

Industrial policy in the era of vertically specialized industrialization

5

William Milberg, Xiao Jiang and Gary Gereffi

5.1 Introduction

The expansion of global value chains (GVCs) since the early 1990s has played an important role in shifting the pattern of international trade and altering the process of industrialization and de-industrialization. Sometimes called global commodity chains or global production networks, GVCs are defined by Sturgeon (2001) as “the sequence of productive (i.e. value added) activities leading to and supporting end use”. Trade in intermediates rather than in final goods and services has grown rapidly and thus the level of vertical specialization – the import content of exports – has increased in almost every country in the world. From South Africa’s auto parts sector to Cambodia’s clothing industry to Kenya’s cut-flower producers to India’s business services firms, GVCs include a wide variety of traded goods and services production. Services, including financial services, are often produced within global production networks, and services such as logistics are an important aspect of many global networks of goods production.¹

As a result of these shifts, economic development now often occurs as a process of “industrial upgrading” within GVCs. If economic development requires a change in the structure of production, involving industrial transformation and higher value added activity, and if production is increasingly organized within GVCs, then development must occur within such chains. Economic upgrading in GVCs – whether it is moving into higher value added functions within the

¹ See Cattaneo, Gereffi and Staritz (2010), and Staritz, Gereffi and Cattaneo (2011) for a sampling of the broad range of industries covered by recent GVC studies.

same chain or jumping into more technologically sophisticated but related value chains – is now recognized as an important channel of industrialization (Humphrey and Schmitz, 2002).

Considerable research has identified these shifts in trade and economic development resulting from the expansion of GVCs, and the topic is of increasing interest to international organizations, including the World Trade Organization (WTO), the World Bank, the International Labour Organization (ILO), the Organisation for Economic Co-operation and Development (OECD), the United Nations Industrial Development Organization (UNIDO) and the United Nations Commission on Trade and Development (UNCTAD).² The GVC approach helps explain structural shifts in the global economy, such as the boom in intermediate goods trade, the heightened volatility of world trade, the growing number of regional trade agreements, and the misleading nature of published statistics on bilateral and sectoral trade balances (OECD, 2011). But what does all this mean for the role of the State in economic development?

Twentieth-century debates over the merits of industrial policy as a strategy for economic development occurred prior to the spread of these complex international production networks. Industrial policy viewed through the lens of GVCs will thus differ from traditional arguments for industrial policy. The GVC approach puts emphasis on firms rather than States, leaving the role of the State less evident than it was in earlier phases of late industrialization. In this chapter we advance the discussion of industrial policy in several ways. First, we make the case that the prominence of GVCs alters the terrain of action for developmental states. We begin by explaining why the industrial policy strategies of earlier eras, in particular import substitution and export orientation, do not really fit the contemporary global economy. The key element is the role of vertical specialization (VS), defined as the import content of exports. Vertical specialization is generally high when production is organized in GVCs that span multiple countries, which means that intra-industry trade in intermediate goods becomes far more significant.

The expansion of GVCs is closely linked to the growth of intermediate goods trade, but the implications for developing economies depend on the kind of GVCs

² The WTO's "Made in the World Initiative" and Director-General Pascal Lamy's statement in *The Financial Times* in 2011 that "'Made in China' doesn't mean anything anymore" are indicative of the considerable interest in GVCs and vertical specialization at the major international organizations dealing with international trade and economic development. In addition to the publication of the joint WTO–OECD trade in value added data set (OECD, 2013), the issue has received attention of the WTO (Escalaith, Lindenberg and Miroudot, 2010), the OECD (Miroudot and Ragoussis, 2009), the World Bank (Cattaneo, Gereffi and Staritz, 2010), UNIDO (Sturgeon and Memedovic, 2011), the ILO (Milberg, 2004), and the US International Trade Commission (Dean, Fung and Wang, 2007), and this has greatly improved our understanding of the magnitudes and trends involved.

involved. In the producer-driven chains typical of capital- and technology-intensive industries like automobiles, electronics and pharmaceuticals, for example, multinational corporations (MNCs) controlled the entire production process, and intra-firm trade was predominant. Foreign direct investment (FDI) in these producer-driven chains was closely tied to the import substitution industrialization (ISI) policies that typified the 1960s and 1970s in Latin America and selected countries in Asia and Africa.

It was the emergence of buyer-driven GVCs organized initially by major retailers and global brands from the United States and Europe, however, that ushered in the shift from ISI to export-oriented industrialization (EOI) in East Asia and parts of Latin America, beginning in the mid-1960s and accelerating through the 1990s (Gereffi, 1995 and 2001). The distinguishing feature of these buyer-driven chains was that they were controlled by commercial capital (retailers and marketers such as Walmart, Nike and Starbucks), not industrial MNCs, and thus international subcontracting networks replaced FDI to a significant degree. This meant that production was not only carried out in developing economies, but most of the suppliers were domestically owned firms engaged in assembly production and later in full-package (called original equipment manufacturer, or OEM) production, which relied to a large degree on imported inputs. One of the major upgrading dynamics in buyer-driven chains was for developing countries to try to capture more value by making more inputs locally rather than importing them, and by moving up the value chain from production into design and branding, called ODM (own design manufacturing) and OBM (own brand manufacturing) in the literature (Gereffi, 1999).

