

HANDBOOK ON GLOBAL VALUE CHAINS



Handbook on Global Value Chains

Edited by

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4. Global value chains and quantitative macro-comparative sociology

Matthew C. Mahutga

4.1 INTRODUCTION

How does globalization impact the organizational, developmental, and distributional dynamics of the global economy? Such questions lie at the heart of both global value chain (GVC) analysis and quantitative macro-comparative sociology (QMCS). In this chapter, I describe what I see as the most distinctive *theoretical* feature of GVC analysis as it relates to these questions. Where conventional wisdom focuses upon the consequences of falling trade barriers (or increasing trade) on demand, GVCs understand the potential gains from globalization as a consequence of the concrete relations between firms. Crucially, these different theoretical foci yield contrasting predictions regarding the potential gains from globalization. In Ricardian and Heckscher-Ohlin (H-O) formulations, modern trade theory predicts that production globalization should promote development in both the North and the South, reduce income inequality in the South and increase income inequality in the North. Alternatively, as I describe below, GVC analysis is more consistent with differential gains from globalization across the North and South, and rising inequality in both regions.

Despite these contrasting predictions, however, QMCS has been slow to integrate GVC insights. I therefore turn to the theoretical and methodological problems that macro-comparatists face when attempting to take this relational turn. QMCS examines ecological units, and often states. States are embedded within GVCs in multifaceted ways. Theoretically, one must extend the firm-level implications of GVCs to their aggregate-level implications for larger ecological units. Empirically, one must operationalize GVC constructs in such a way that accounts for the varied ways in which relational dynamics manifests across value chains and over time. This empirical project is complicated by the legacy of methodological nationalism, whereby detailed and cross-nationally comparable firm-level data do not exist, and GVC-relevant statistics are measured at the level of the state.

In the final substantive section, I highlight several lines of relatively recent QMCS integrating GVC analysis. I demonstrate the varied ways that researchers aggregate firm-level GVC dynamics to large ecological units in theory and empirically. These ecological units include the global industry, the national industry, and the national economy as a whole. This review demonstrates convincingly that a careful wedding of deductive theory construction and creative research design can produce novel evidence-based research linking GVCs to the macroeconomy. In the conclusion, I clarify that this recent body of work is united by a common theoretical and operational logic, but is also incredibly varied in substance. This combination of common logic and varied substance will naturally lead to tension, as scholars work to accumulate knowledge in the context of a variegated and dynamic GVC landscape. This tension is not only natural but desirable – much can be gained by animating the macro-comparative study of GVCs with this tension.

4.2 VALUE CHAINS AND THE GAINS FROM GLOBALIZATION

Conventional wisdom regarding the potential gains from globalization resides squarely in economic trade theory, which focuses upon the response of price-setting markets to declining trade barriers. In contrast, the value chains approach situates the potential gains from globalization within concrete social relations between firms. As I describe below, these varied foci matter both for the theoretical mechanisms underlying the potential gains from globalization, as well as the expected distribution of those gains (e.g., Bair and Mahutga, 2016). To illustrate these points, I review two distinct economic theories of trade: Ricardo's theory of comparative advantage and H-O factor-abundance trade theory. The first predicts mutual gains from increasing trade across the North and South, while the latter predicts rising income inequality in the North, and declining income inequality in the South. While these two approaches might first appear dated, they embody the key guiding principle of modern theories of trade concerned with economic development and the distribution of income (e.g., Autor, Dorn and Hanson, 2013; Baldwin and Robert-Nicoud, 2014). I then argue that GVCs may instead lead to unequal gains from trade across the North and South, as well as rising inequality in both.

Ricardian trade theory is now well developed and incredibly elaborated (e.g., Dornbusch, Fischer and Samuelson, 1977; Deardorff, 1980). But the logic of contemporary theory follows directly from the original insights of David Ricardo. In the chapter 'On Foreign Trade,' Ricardo (1817 [1919]) argues that it is to the benefit of all that each country produce those goods for which its 'situation, climate and its other natural or artificial advantages it is adapted, and by their exchanging them for the commodities of other countries' (p. 80). His argument assumes that capital is not perfectly mobile across countries, and that countries differ with respect to labor productivity. And most importantly, Ricardo argues that it will be advantageous for a country to shift its capital into the production of the good for which it is most *relatively* endowed, even if that means shifting out of the production of a good for which it has an *absolute* productivity advantage with regard to some other country. Applied to the potential gains from globalization, Ricardian models of comparative advantage predict a mutually beneficial impact of North–South trade.

