirection of knowledge flows, entrepreneurial initiatives, and changes in relationship management.[39] Unlike structural changes—whose feasibility depends on various external factors, including institutions, industry structures, and supplier capabilities—managerial governance adaptations are within lead firm managers' control, are potentially equally efficient in various types of GVCs, and may prove instrumental in reducing disruptions and increasing GVC resilience.

GVC Governance Post-Pandemic: Managerial Governance Adaptations

As mentioned above, efficient GVC governance is defined as a set of routines and practices that reduce bounded rationality and reliability and facilitate value creation in the network. The pandemic has introduced additional governance challenges that can be characterized along these three dimensions of

TABLE 2. GVC Governance Objectives and COVID-19 Disruptions.

GVC Governance Objectives	Additional Governance Challenges Introduced by COVID-19
Economizing on bounded rationality	Information problems • Ambiguity about duration/severity of the health crisis • Uncertainty regarding trade/travel restrictions and government policies • Uncertainty about input costs • Supply and demand fluctuations • Limited information on suppliers' vulnerabilities/impact (especially in multi-tier networks)
Economizing on bounded reliability	Commitment problems • Supply interruptions and bottlenecks • Government restrictions/protectionist policies • Institutional frailty
Facilitating value creation	Value creation problems • Reduced access to host country resources • Difficulties in resource re-orchestration and new capability development • Input and labor shortages

Note: GVC = global value chain.

efficiency: *information problems* (continued ambiguity about the global health situation, uncertainty regarding trade and travel restrictions); *commitment problems* (supply bottlenecks, protectionist policies of governments, increasing institutional frailty); and associated *value creation problems* (reduced access to resources outside of home country, inability to deliver value to customers due to trade interruptions and labor shortages, lack of capabilities to address shifting demand).[40] Lead firm's governance objectives and associated governance challenges introduced by the global pandemic are summarized in Table 2. We propose that in order to build resilient GVCs, lead MNEs need to implement governance adjustments that best address these new efficiency challenges.

It should be noted that managerial governance adaptations are not specific to crisis situations. Lead firms in GVCs are tasked with choosing the most suitable governance mechanism for each fine-sliced value chain activity. Here, decisions on requisite changes in location and control are necessarily accompanied by managerial adaptations that best support each activity set and allow the head office to effectively coordinate, monitor, and integrate internalized and outsourced activities. It has been argued that managerial routines that facilitate knowledge sharing, collaborations, entrepreneurial resource orchestration, and flexibility are critical for the GVC's sustainability over time and for the lead firm's ability to maintain its central position in the network.[41] These managerial routines become particularly important in the post-pandemic environment, where links connecting various dispersed GVC actors are disrupted. The value of managerial governance is further amplified when responding to disruptions through structural reconfigurations (i.e., ownership and location changes) is not feasible.

We discuss proposed managerial governance mechanisms relevant for post-pandemic GVC orchestration below. Our process for identifying these managerial government adaptations was twofold. First, we surveyed extant research on GVC governance, with a focus on identifying managerial governance routines deployed by lead firms for network orchestration.[42] Second, we assessed these governance mechanisms based on their capacity to address efficiently the information, commitment, and value creation problems introduced by the global pandemic. We classified the resulting managerial governance mechanisms into three groups: *inter-firm adaptations* (those pertaining to relationships among GVC actors); *extra-GVC adaptations* (those pertaining to relationships with actors outside of formal GVC boundaries); and *intra-firm adaptations* (those pertaining to routines, processes, and decision rules inside the lead firm).[43] The results of this analysis are summarized in Table 3 and presented below.

Inter-Firm Managerial Governance Adaptations: Strategic Supplier Management

We know by now that a lead firm's GVC network is multi-tiered and can consist of hundreds of Tier 1 suppliers (which have a contractual relationship with the lead firm), as well as hundreds or even thousands of sub-tier suppliers that Tier 1 firms manage. Beyond Tier 1 (and to a degree, Tier 2 suppliers), lead MNEs rarely know who their sub-tier suppliers are, how resourceful they are, and, implicitly, how reliable they are in times of disruption. The pandemic highlighted that lead firms did not have reliable information as to where their Tier 1 suppliers sourced the critical parts or materials from, whether those suppliers were clustered in a single affected area, and whether there were even viable substitutes for current suppliers in other locations.[44] Some lead firms in buyer-dominated GVCs may indeed opt to become more vertically integrated to reduce the risks associated with loss of value chain control. When vertical integration is not feasible, lead firms may achieve easier coordination and monitoring by re-evaluating contractual relationships with suppliers, strengthening relationships among strategic partners, and investing in key strategic suppliers' capabilities and resources.

Rethinking contracts: Equity contracting and relational governance. Presently, most offshore production is managed through non-equity contracts.[45] While non-equity contracting will likely continue, firms may need a greater reliance on equity and the associated use of formal orchestration tools—such as contracts that clearly specify price incentives and penalties—to incentivize suppliers and safeguard against potential commitment breakdowns in case of external shocks. Equity-based contracts provide lead firms and their strategic partners with clearly specified and legally enforceable options for monitoring and controlling GVC relationships. Equity investment also signals a deep commitment to the relationship and thus enhances partners' reliability. Importantly, equity contracting implies partners' commitment to contribute funding in emergency situations in case of future disruptions.

While equity-based contracts provide an attractive incentive for commitment fulfillment and productive collaboration, we recognize that they are not

TABLE 3. Managerial Governance Adaptations in GVCs.

Managerial Governance Adaptation	Pandemic-Induced Governance Problem to Be Addressed		
	Information Problem	**Commitment Problem**	**Value Creation Problem**
Inter-firm: Strategic supplier management • Rethinking contracts: Equity contracting and relational governance • Lead MNE-supported supplier upgrading and value sharing	• Clearly specified incentives and penalties • Enhanced technical knowledge sharing among partners • Enhanced access to macro-level host country knowledge	• Formal incentives and safeguards against commitment breaches • Mutual commitment through equity enhances reliability • Funding sources for emergency situations • Suppliers are more invested in GVC's resilience/ sustainability • Goal alignment through collaborative decision making	• Joint investment, knowledge sharing, and complementarity of goals, capabilities, and resources facilitate value creation through collaboration • Network-wide coordinated response to disruptions • Supplier capability development improves their ability to respond to disruptions when needed
Extra-GVC: Broad-based stakeholder management and corporate diplomacy	• Facilitates knowledge dissemination/ awareness of relevant issues throughout the network • Facilitates better access to macro-level policy information	• Secures support and commitment of stakeholders • Shared responsibility for ESGD performance through the GVC	• Creates better outcomes for multiple actors inside and outside of the value chain • Stimulates innovation through multi-layer collaborations
Intra-firm: Resource (re) orchestration • Investment into IT/analytics • Entrepreneurial retooling	• Facilitates collection, transmission, and coordination of real-time data • Facilitates forecasting of risks and strategic planning • Facilitates general knowledge flows	• Scenario planning allows to predict disruptions and arrange alternative ways to deliver on commitments • End-to-end visibility makes it possible to detect commitment breakdowns • Retooling facilitates alternatives solutions in instances where commitments are disrupted	• Facilitates continuity of operations, minimizes losses from disruptions • Facilitates new opportunities for value creation through retooling • Facilitates new capability development • Facilitates efficient utilization of inputs

Note: GVC = global value chain; ESGD = environmental, social, governance, and diversity; IT = information technology; MNE = multinational enterprise.

100% efficient under conditions of high uncertainty—for example, in institutional environments where contracts are poorly enforceable despite the lead firm's best efforts,[46] and/or in situations where external ambiguity and task complexity make elaborate contracting highly complicated. It would therefore be difficult for lead firms to design contracts when there is ambiguity and uncertainty around the nature of the relationship between the firm and its partners (which explains the vague contract language often used between lead firms and their partners).[47]

Here, relational governance can act as either a substitute or complement to formal contracting. Scholars have argued that relational contracting will play a prominent role in the post-pandemic environment, fueled by increased institutional frailty, perceived volatility of commitments, and associated need for greater safeguards.[48] Lead MNEs can engage in informal relationship building throughout the network to a greater extent to secure commitments and increase the amount and quality of knowledge exchanges, thus stimulating innovation and flexibility. Deeper and more meaningful relationships among partners[49] may also help the lead firm close information gaps related to changing trade and investment environments in host countries. Close relationships within the GVC can be particularly helpful when quick, coordinated action is needed in response to disruptions. For example, Procter & Gamble created cross-functional teams to engage in "joint innovation" with several of its suppliers[50]; the rationale was to generate value by leveraging the skills of employees as well as partners, in order to develop new ideas, identify other external partnership opportunities, and create more interaction between business strategy and the operational activities of the company.

Lead MNE-supported supplier upgrading and value sharing. Supplier upgrading refers to the development of branding capabilities, technological catch-up, and/or progression from original equipment manufacturing (OEM) to original design manufacturing (ODM) and own brand manufacturing (OBM) by peripheral GVC actors typically located in emerging economies.[51] New supplier capabilities, such as moving into manufacturing of more sophisticated product lines and using superior technologies to transform inputs into outputs, can potentially benefit lead firms, especially those competing on quality rather than cost. Yet, to date, the main drivers behind supplier upgrading have been related to macro-level forces such as market conditions and institutional environments,[52] with lead firms playing a secondary role in spurring supplier upgrading initiatives (with several notable exceptions, e.g., lead firms in automotive industries purposefully facilitating auto parts supplier upgrading).[53] Part of the reason for lead firms' passive role in supplier upgrading is their reluctance to relinquish control over critical knowledge, generally out of fear that suppliers may use that knowledge to move up the value chain and challenge the dominant position of the lead MNE, either displacing the lead firm or, over time, becoming its direct competitor.[54]

The COVID-19 pandemic has shown that suppliers may be inertial and path-dependent when responding to the crisis, mainly because they lack the technological capabilities and orchestration know-how needed to efficiently deal with unpredictable disruptions.[55] In the post-COVID era, a lead firm may benefit from

adopting a "developmental" GVC governance structure[56] to avoid the inefficiencies that come with supplier inertia and lack of competence to manage disruptions. In the manufacturing industry, late deliveries can mean that lead firms have to pay additional overtime or credit customers for delays experienced (if lead firms are to enact penalties, as often suggested,[57] that would probably bankrupt some of the suppliers in the developing world). Hence, a more active role in facilitating supplier learning entails investing in common use of technology, active knowledge transfer and training, assigning MNE staff to offer support to suppliers in a similar manner in which the lead MNE would support its own units, and promoting collaborative decision making. Some lead firms have been successfully invested in collaborative supplier strategies for many years. For instance, IKEA managers share business intelligence, managerial practices, and business policies with their network of suppliers located in China and South-East Asia in order to stimulate technological upgrading and innovation in their value chain and help less-efficient and less-experienced partners become more competent.[58] These adjustments have proved efficient because they increased value creation within the company's supplier network.