H-O trade theory focuses not on relative labor productivity, but rather on cross-country differences in the abundance of production factors (e.g., land, labor, capital, etc.) (Bowen, Leamer and Sveiskaus, 1987). While the implications of this theory are many, it has been famously deployed to understand the changes in national income distributions in response to increases in trade (e.g., Wood, 1994). Conventionally, international trade reduces the price of production factors toward that which prevails in the countries where they are most abundant. With respect to income inequality, the focal production factor is the price of differentially skilled labor. Low-skilled labor is relatively abundant in the Global South, while high-skilled labor is relatively abundant in the North. Thus, increases in North/South trade should increase the demand for low-skill labor in the South, and reduce the demand for low-skilled labor in the North and vice versa. Because high-skilled workers always earn higher wages than low-skilled workers at any given time, North/South trade should increase wage inequality between low- and high-skill workers in the South, and decrease wage inequality between high- and low-skill workers in the South (cf. Feenstra and Hanson, 1996).

Note that in both the Ricardian and H-O frameworks, the gains from globalization (or North–South trade) follow from trade-induced changes in prices and demand. Such models rarely, and only very recently, consider that much of trade globalization is coordinated in various ways by firms that are interconnected through value chains/production networks (Chor, Chapter 5 this volume; Milberg and Winkler, 2013). Indeed, some recent interventions suggest that the mutual welfare benefits of trade discussed above are amplified in a world of production fragmentation (Costinot and Rodríguez-Clare, 2014; Caliendo and Parro, 2015). In the GVC framework, this coordination matters for the gains from globalization (e.g., Gereffi, Humphrey and Sturgeon, 2005). In particular, recent QMCS instantiations of GVC analysis suggest that the asymmetrical bargaining power between leading and supplier firms impacts the distribution of the gains from globalization, both between and within countries (e.g., Schrank, 2004; Heintz, 2006; Mahutga, 2014a; Mahutga and Jorgenson, 2016; Mahutga, Roberts and Kwon, 2017). In particular, the intuition is that the impacts of trade globalization for any given country depend on the value chain/production network position of firms within that country.

With respect to economic development, a key argument has been that countries where firms tend to play a leading role in their value chains will experience greater gains from globalization than those with firms who play a more subordinate role (e.g., Mahutga, 2014a, 2014c; Bair and Mahutga, 2016; Pandian, 2016). The key mechanism is the asymmetrical power of leading firms, who squeeze costs from their suppliers in poor countries (Heintz, 2006).¹ In the aggregate, this produces greater returns to network integration for the countries in which leading firms are embedded. Such a claim is not necessarily in conflict with the insights from Ricardian models, but it is certainly an important caveat. With respect to income inequality within countries, supplier firms achieve cost concessions through lower wages (Mahutga, 2014a), which leads to wage gaps between workers in value chain supplier firms and those in domestic firms or foreign subsidiaries (Mahutga and Jorgenson, 2016). That is, the integration of Southern firms into value chains should *increase* income inequality in the Global South, which is in stark contrast to the predictions of H-O theory (cf. Feenstra and Hanson, 1996).

In short, GVC analysis leads to predictions about the potential gains from globalization that are distinct from, and sometimes contrary to, the predictions from conventional trade theory. These predictions arise from attending to the embeddedness of globalized production in networks of firms, and the asymmetrical bargaining power that some firms enjoy over others. Because firms are spatially embedded within countries, the gains from globalization depend in no small part on the value chain/network position of firms therein. Yet this very embeddedness poses distinct theoretical and methodological challenges for QMC sociologists. I discuss some of these challenges below.