Another example is ASML, a lithography equipment manufacturer for the semiconductor industry, which developed what the company refers to as a "value-sharing" mechanism with its suppliers.[59] The company allows suppliers to maintain healthy profit margins (which act as a volatility buffer), finances part of the infrastructure required to produce new products, and offers purchase guarantees. The strategy to value-share with suppliers led to suppliers prioritizing the lead firm's business, reduced costs and lead times, and offered stability in an industry where product lifecycles are relatively short and demand is unstable. We would therefore expect benefits from an increase in such supplier management practices in situations when GVC resilience is threatened (i.e., during and after the pandemic), particularly in markets that are of key strategic importance for the lead MNE. This requires further commitment from the MNE and its suppliers, who may then take more formal and informal responsibilities to ensure the long-term resilience and sustainability of their GVCs.

Extra-GVC Managerial Governance Adaptations: Broad-Based Stakeholder Management and Corporate Diplomacy

Lead firm MNEs are under tremendous pressure from a variety of stakeholders—NGOs, international organizations, regulators, consumers, the media, and the general public—to enhance GVC performance in terms of environmental, social, governance, and diversity (ESGD) parameters.[60] The pandemic has exacerbated these pressures by drawing the public's attention to societal issues in different locations and shining a spotlight on MNEs' potential wrongdoings, such as unfair working conditions and discrimination. We note that the COVID-19 pandemic has had a disproportionately negative effect on workers in less-developed countries, where lead firms and their Tier 1 suppliers already experienced issues with environmental and labor standard violations. One particularly notable example is Bangladesh, where many garment factories were

closed until further notice, as retailers (e.g., Gap, Zara, and Primark) canceled or suspended their orders and stopped placing new orders to avoid further losses from sales decline.[61] In these locations, the pandemic has triggered either mass unemployment, rising inequality, or exposure to the virus due to poor working conditions.[62] Labor groups and local institutions will expect companies to keep at least some of their investment in these factories, and to adhere to strict safety protocols once reopened.

The pandemic may well become a catalyst for achieving better working conditions throughout the GVC. Research[63] suggests that social restructuring brought about by crises offers an opportunity for MNEs to become more strategically involved with local actors and contribute to recovery efforts, thereby building legitimacy and consolidating local market acceptance.

In fact, an independent study conducted by Morgan Stanley Capital International also found that, all else considered, firms with stronger ESGD practices suffered less during periods of crisis.[64] Perception of social irresponsibility in any part of the GVC may damage the reputation of the lead MNE, which is increasingly seen as accountable for the behavior of the entire network.[65] On the other hand, lead MNEs will benefit from positive reputation effects if they and their partners are seen as contributing, in a meaningful way, to pandemic-fighting efforts and post-pandemic social and economic recovery. Sustained goodwill achieved through positive engagement with stakeholders can also help during difficult times, whereby communities and customers rally behind a firm seen as a good corporate citizen.

What does this mean for the lead MNE management? This implies that a GVC must be managed in a way in which activities align with the interests of all affected stakeholders, beyond the lead firm and its subsidiaries.[66] Lead firms should employ targeted, systematic, and professional corporate diplomacy strategies to engage relevant stakeholders,[67] including government, research, educational, political, financial, and social institutions. Historically, close links to non-market stakeholders have helped lead firms respond to policies around social and economic development in host countries, promote innovation, develop new capabilities, and build local market legitimacy and reputation.[68] These connections will remain highly valuable post-pandemic, particularly ties with home and host country regulators who have the relevant information and the power to shape local, national, and international responses to external shocks (i.e., through lock-downs, restrictions on travel and trade, as well as business subsidies/support packages).[69]

In certain cases, cooperation with non-market stakeholders outside of the MNE's immediate value chain can lead to large-scale, multi-layer collaborations with significant, positive global outcomes. For instance, the global efforts to fight the pandemic have already resulted in international R&D collaborations to accelerate the development of medical equipment, therapies, and vaccines.[70] Such collaborations involve multiple layers of stakeholders, including lead MNEs, hospitals, research institutes, and various levels of governments, with the World Health

Organization acting as a global hub to centralize and properly channel relevant knowledge. Ultimately, collaborations facilitate the use of underutilized resources and efficiently redirect knowledge, which is critical in times of crisis and disruption. We therefore propose that large-scale cooperation and knowledge sharing, if replicated and taken onboard by lead firms in a variety of industries, may enhance GVC resilience in the long term.

Intra-Firm Managerial Governance Adaptations: Resource Recombination

GVCs' raison d'être, as stated in our introduction, is the continuous re-evaluation of governance, with the goal of achieving maximum efficiency for the entire network of fine-sliced activities. This means that lead firms must simultaneously allocate and recombine resources across product and geographic space, while reconciling global pressures with local priorities, and macro-level dynamics with internal resources and capabilities.[71] The pandemic has highlighted the role of resource recombination and has shown that GVCs with lead firms that were able to quickly reallocate resources to address sudden supply and demand shifts experienced less disruption than GVCs with lead firms adopting "wait and see" strategies.[72] Furthermore, lead firms that invested significantly into advanced technology were (and will remain) in a better position to implement successfully such resource shifts.[73]

Investment in Information and Analytics

Lead firms can manage risks associated with external shocks by increasing investment into advanced analytics (e.g., AI, natural language processing) so as to predict disruptions, anticipate impacts on value chain activities, and map out responses (e.g., identify potential bottlenecks, replace high-risk suppliers, reroute supply and distribution channels, re-organize logistics, and/or build additional capacity into operations). There are examples of firms whose GVCs have proved more resilient as a result of having predictive analytics mechanisms in place. For instance, General Motors invested significant resources over the years in mapping its GVC in order to understand how and when inputs turn into outputs, and where each supplier and each activity is located.[74] When disruptions take place, the company has greater visibility of its value chain and is therefore better able to understand in real time which areas are likely to be affected and how the end product may be influenced. Furthermore, with this information, a lead firm is much more flexible, because it is able to establish inventory; book alternative locations for production and assembly; effectively communicate with onsite workers, suppliers, and carriers; and offer substitute products to customers quicker than its competitors, thus overcoming potential bounded reliability issues. In the same vein, Toyota invested in improving supply chain resilience by creating a database that can be used to visualize supply networks for each component.[75] In turn, Procter & Gamble has what the company refers to as a control tower system, which

offers comprehensive information about its geographies and products; this system integrates real-time data on lead firm and partner locations, including any disruptions associated with road delays, weather conditions, and inventory levels.[76] When disruptions do occur, the system can rapidly analyze the data and find alternative solutions to supply disruptions in a matter of minutes and hours. In fact, empirical evidence indicates that when the pandemic struck, lead firms with superior analytics systems gained timely access to relevant information, efficiently moved activities from affected cities in China, and experienced fewer losses than competitors.[77]