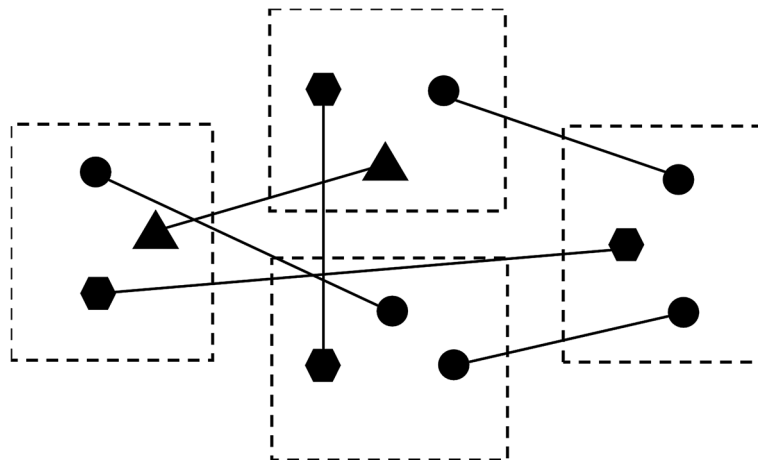
4.3 ADDING VALUE TO QMCS: THEORETICAL AND METHODOLOGICAL CHALLENGES

Broadly speaking, QMCS involves theoretically informed empirical comparisons of ecological units. Most typically, these ecological units are nation-states. The substantive questions animating QMCS are incredibly broad. Substantive areas overlapping with GVC analysis include economic development (e.g., Bornschier, Chase-Dunn and Rubinson,

1978; Snyder and Kick, 1979; Smith and White, 1992; Mahutga, 2006; Mahutga and Smith, 2011; Curwin and Mahutga, 2014), income inequality (Alderson and Nielsen, 2002; Bandelj and Mahutga, 2010) and economic organization (Alderson, 1999, 2004; Biggart and Guillén, 1999). In particular, macro-comparatists often try to understand how ‘external factors’ (e.g., foreign direct investment [FDI] and international trade) and ‘international factors’ (e.g., institutional varieties and historical legacies) combine and interact to produce cross-national variation in these outcomes (see also Stolzenburg et al., Chapter 30 this volume).

Standard methodological approaches in QMCS involves econometrics, network analysis or some combination of the two. For example, scholars who wish to understand the developmental and distributional consequences of FDI and international trade might regress economic development or income inequality on measures of FDI and trade. Those who wish to understand the developmental returns to a country’s position in the international division of labor (or broader ‘world-system’) might use network analysis to analyze country-by-country socio-matrices on relationships including total and commodity-specific trade, military exchanges, embassies, and so on (e.g., Snyder and Kick, 1979; Nemeth and Smith, 1985). These network analyses thus quantify country position in order to explain variation in economic development or cross-national patterns of economic organization. The unit of analysis in such analyses is often the country-year. That is, quantitative macro-comparatists want to study both cross-national and over-time variation.

The first key challenge for macro-comparatists wishing to integrate GVC insights into empirical research is the multilayered and multilevel problem of embeddedness. Firms are relationally embedded in social networks, but spatially embedded in states. Moreover, ‘positional power’ varies by the type of governance coordinating a particular network, and proximately by industry. This multifaceted problem of embeddedness is depicted graphically in Figure 4.1. Macro-comparatists are interested in outcomes at the level of



Note: Dashed lines are national boundaries. Solid lines are interfirm ties. Node shapes correspond to different industries or governance types.

Figure 4.1 Multifaceted problem of embeddedness

the state, depicted in Figure 4.1 by dashed lines. However, national-level outcomes are a function of the relationships between the firms in any focal country and those in others. Moreover, governance varies considerably across value chains and countries have different mixes of firms and industries.

Why does this multifaceted embeddedness present theoretical and methodological challenges? First, developmental and distributional outcomes should, in theory, differ across networked firms and thereby the countries in which those firms are located. However, the *type* of positional power that matters varies by governance. In the original global commodity chain (GCC) distinction between buyer and producer-driven governance for example, positional power accrued to buyers in one modality and producers in another (Gereffi, 1994). Moreover, the *level* of power asymmetry varies by governance. In more recent formulations of GVC governance, the level of power asymmetry is clearly higher in some value chains than others (Gereffi et al., 2005). Countries also have a mix of firms. Some firms may occupy powerful positions in some chains, but weak ones in others. Thus, as a matter of measurement, one must deploy *multiple* measurement strategies to capture the *aggregate* positional power of a country's firms.

A second challenge is that value chains change over time. For one, we live in a world that is exceedingly more 'networked' than even 30 years ago. That is, value chains have become more extensive over time, and there is little reason to suspect a reversal in this trend (Mahutga, 2012). In theory, this should matter for the impacts of value chain activity (e.g., Schrank, 2004). Moreover, governance is itself dynamic (Gereffi et al., 2005; Mahutga, 2012). This clearly matters for the level of power asymmetry operating in any given chain at any given time (Gereffi et al., 2005). It may also matter for the *type* of positional power operating in a chain, insofar as the key agents might shift from producers to buyers, or some other role (e.g., Sturgeon, 2002). Because value chains are themselves dynamic, so too are the consequences of value chain activity. Both theory and method must account for this dynamism.

A fourth, and perhaps the biggest, challenge is that the firm-level orientation of the GVC literature poses 'a unit of analysis dilemma' in terms of evaluating how firm-level dynamics impact 'the larger units that are traditionally regarded as the spaces or containers' of economic performance and behavior (Bair, 2005, p. 166). While some of these dilemmas are theoretical (see above and below), they are also empirical: 'publicly available and detailed information at the level of firms is generally lacking' (Gereffi, 2005, p. 169). Instead, the legacy of methodological nationalism means that the more widely available data on GVC-relevant metrics – trade, value-added, wages, establishments, and so on – are collected at the level of the nation-state.

By way of summary, quantitative macro-comparative research shares with GVC analysis a common concern for the organizational, developmental, and distributional implications of economic globalization. In order to incorporate GVC insights into their analyses, however, they must grapple with the multifaceted problem of embeddedness. Economic performance, organizational structure and income distributions are shaped by the aggregate behavior of the firms within a given country. But measuring a key concept of interest to GVC analysts – positional power – is made difficult because it varies across GVCs at any moment in time, and because GVCs are themselves dynamic. Moreover, measuring the positionality of a country's firms is more than a simple aggregation problem – cross-nationally and temporally comparable firm-level data do not exist;

relevant statistics are collected at the level of countries. As I demonstrate below, however, these problems can be overcome. The solution lies in combining deep (and deductive) thinking about the probable links between GVC dynamics and the substance at hand with creativity in research design.

4.4 CAPTURING THE VALUE OF GVCs FOR QMCS: THEORY CONSTRUCTION AND RESEARCH DESIGN

In this section, I describe published quantitative macro-comparative sociological (and some related interdisciplinary work) research that explicitly integrates ideas from GVC (or GCC or global production network [GPN]) analysis. The goal is twofold. First, I show the varied ways that researchers extend insights from GVC analysis theoretically. Here I discuss the ways that researchers use GVC insights deductively to formulate testable hypotheses linking GVCs to varied outcomes at varied ecological levels. Second, I show the varied ways that researchers operationalize these theoretical extensions in order to subject them to empirical scrutiny.

4.4.1 GVCs and Economic Organization

A key insight of GVC analysis is that the organization of national economies (particularly in manufacturing) depends increasingly upon the integration of national firms into GVCs (e.g., Sturgeon, Biesebroeck and Gereffi, 2008; Hamilton and Gereffi, 2009).² For GVC researchers conducting case studies in various parts of the developing world, this much is obvious: the firms they observe are unambiguously producing and exporting at the behest of leading firms located in the Global North (e.g., Bair and Gereffi, 2001; Schrank, 2004). This relational perspective is a departure from conventional explanations linking economic organization in any particular country to factors internal to it – resource endowments, human capital, physical capital, geography, economic policy, and so on (e.g., Bowen et al., 1987; Wood, 1994; Alderson, 1999). Thus, extant macro-comparative work examines the degree to which GVC insights exert independent causal effects on economic organization, and the relative importance of these effects with regard to conventional wisdom. Here I review several pieces of quantitative macro-comparative research that take the relative importance of GVCs head on (also see Feenstra and Hamilton, 2006).