While the use of advance analytics to optimize GVCs is not particularly new (although few companies invest in advanced logistics control as significantly as the MNEs discussed above), the pandemic has highlighted its tremendous potential for managing risks and disruptions under conditions of volatility, uncertainty, complexity, and ambiguity (VUCA).[78] Beyond real-time data analysis, lead firms can rely on predictive analytics such as AI to forecast various types of disruptions, from supply and demand fluctuations to political, weather-related, and socio-cultural risks.[79] A recent study by Bain and Company[80] found that advanced analytics can improve forecasting accuracy by 20% to 60%.

Entrepreneurial Retooling

Advanced analytics offer information necessary for managing GVC risks; however, effectively utilizing this information requires considerable flexibility and entrepreneurial judgment on behalf of the lead firm management. A number of entrepreneurial lead firms were able to quickly reroute their supply chains and repurpose their production lines at the onslaught of the pandemic so as to address urgent changes in demand while providing employment to an idle workforce.[81] For instance, brewers, gin distilleries, and perfume producers used their existing ethanol supplies to make hand sanitizer; telecom companies leveraged their technologies to develop thermo-scanners and physical distancing bracelets. Manufacturers with 3D printers made personal protection equipment; luxury designers (e.g., Armani, Gucci, Prada, and Burberry) repurposed their factories to produce masks, medical overalls, and gowns; Dyson used its competencies in vacuum cleaners to manufacture portable ventilators. Supermarket chains partnered with restaurants and their suppliers to make use of restaurants' inventory while addressing the shortage of groceries. Many services were forced to expand their digital presence, reroute distribution toward online delivery, and become more innovative in the manner in which they use technology to interact with customers. Achieving these results required that lead MNEs rapidly source raw materials, design new products, test and distribute them in a short time span.

For entrepreneurial retooling to occur, past routines had to be unlearned, new knowledge developed, personnel retrained and redeployed, new technologies adopted, and new partnerships entered.[82] In order to recover from the crisis and thrive under VUCA conditions, lead firms will need to take an active entrepreneurial role in managing GVC resources. Entrepreneurial abilities, sophisticated

managerial skills, and orchestration know-how of lead MNE managers will become critical ingredients of post-pandemic success.

Conclusion

Without a doubt, the impact of COVID-19 will continue to unfold for years to come. In the long-term, responding to the risks associated with crises and disruptions will become an integral part of business-as-usual. It is therefore the responsibility of scholars to accurately portray specific implications of the pandemic for researchers, managers, and regulators.

We explain how lead MNEs can take this increased complexity and supply chain disruption and potentially turn it into meaningful change. We specifically propose that, instead of focusing on short-term responses to immediate disruptions, lead MNEs should structure and orchestrate their GVCs based on long-term governance considerations. Long-term governance implies regularly evaluating costs, risks, and value creation potential of extant structural and managerial governance mechanisms and making the necessary adjustments. We predict that an exclusive focus on cost, while certainly influencing any potential changes in governance, may be less determinative of GVC governance decisions than pre-pandemic. Other considerations, such as facilitating timely and reliable access to information, safeguarding commitments, and, more generally, ensuring continuous capability development and value creation in the GVC, may be of greater importance.[83]

Our overarching point is that while there are pre-COVID trends pushing GVCs toward structural reconfiguration, it is the managerial governance responses that are likely to be instrumental in reducing information costs, increasing efficiency, and enhancing GVCs' long-term resilience. The short-term restrictions on trade and transportation will be lifted once the pandemic is under control, and the flow of goods and services will resume once the global economy restarts. The COVID-19 pandemic may not radically change the governance of GVCs, but, we predict, will provide an impetus for changing the manner in which firms use managerial tools at their disposal to (re)organize, develop, and control their GVCs.

The global pandemic has presented a set of serious challenges to the global community, but we may be faced with even bigger global problems in the coming years,[84] including continuing climate change, food security, extreme poverty in some parts of the world, and major global health issues. These issues are certain to have implications for MNEs, GVCs, and broader stakeholders, yet the exact nature of these implications is difficult to predict. Managers, therefore, need to continue to develop and refine tools for efficiently managing their GVC in the increasingly volatile and unpredictable global environment.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: We would like to thank

the Haskayne School of Business at the University of Calgary for funding the research of this article through the Transformative Research Grant and the Corporate Longevity Research Grant.