The first paper asks how theories of GVC governance can make sense of the varying degrees to which manufacturing is organized on a global scale across industries (i.e., the ‘globalness’ of value chains). Mahutga (2012) roots the emergence of GVC governance in the strategic decisions of leading firms as they solve the ‘make-or-buy’ dilemma, and choose where to locate externalized functions. He identifies two variables: entry barriers to manufacturing and the distribution of supplier capability across the North–South divide. Entry barriers reduce the incentive for leading firms to externalize manufacturing, while the distribution of supplier capabilities affects whether lead firms choose to outsource or offshore. When barriers to entry are high, leading firms keep more manufacturing ‘in house.’ Where supplier capabilities in the Global South are low, lead firms will locate externalized activities in co-located supplier firms. In combination, these yield hypotheses about the geographic scope of value chains: they will be more global in scope

as barriers to entry in manufacturing fall, because leading firms will externalize a greater share of the activity, and suppliers in the South will have greater capabilities in relation to it. Because this theory operates at the level of the global industry, Mahutga (2012) overcomes the problem of multifaceted embeddedness and methodological nationalism by measuring global industry-level 'spatial fragmentation' with the ratio of world trade to world value-added in three industries (see Feenstra, 1998). Using three archetypical industries – transportation equipment, electronics and apparel – Mahutga shows that the rate of spatial fragmentation in each corresponds precisely to these predictions: where apparel is the most globalized, transportation equipment the least, and electronics is an intermediate.

Analogously, Antràs et al. (2012) measure the 'upstreamness' of US industries using detailed input/output matrices for US industries and for countries overall. An upstream industry is one in which most of the output serves as an input in another industry. At the cross-country level, they find that countries with low financial development (credit availability) and human capital tend to occupy downstream segments of the value chain.

Antràs (2015) shows that many of the key insights of GVC analysis – that is, that production can be separated into production and services and coordinated among independent firms in diverse locations – can improve standard models of international trade. He shows that asymmetrical bargaining power between leading firms and their suppliers can substitute for imperfect contract enforcement, and determine their relative share of the surplus created by the relationship (Ponte et al., Chapter 13 this volume). He also verifies empirically that value chains will be less global when barriers to entry are higher (Neilson, Chapter 18 this volume; Barrientos, Chapter 20 this volume). Antràs overcomes the problem of multifaceted embeddedness and methodological nationalism by examining detailed sector-level US import data. That is, he aggregates from firms to sectors.

Bair and Mahutga (2012) juxtapose GCC/GVC theories of industrial governance with those proposed by the Varieties of Capitalism (VoC) perspective (e.g., Hall and Soskice, 2001). Where GVC theories predict common types of industrial governance across national contexts, the VoC perspective predicts institutionally specific patterns of industrial governance (see Gereffi, 1996; cf. Whitley, 1996). Bair and Mahutga (2012) compare rates of spatial fragmentation (i.e., offshoring) across three industries and VoCs. If GVC governance is institutionally transcendent, they argue, we should observe greater variation between GVCs than VoCs. They find that, at the national level, offshoring in the Organisation for Economic Co-operation and Development (OECD) was greatest among garments, followed by electronics and transportation equipment. Importantly, these patterns were the same in both 'liberal' and 'coordinated' market economies, suggesting that GVC governance transcends national institutions.

Mahutga (2014b) uses the original GCC distinction between buyer- and producer-driven governance to formulate testable hypotheses linking the aggregate chain position of national firms to cross-national patterns of manufacturing specialization. He addresses the problem of multifaceted embeddedness and methodological nationalism in two ways. First, he derives two different measure of positional power. In both cases, he extends the sourcing behavior of leading firms in buyer- and producer-driven chains to their implications for national level import/export profiles. In buyer-driven chains (e.g., apparel), countries with primarily lead firms will source from a geographically diffuse supply based and capture a large share of the export markets of their partners. In producer-driven

chains (e.g., transport equipment), countries with primarily leading firms will produce and export to the entire world market, and capture a significant share of the import markets of their partners. Second, he hypothesizes that these measures should matter more for export specialization after 1980, when it was widely observed that value chains became the predominant organizational model of economic organization. Mahutga shows that buyer- and producer-driven power are correlated with garment and transport equipment manufacturing specialization after 1980, even when controlling for a host of conventional 'internal' factors. This analytical approach has also been used to analyze the competitiveness of national automotive industries in the EU (Garcia and Paz, 2017).