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Notes

1. Peter J. Buckley, "Internalisation Thinking: From the Multinational Enterprise to the Global Factory," *International Business Review*, 18/3 (June 2009): 224-235.
2. Rajat Panwar, "It's Time to Develop Local Production and Supply Networks. Strategy Insight Note," *California Management Review*, April 28, 2020, https://cmr.berkeley.edu/2020/04/local-production-supply-networks/; Roger Strange, "The 2020 COVID-19 Pandemic and Global Value Chains," *Journal of Industrial and Business Economics*, 17 (September 2020): 455-465.
3. Alan Beattie, "Will Coronavirus Pandemic Finally Kill Off Global Supply Chains?" *Financial Times*, May 27, 2020, https://www.ft.com/content/4ee0817a-809f-11ea-b0fb-13524ae1056b/; Bernhard Warner, "The Coronavirus Is Already Disrupting the Global Supply Chain, Starting with These Commodities," *Fortune*, January 31, 2020, https://fortune.com/2020/01/31/coronavirus-global-supply-chain-commodities/; Lizzie O'Leary, "The Modern Supply Chain Is Snapping," *The Atlantic*, March 19, 2020, https://www.theatlantic.com/ideas/archive/2020/03/supply-chains-and-coronavirus/608329/.
4. Peter J. Buckley and Mark C. Casson, *The Future of the Multinational Enterprise* (London, UK: Macmillan, 1976); Alain Verbeke, *International Business Strategy* (Cambridge, UK: Cambridge University Press, 2013); Liena Kano, "Global Value Chain Governance: A Relational Perspective," *Journal of International Business Studies*, 49/6 (2018): 684-705.
5. Alain Verbeke and Hadi Fariborzi, "Managerial Governance Adaptation in the Multinational Enterprise: In Honour of Mira Wilkins," *Journal of International Business Studies*, 50/8 (2019): 1213-1230, at p. 1215; Liena Kano, Eric W. K. Tsang, and Henry Wai-chung Yeung, "Global Value Chains: A Review of the Multi-Disciplinary Literature," *Journal of International Business Studies*, 51 (2020): 577-622, p. 599; D. Eleanor Westney, "International Business and Multi-Level Institutional Change: Looking Back and Facing Forward," in *The Multiple Dimensions of Institutional Complexity in International Business Research: Progress in International Business Research*, ed. Alain Verbeke, Rob van Tulder, Elizabeth L. Rose, and Yingqi Wei, vol. 15 (Cheltenham, UK: Edward Elgar, 2021), pp. 23-43.
6. Buckley and Casson, op. cit.; Verbeke, op. cit.; Kano, op. cit.
7. Jean-Francois Hennart, "Explaining the Swollen Middle: Why Most Transactions Are a Mix of 'Market' and 'Hierarchy,'" *Organization Science*, 4/4 (November 1993): 529-547; Kano et al., op. cit.

8. Bounded rationality refers to individuals' behavior that is "intendedly rational, but only *limitedly* so," in Herbert Simon, *Administrative Behavior* (New York, NY: Macmillan, 1961), p. xxiv.
9. Bounded reliability implies that individuals are not perfectly reliable to make good on open-ended promises, irrespective of intent. Bounded reliability refers to behavior that leads to broken commitments, and includes opportunism as intentional deceit, see Oliver Williamson, *The Mechanisms of Governance* (New York, NY: Oxford University Press, 1996). Bounded reliability also accounts for benevolent forms of commitment non-fulfillment, such as benevolent preference reversal and identity-based discordance, see Liena Kano and Alain Verbeke, "The Three Faces of Bounded Reliability: Alfred Chandler and the Micro-Foundations of Management Theory," *California Management Review*, 58/1 (Fall 2015): 97-122.
10. Alain Verbeke and Thomas P. Kenworthy, "Multidivisional vs Metanational Governance of the Multinational Enterprise," *Journal of International Business Studies*, 39 (September 2008): 940-956.
11. Verbeke and Fariborzi, op. cit.; Westney, op. cit. It should be noted that the knowledge gap related to managerial governance in GVCs is particularly evident in economic-based research fields, namely, international business and general management literatures. Research outside of management—namely, economic sociology, economic geography, and development studies—addresses managerial aspects of GVC governance to a greater extent.
12. Verbeke and Fariborzi, op cit.
13. Kano, op. cit.; Mohammed Yamin, "A Commentary on Peter Buckley's Writings on the Global Factory," *Management International Review*, 51 (April 2011): 285-293.
14. Liena Kano and Chang Hoon Oh, "Global Value Chains in the Post-COVID World: Governance for Reliability," *Journal of Management Studies*, 57/8 (December 2020): 1773-1777.
15. David Ahlstrom, Jean-Luc Arregle, Michael A. Hitt, Gongming Qian, Xufei Ma, and Dries Faems, "Managing Technological, Sociopolitical, and Institutional Change in the New Normal," *Journal of Management Studies*, 57/3 (May 2020): 411, doi:10.1111/joms.12569.
16. Olga Petricevic and David J. Teece, "The Structural Reshaping of Globalization: Implications for Strategic Sectors, Profiting from Innovation, and the Multinational Enterprise," *Journal International Business Studies*, 50 (December 2019): 1487-1512.
17. Kano et al., op. cit.; Petricevic and Teece, op. cit.; Simon J. Evenett, "Protectionism, State Discrimination, and International Business Since the Onset of the Global Financial Crisis," *Journal of International Business Policy*, 2 (March 2019): 9-36; Gary Gereffi, *Global Value Chains and Development: Redefining the Contours of 21st Century Capitalism* (Cambridge, UK: Cambridge University Press, 2018); Maria Jose Murcia, Rajat Panwar, and Jorge Tarzijan, "Socially Responsible Firms Outsource Less," *Business & Society*, 60/6 (July 2020): 1507-1545, doi:10.1177/0007650319898490; Rajneesh Narula, "Enforcing Higher Labor Standards Within Developing Country Value Chains: Consequences for MNEs and Informal Actors in a Dual Economy," *Journal of International Business Studies*, 50 (December 2019): 1622-1635.
18. Kano et al., op. cit.; China's "Made in China 2025" Industrial Policy—designed to make China a technology leader in advanced manufacturing sectors—is one of many announced policies which are now likely to exacerbate global trade tensions in a post-COVID era, particularly if this policy initiative involves restrictions on imports or direct investment into these sectors.
19. Gereffi, op. cit.; Kano, op. cit.; Bart L. MacCarthy, Constantin Blome, Jan Olhager, Jagjit Singh Srai, and Xiande Zhao, "Supply Chain Evolution—Theory, Concepts and Science," *International Journal of Operations & Production Management*, 36/12 (December 2016): 1696-1718.
20. United Nations Conference on Trade and Development, "World Investment Report 2020: International Production beyond the Pandemic," 2020, https://unctad.org/en/PublicationsLibrary/wir2020_en.pdf; Chloe Taylor, "Coronavirus Will Reverse Globalization and Create Regional Supply Chains, Economists Predict," *CNBC*, May 13, 2020, https://www.cnbc.com/2020/05/13/coronavirus-will-undo-globalization-make-supply-chains-regional-eiu.html.
21. Rajneesh Narula, "Policy Opportunities and Challenges from the COVID-19 Pandemic for Economies with Large Informal Sectors," *Journal of International Business Policy*, 3 (September 2020): 302-310.