4.4.2 GVCs and Economic Development

As I noted above, conventional thinking on the potential gains from globalization begins with trade theory. Through various mechanisms, these theories suggest that trade is mutually beneficial for participating countries in the North and South. The GVC literature has always been less sanguine about increased trade and globalization (Bair, 2005). Mahutga (2014a) takes this skepticism as a point of departure. Theoretically, he derives an exchange-theoretic conceptualization of network governance in which the particular type of governance operating at any point in time is a function of the type of bargaining power accruing to leading firms (see Ponte, Sturgeon and Dallas, Chapter 6 this volume). Because this bargaining power allows leading firms to extract economic concessions from suppliers, the economic returns to participating in GVCs/GCCs/GPNs should skew toward the leading firms. Employing the methodology of Mahutga (2014b), he then argues that these skewed developmental returns should be observed most acutely in the distribution of wages across countries. Here, workers in the Global South are particularly vulnerable, and thus bear the brunt of the economic concessions their firms make. Mahutga (2014a) finds that, indeed, wages in the garment and transport equipment sectors are skewed heavily toward countries with high buyer- and producer-driven power, respectively. Moreover, these effects explain the wage gap between core and non-core zones of the world-system, and become significantly more pronounced in the post-1980 period.

In more recent work, Pandian (2016) uses GVC insights to inform debates about the developmental efficacy of industrialization. In particular, he revisits recent debates about the developmental potential for manufacturing employment in the Global South during the period of globalization (e.g., Arrighi, Silver and Brewer, 2003; Firebaugh, 2003). Pandian's design was both strategic and more aggregate than those reviewed above. His deductive logic was that *if* GVCs allow leading firms in the Global North to extract the majority of the gains from production globalization, *then* we should observe declining growth returns to manufacturing employment over time. That is, rather than take a sector-specific governance approach, Pandian focuses instead on the time dimension. He analyzes a panel dataset in which economic growth was regressed on manufacturing employment and its interaction with time, along with a baseline set of controls. He found that while manufacturing employment does increase growth (e.g., Firebaugh, 2003), this growth effect declines over time in the South but not in the North (Arrighi et al., 2003).

4.4.3 GVCs and Income Inequality

Recent work extends the firm-level GVC perspective to its implications for the distribution of income within countries, both at the ‘top’ and ‘bottom’ of the value chain. One paper examines the effect of value chain integration on income inequality in post-socialist transition countries (Mahutga and Jorgenson, 2016). To theorize this effect, Mahutga and Jorgenson argue that the wage effects of economic concessions made by supplier firms (e.g., Schrank, 2004; Heintz, 2006; Mahutga, 2014a) have implications for the between-sector distribution of earnings within countries. Here, GVC ‘integration depresses wages for workers in domestically owned [GVC]-integrated manufacturing enterprises vis-à-vis those in foreign-owned firms, domestically owned non-exporting firms, and domestically owned exporting firms without relations to [GVCs]’ (Mahutga and Jorgenson, 2016, p. 1714). Their analysis is consistent with the argument: increases of North-bound exports increase inequality, and these effects cannot be attributed to FDI or more generic trade effects (also see below). To our knowledge, this is the first paper linking GVCs to the distribution of income within countries.

To address the problem of multifaceted embeddedness and methodological nationalism, Mahutga and Jorgenson return to trade but consider the direction in which it flows. They measure GVC integration with the percentage of manufacturing exports to a ‘*select group of northern countries*’ known for housing the leading firms in [GVCs] because ‘all of the possible modes of governance organizing [GVCs] will be captured by north-bound trade’ (Mahutga and Jorgenson, 2016, pp. 1719, 1721, original emphasis).³ Mahutga and Jorgenson go to great length to validate this measure. They show that (1) relative rates of North-bound trade vary across garments, transport and electronics equipment in the same way as Mahutga (2012) and Bair and Mahutga (2012); (2) ‘North-bound’ exports have no effect when the set of high-income destination countries are outside of the select group; and (3) the effect of North-bound exports is not driven by unobserved skill shifts predicted by market-based arguments (e.g., Zhu and Treffer, 2005).