22. Vida Vanchan, Rachel Mulhall, and John Bryson, "Repatriation or Reshoring of Manufacturing to the U.S. and U.K.: Dynamics and Global Production Networks or from Here to There and Back Again," *Growth and Change*, 49/1 (March 2018): 97-121.
23. Jonathan Tilley, "Automation, Robotics and the Factory of the Future," McKinsey & Company, September 7, 2017, https://www.mckinsey.com/business-functions/operations/our-insights/automation-robotics-and-the-factory-of-the-future#.
24. Alessandro Ancarani, Camela Di Mauro, and Franceso Mascali, "Backshoring Strategy and the Adoption of Industry 4.0: Evidence from Europe," *Journal of World Business*, 54/4 (June 2019): 360-371; Julien Gooris and Carine Peeters, "Fragmenting Global Business Processes: A Protection for Proprietary Information," *Journal of International Business Studies*, 47/5 (June/July 2016): 535-562; André O. Laplume, Bent Petersen, and Joshua M. Pearce, "Global Value Chains from a 3D Printing Perspective," *Journal of International Business Studies*, 47/5 (June/July 2016): 595-609; Stefano Elia, Silvia Massini, and Rajneesh Narula, "Disintegration, Modularity and Entry Mode Choice: Mirroring Technical and Organizational Architectures in Business Functions Offshoring," *Journal of Business Research*, 103 (October 2019): 417-431.
25. Gereffi, op. cit.
26. Richard Fontaine, "Globalization Will Look Very Different after the Coronavirus Pandemic," *Foreign Policy*, April 17, 2020, https://foreignpolicy.com/2020/04/17/globalization-trade-war-after-coronavirus-pandemic/; Philip Stephens, "Supply Chain 'Sovereignty' Will Undo Globalization's Gains," *Financial Times*, March 17, 2021, https://www.ft.com/content/b5f72f88-814f-4697-8b83-e7d120c81fdc?. . .7e8fw&sharetype=gift?token=5de828a3-3118-4355-b92f-9927ecf53dc6.
27. Jack Nicas, "A Tiny Screw Shows Why iPhones Won't Be 'Assembled in U.S.A.,'" *The New York Times*, January 28, 2019, https://www.nytimes.com/2019/01/28/technology/iphones-apple-china-made.html.
28. Achim Berg and Saskia Hedrich, "What's Next in Apparel Sourcing?" McKinsey & Company, 2014, https://www.mckinsey.com/~/media/McKinsey/Industries/Retail/Our%20Insights/Whats%20next%20in%20apparel%20sourcing/Whats_next_in_apparel_sourcing.pdf.
29. Ancarani et al., op. cit.
30. Susan Lund, James Manyika, Jonathan Woetzel, Edward Barriball, Mekala Krishnan, Knut Alicke, Michael Birshan, Katy George, Sven Smit, Daniel Swan, and Kyle Hutzler, "Risk, Resilience, and Rebalancing in Global Value Chains," McKinsey & Company, August 2020, https://www.mckinsey.com/business-functions/operations/our-insights/risk-resilience-and-rebalancing-in-global-value-chains.
31. Weidong Liu and Peter Dicken, "Transnational Corporations and 'Obligated Embeddedness': Foreign Direct Investment in China's Automobile Industry," *Environment and Planning A: Economy and Space*, 38/7 (July 2006): 1229-1247.
32. Timothy Sturgeon, Johannes Van Biesebroeck, and Gary Gereffi, "Value Chains, Networks and Clusters: Reframing the Global Automotive Industry," *Journal of Economic Geography*, 8/3 (May 2008): 297-321.
33. Strange, op. cit.
34. Gary Gereffi, "What Does the COVID-19 Pandemic Teach Us about Global Value Chains? The Case of Medical Supplies," *Journal of International Business Policy*, 33/3 (September 2020): 287-301.
35. Stephens, op. cit.
36. Lund et al., op. cit.
37. Nicole Longo, "Setting Up a Pharmaceutical Manufacturing Supply Chain Is a Complex and Lengthy Process," *The Catalyst*, May 14, 2020, https://catalyst.phrma.org/setting-up-a-pharmaceutical-manufacturing-supply-chain-is-a-complex-and-lengthy-process.
38. Peter J. Buckley, "The Theory and Empirics of the Structural Reshaping of Globalization," *Journal of International Business Studies*, 51 (December 2020): 1580-1592, at p. 1582.
39. Tilley, op. cit.; Akbar Zaheer and N. Venkatraman, "Relational Governance as an Interorganizational Strategy: An Empirical Test of the Role of Trust in Economic Exchange," *Strategic Management Journal*, 16/5 (January 1995): 373-392.
40. Michael A. Hitt, R. Michael Holmes Jr., and Jean-Luc Arregle, "The (COVID-19) Pandemic and the New World (Dis)order," *Journal of World Business*, 56/4 (June 2021): 101210; Kano and Oh, op. cit.

41. Kano, op. cit.; Björn Ambos, Kristin Brandl, Alessandra Perri, Vittoria G. Scalera, and Ari Van Assche, "The Nature of Innovation in Global Value Chains," *Journal of World Business*, 56/4 (June 2021): 101221, doi:10.1016/j.jwb.2021.101221; Jenny Hilleman and Alain Verbeke, "Internalization Theory and the Governance of the Global Factory," in *Multinational Enterprises, Markets and Institutional Diversity*, ed. Alain Verbeke, Rob van Tulder, and Sarianna Lundan, vol. 9 (Bingley, UK: Emerald Publishing Limited, 2014), pp. 27-49.
42. As mentioned above, research on the managerial dimension of GVC governance is scarce, with most GVC governance research focusing on structural governance decisions related to ownership/control and locations of value chain activities (see Ambos et al., op. cit.). Exceptions include research in economic sociology focusing on relational governance, most notably work by Gary Gereffi and colleagues (e.g., Gary Gereffi, John Humphrey, and Timothy Sturgeon, "The Governance of Global Value Chains," *Review of International Political Economy*, 12/1 (2005): 78-104) as well as some work in international business research (e.g., Kano, op. cit.). Managerial governance practices in GVCs are summarized in a recent systematic literature review by Kano et al., op. cit., where this dimension of governance is labeled as "strategic governance" (see p. 584 for a summary, pp. 603-607 for a detailed discussion). Components of "strategic governance" summarized in Kano et al.'s review paper (Kano et al., op. cit.) formed the foundation for our analysis.
43. We thank an anonymous reviewer for this suggestion.
44. Tom Linton and Bindiya Vakil, "Coronavirus Is Proving We Need More Resilient Supply Chains," *Harvard Business Review*, March 5, 2020, https://hbr.org/2020/03/coronavirus-is-proving-that-we-need-more-resilient-supply-chains.
45. Gabriella Lojacono, Nicola Misani, and Stephen Tallman, "Offshoring, Local Market Entry, and the Strategic Context of Cross-Border Alliances: The Impact on the Governance Mode," *International Business Review*, 26/3 (June 2017): 435-447.
46. Kevin Zheng Zhou and Laura Poppo, "Exchange Hazards, Relational Reliability, and Contracts in China: The Contingent Role of Legal Enforceability," *Journal of International Business Studies*, 41 (June 2010): 861-881.
47. Roman Belotserkovskiy, Jayant Sewak, Adina Teodorian, and Britta Lietke, "Contracting for Performance: Unlocking Additional Value," McKinsey & Company, https://www.mckinsey.com/business-functions/operations/our-insights/contracting-for-performance-unlocking-additional-value.
48. Kano and Oh, op. cit.; Alain Verbeke, "Will the COVID-19 Pandemic Really Change the Governance of Global Value Chains?" *British Journal of Management*, 31/3 (July 2020): 444-446.
49. Verbeke, op. cit.
50. Agustin Gutierrez, Ashish Kothari, Carolina Mazuera, and Tobias Schoenherr, "Taking Supplier Collaboration to the Next Level," McKinsey & Company, July 7, 2020, https://www.mckinsey.com/business-functions/operations/our-insights/taking-supplier-collaboration-to-the-next-level.
51. Gary Gereffi, "International Trade and Industrial Upgrading in the Apparel Commodity Chain," *Journal of International Economics*, 48/1 (June 1999): 37-70; Gary Gereffi, "Global Value Chains and International Development Policy: Bringing Firms, Networks and Policy-Engaged Scholarship Back In," *Journal of International Business Policy*, 2/3 (September 2019): 195-210.
52. Seth Pipkin and Alberto Fuentes, "Spurred to Upgrade: A Review of Triggers and Consequences of Industrial Upgrading in the Global Value Chain Literature," *World Development*, 98 (October 2017): 636-554.
53. Gerald A. McDermott and Rafael A. Corredoira, "Network Composition, Collaborative Ties, and Upgrading in Emerging Market Firms: Lessons from the Argentine Autoparts Sector," *Journal of International Business Studies*, 41/2 (February 2010): 308-329.
54. Gary Herrigel, Volker Wittke, and Ulrich Voskamp, "The Process of Chinese Manufacturing Upgrading: Transitioning from Unilateral to Recursive Mutual Learning Relations," *Global Strategy Journal*, 3/1 (February 2013): 109-125.
55. "Supply Chain Disruption: Repurposed Supply Chains of the Future Must Have Resilience and Responsibility at Heart," Accenture, https://www.accenture.com/us-en/insights/consulting/coronavirus-supply-chain-disruption.