A more recent paper considers the distributional effects of GVCs at the ‘top’ of the value chain. Mahutga et al. (2017) take the mixed empirical support for long-standing trade theories linking trade globalization to income inequality in the North as a point of departure. Recall that these theories link globalization to rising inequality through the impact of Southern manufacturing imports on the relative wage of low-skill workers. Mahutga et al (2017) argue that one reason for the mixed empirical support is the dynamic nature of GVCs. This dynamism matters for two reasons. First, the widely observed link between GVC integration and ‘industrial upgrading’ in the South increases both the number of capable suppliers *and* their geographic distribution over time. This process both integrates increasingly low-wage countries into GVCs, and heightens the bargaining power of leading firms, both of which increase the wage gap between Northern workers and their counterparts in the Global South. Mahutga et al. (2017) also argue that the expansion of GVCs into a greater array of commodity categories increases *perceptions* of economic insecurity for Northern workers.

To overcome the problem of multifaceted embeddedness and methodological nationalism, Mahutga et al. (2017) focus primarily on the temporal dimension. In particular, they measure world-level entrenchment of GVCs by extending Feenstra’s (1998) logic to the entire manufacturing sector. That is, if GVCs are increasingly entrenched, we should

expect to observe a greater degree of spatial fragmentation over time for the worldwide manufacturing sector as a whole. They show that the ratio of global manufacturing trade to global manufacturing value-added increased from just under 30 percent in the early 1970s to more than 120 percent by 2010. They then regress national income inequality on Southern manufacturing imports and its interaction with spatial fragmentation. Consistent with their argument that GVC dynamics can account for the mixed empirical record, they show that Southern imports did not have a significant effect on income inequality until world manufacturing trade surpassed 64.5 percent of value-added, which did not occur until 1995 (see also Johnson and Noguera, 2017). That is, offshoring did not matter for income inequality in the North until GVCs became the modal organizational form in the sector.

4.4.4 The Moderating Role of Institutions

Mahutga et al. (2017), Mahutga and Jorgenson (2016) and Milberg and Winkler (2010) go further than the others in assessing the degree to which institutional factors moderate the effect of GVCs (see Stolzenburg et al., Chapter 30 this volume). Mahutga and Jorgenson (2016) demonstrate that labor market institutions diverged considerably among post-socialist transition countries that did and did not join the European Union (EU). They then deduce that the more flexible labor markets in EU transition countries should exacerbate the distributional effects of GVC integration. Mahutga et al. (2017) argue that countries with more robust wage-coordinating institutions and more generous welfare states should experience smaller distributional effects of offshoring. Milberg and Winkler (2010) examine the effects of goods offshoring on the labor share of income in OECD countries. They argue that offshoring should erode this labor share by the traditional mechanisms, but that these effects should be weaker or even reversed in countries with supportive labor markets (e.g., strict employment protection legislation and high levels of public expenditure on labor market programs and unemployment protection). The empirical evidence in these three pieces is entirely consistent with these intuitions. EU-integrating transition countries experience significantly larger disequalizing effects from GVC integration, while rich democracies with robust wage-coordinating institutions, larger welfare states and more supportive labor markets experience significantly smaller disequalizing effects of offshoring (see also Wood, 1994).

4.4.5 Trade in Value-added

There is a nascent and strongly GVC-connected literature on trade in value-added that could be implemented in QMCS (see Banga, 2013; Elms and Low, 2013; OECD/WTO, 2018). This work is rooted in early efforts by economists to quantify the amount of global sourcing over time (e.g., Johnson and Noguera, 2017). The explicit goal of this work is to measure the domestic content of manufacturing exports in a systematic fashion. The technical aspects of this work involve constructing input-output matrices for each country year, and employing Leontief matrix inverses, which is beyond the present scope (but see Elms and Low, 2013). The logic of this work is rather straightforward: with the expansion of GVCs, countries import and export both finished and intermediate goods. Thus, any country's import/export profile includes both domestic and imported content. The goal

of the trade-in-value-added approach is to estimate the amount of domestic value-added embodied in any country's exports by subtracting out the imported content. That is, it is very much in keeping with the logic of Feenstra (1998), which is that trade should depart from value-added proportionally with the fragmentation of production into intermediate stages that cross borders. Because the methodology for estimating the precise amount of domestic content is challenging, this literature has not progressed much past basic estimates. Recent papers try to use the approach in quite similar ways to Mahutga (2014a) by linking GVC integration to skewed distributions of value-added across 'upstream' and 'downstream' positions (see, in particular, Banga, 2013). Future work might more closely link the trade-in-value-added approach to the sector-specific governance underscored in traditional GVC work in order to understand how the degree and type of skew varies across industries with different modal forms of governance.