56. Inge Ivarsson and Claes Göran Alvstam, "Supplier Upgrading in the Home-furnishing Value Chain: An Empirical Study of IKEA's Sourcing in China and South East Asia," *World Development*, 38/11 (November 2010): 1575-1587, https://www.sciencedirect.com/science/article/abs/pii/S0305750X10001154.
57. Belotserkovskiy et al., op. cit.
58. Inge Ivarsson and Claes Göran Alvstam, "Upgrading in Global Value-Chains: A Case Study of Technology-Learning among IKEA-Suppliers in China and Southeast Asia," *Journal of Economic Geography*, 11/4 (July 2011): 731-752.
59. Gutierrez et al., op. cit.
60. Stefano Ponte and Joachim Ewert, "Which Way Is 'Up' in Upgrading? Trajectories of Change in the Value Chain for South African Wine," *World Development*, 37/10 (2009): 1637-1650; Alain Verbeke and I. H. Ian Lee, *International Business Strategy*, 3rd ed. (Cambridge, UK: Cambridge University Press, 2021).
61. Ruma Paul, "Garment Exporter Bangladesh Faces $6 Billion Hit as Top Retailers Cancel," *Reuters*, March 31, 2020, https://www.reuters.com/article/health-coronavirus-bangladesh-exports/update-1-garment-exporter-bangladesh-faces-6-bln-hit-as-world-retailers-cancel-orders-idUSL4N2BO594.
62. Steven Greenhouse, "Some Retailers Rethink Roles in Bangladesh: Worried about Image, Disney Cuts Its Ties," *The New York Times*, February 5, 2013, https://www.nytimes.com/2013/05/02/business/some-retailers-rethink-their-role-in-bangladesh.html.
63. Murad A. Mithani, "Liability of Foreignness, Natural Disasters, and Corporate Philanthropy," *Journal of International Business Studies*, 48/8 (October 2017): 941-963.
64. Dimitris Melas, "Five Lessons for Investors from the COVID-19 Crisis," *Morgan Stanley Capital International*, May 19, 2020, https://www.msci.com/www/blog-posts/five-lessons-for-investors-from/01825591187.
65. Giulio Nardella, Stephen Brammer, and Irina Surdu, "Shame on Who? The Effects of Corporate Irresponsibility and Social Performance on Organizational Reputation," *British Journal of Management*, 31/1 (January 2020): 5-23.
66. In this section, we focus on extra-GVC stakeholder management; however, it should be noted that lead firms must involve suppliers in their efforts to achieve ESGD goals while remaining efficient. Specific steps include skill development and training, selective supplier upgrading, and a careful design of supplier contracts to better specify all partners' responsibility and accountability in achieving ESGD standards.
67. Luciano Ciravegna, Liena Kano, and Francesco Rattalino, "Corporate Diplomacy and Family Firm Longevity," *Entrepreneurship Theory and Practice*, 44/1 (January 2020): 109-133; Enric Ordeix-Rigo and João Duarte, "From Public Diplomacy to Corporate Diplomacy: Increasing Corporation's Legitimacy and Influence," *American Behavioral Scientist*, 53/4 (December 2009): 549-564; Ulrich Steger, *Corporate Diplomacy: The Strategy for a Volatile, Fragmented Business Environment* (West Sussex, UK: John Wiley & Sons, 2003); Aurélien Acquier, Bertrand Valiorgue, and Thibault Daudigeos, "Sharing the Shared Value: A Transaction Cost Perspective on Strategic CSR Policies in Global Value Chains," *Journal of Business Ethics*, 144/1 (August 2017): 139-152.
68. Rory Horner and Matthew Alford, "The Roles of the State in Global Value Chains," in *Handbook on Global Value Chains*, ed. Stefano Ponte, Gary Gereffi, and Gale Raj-Reichert (Cheltenham, UK: Edward Elgar, 2019): 555-569; Narula, op. cit.
69. Kano and Oh, op. cit.
70. Jose Guimon and Rajneesh Narula, "A Happy Exception: The Pandemic Is Driving Global Scientific Collaboration," *Issues in Science and Technology*, April 22, 2020, https://issues.org/pandemic-global-scientific-collaboration/.
71. Verbeke and Lee, op. cit.
72. Milan Jocevski, "Blurring the Lines between Physical and Digital Spaces: Business Model Innovation in Retailing," *California Management Review*, 63/1 (Fall 2020): 99-117.
73. Farok J. Contractor, "The World Economy Will Need *Even More* Globalization in the Post-Pandemic 2021 Decade," *Journal of International Business Studies*, advance online publication (February 2021), https://link.springer.com/article/10.1057/s41267-020-00394-y.
74. Linton and Vakil, op. cit.
75. Olaf Schatteman, Drew Woodhouse, and Joe Terino, "Supply Chain Lessons from Covid-19: Time to Refocus on Resilience," *Bain & Company*, April 27, 2020, https://www.bain.com/insights/supply-chain-lessons-from-covid-19/.

76. Steve Banker, "Procter & Gamble's Futuristic Control Tower Environment," *Forbes*, July 1, 2015, https://www.forbes.com/sites/stevebanker/2015/07/01/procter-gambles-futuristic-control-tower-environment/?sh=308dacb60e9b/.
77. Lund et al., op. cit.
78. Buckley, op. cit.
79. Contractor, op. cit.
80. Schatteman et al., op. cit. Rajneesh Narula, "The Viability of Sustained Growth by India's MNEs: India's Dual Economy and Constraints from Location Assets," *Management International Review*, 55 (April 2015): 191-205; Rajneesh Narula, "An Extended Dual Economy Model: Implications for Emerging Economies and Their Multinational Firms," *International Journal of Emerging Markets*, 13/3 (2018): 586-602; Narula, op. cit.
81. Lund et al., op. cit.
82. Klaus Meyer, Carsten Lund Pedersen, and Thomas Ritter, "The Coronavirus Crisis: A Catalyst to Entrepreneurship," *The Conversation*, April 12, 2020, https://theconversation.com/the-coronavirus-crisis-a-catalyst-for-entrepreneurship-135005.
83. Kano and Oh, op. cit.
84. Hitt et al., op. cit.; D. Eleanor Westney, "MNCs and Cross-Border Strategic Management," in *Strategic Management: State of the Field and Its Future*, ed. I. Duhaime, M. A. Hitt, and M. Lyles (Oxford, UK: Oxford University Press): 301-318.