4.5 CONCLUSION

In this chapter, I endeavored to show that (1) GVC analysis produces theoretical insights about the gains from globalization that depart from conventional wisdom in important ways; (2) such insights are difficult for macro-comparativists to integrate for theoretical and methodological reasons; but (3) these difficulties can be overcome with careful mergers of deductive theory construction and creative research design. In the remainder of this brief conclusion, I want to summarize the general strategies that future researches must follow to advance this literature. Theoretically, these strategies involve thinking deeply about how GVC dynamics aggregate with regard to the particular explanandum at hand. Empirically, these strategies involve thinking deeply about how GVC dynamics *should* manifest themselves in aggregate data given extant knowledge on GVC governance.

In terms of theory, I covered examples linking GVC dynamics to the geographic scope of global industries (Mahutga, 2012), the degree of offshoring of national industries (Bair and Mahutga, 2012), the structure of the national economy (Mahutga, 2014b; Garcia and Paz, 2017), economic development (Mahutga, 2014a, 2014c; Pandian, 2016) and income inequality (Mahutga and Jorgenson, 2016; Mahutga et al., 2017). In each case, the logic of deductive theory construction was the same, and involved answering the question of how GVC dynamics *should* impact a particular outcome given our knowledge of GVC governance. However, the substance of these theories varied tremendously. On one hand, this substantive variety is entirely keeping with the nature of GVCs – they touch down in different ways across time, space, and governance type. On the other, the theories that these macro-comparativists construct by aggregating from firms to ecological units are entirely original, and suggest that a high level of logical dexterity is required to advance this literature.

The empirical operationalizations of these theoretical aggregations are equally varied. All but one employed international trade. But the measured concepts were many: the amount of production fragmentation of global industries; the amount of offshoring of national-industries; the direction, source, and destination of various types of flows; and the aggregate positional power of national firms. In much the same way as theory construction, the operational logic was the same across studies. Researchers had to make determinations regarding the appropriate unit of analysis. They also had to determine

how best to aggregate across industries (or not), how to incorporate the time dimension, and how to ensure that their measurements were valid operationalization of GVC dynamics. But the operational outcomes varied tremendously. This, too, reflects the real problem of multifaceted embeddedness. It likewise highlights the high level of creativity required to advance this literature.

I see one key tension as this research unfolds. At some point, there will be pressure to utilize evidence-based assessments to settle upon specific empirical strategies and a narrower range of questions. Such pressure is good in that it reduces two key sources of variability across published research projects that can limit the accumulation of knowledge. Such pressure can also have negative consequences because of the very dynamic nature of GVCs. As one of the earliest observers of commodity/value chains notes, the very nature of the enterprise requires the tension remain unresolved: 'Studying [value chains] is for the [macro-comparativist] something like observing the operations of the human body by means of multiple tests for the physician.' We are 'measuring indirectly and imperfectly a total phenomenon that we cannot see directly no matter what we do. . . It requires imagination and audacity along with rigor and patience. The only thing we have to fear is looking too narrowly' (Wallerstein, 2009, p. 89).⁴

NOTES

1. This proposition is a contested one. See, especially, Bair and Gereffi (2001), Schrank (2004), Mahutga (2014a).
2. I use the term 'national firms' in reference to the mix of firms within a country at any given time. Such firms could be domestically owned/headquartered or subsidiaries of transnational corporations.
3. This 'select group' includes Australia, Austria, Belgium (1999–2009), Belgium/Luxembourg (1991–98), Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg (1999–2009), Netherlands, New Zealand, Norway, Portugal, Sweden, Switzerland, the United Kingdom, and the United States.
4. See Bair (2005) for a discussion of the historical linkages between GVC analysis and world-systems theory.

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