As economic development has increasingly occurred within the context of GVCs, it has taken the form of upgrading into higher value added functions within a given chain or into new chains that generate more value added. In this chapter we refer to this as “vertically specialized industrialization”, or VSI. With VSI, the focus is less on the national economy and more on linkages to a set of value chain actors. There are both empirical and policy distinctions between EOI and VSI. With EOI, export-oriented economies such as Hong Kong (China), Singapore, the People’s Republic of China, and the Republic of Korea in East Asia, as well as Mexico and Central American economies in Latin America, based their growth on cultivating export ties with big buyers in Western markets. These “demand-responsive economies” focused on moving multiple consumer goods through GVCs and upgrading various products, processes and functions along the chain (Hamilton and Gereffi, 2009; Humphrey and Schmitz, 2002).

Whereas EOI was typically focused on exports to advanced industrial economies in the West, VSI relies to a much higher degree on more extensive ties with

the GVC supply base already established in developing economies. Export production that is based on VSI involves a high degree of South–South trade (the most significant source of China’s imports for its iPhone exports is the Republic of Korea (OECD, 2011)). Following the deep and prolonged recession of 2008–10, many countries are shifting their export markets from North to South in the global economy (Staritz, Gereffi and Cattaneo, 2011), and emerging economies are turning inward to highlight production for domestic markets, and using more regionally organized GVCs (Gereffi, forthcoming). While VSI has highlighted the import content of exports as an industrialization strategy, unlike EOI it can also be utilized to promote GVC policies geared to upgrading for regional and domestic markets.

In promoting the capacity and activity of domestic firms, government strategy must take into account the interests and power of lead firms in GVCs, international (and increasingly regional) networks of competing and cooperating supplier firms and international non-governmental organizations (NGOs). Because lead firms are often able to induce greater competition among suppliers in different countries, States may have less leverage than previously in spurring innovation and productivity growth among domestic (supplier) firms. The broad spread of GVCs implies an industrial policy focus on regulating links to the global economy – especially trade, FDI, and exchange rates – much more than was the case under ISI policies, which focused on building national capabilities, but also in a different way than had been the case in the EOI regimes, where the focus was final goods exports (Baldwin, 2011).

Accordingly, we place the issue of industrial policy into a general framework related to the internationalization of production and thus provide a categorization of the policy issues being framed by different sets of countries, including advanced industrial economies, large emerging economies, and smaller economies. Low-income and smaller countries generally seek to upgrade by reducing vertical specialization and moving into higher value added activities, or by capturing more value added through building more sophisticated functions in the chain. Middle-income countries face the difficulty of moving into more technologically sophisticated activities that might allow them to establish name recognition in existing products or establish new product lines and new brands. Failure to overcome this obstacle may, to some extent, account for the middle-income country “trap” (Jankowska, Nagengast and Perea, 2012; Ohno, 2009). High-income countries face the challenge that upgrading typically involves focusing on “core competences”, usually such functions as marketing, product development and finance. These are high value added functions with low employment elasticities. This is likely to be the result of the “de-industrialization” process that high-income

countries must go through³ (Rowthorn and Wells, 1987) but could, if poorly managed, lead to persistently high unemployment with the associated policy challenges of demand management and skills development.

Third, we propose a more comprehensive strategy of how ISI, EOI and VSI fit together as a new framework for talking about policy. This is highlighted in sections 5.3 and 5.4 of the chapter, where we show that the policies of countries toward traded goods change significantly when VSI is prominent. Whereas under ISI, developing countries tried to restrict imports and under EOI, developing economies focused on promoting exports, with VSI the main emphasis is on how to use traded intermediates to capture more value in GVCs. Since imported intermediate goods are used in export products under VSI, moving up GVCs implies first allowing needed intermediate goods imports to flow into the country. However, economic upgrading entails that countries also try to encourage the domestic production of these same items, often initially by foreign-owned companies and eventually by domestic firms.

Fourth, we look more closely at recent shifts occurring with the financial crisis of 2008 and the end of broad-based support for the Washington Consensus policies of neoliberalism. We argue that there has been a shift in the composition of global final demand, with buyer-driven GVCs led by firms in industrialized countries shrinking in importance, and with developing countries playing a larger role, in particular the large emerging markets of China and India. Related to this shift in the composition of final demand is a recognition of the relative efficiency of regional supply networks, in part the result of decades of production networks led by MNCs at the regional level, for example in East Asia, North America, Western and Eastern Europe. Changes in the conditions of global demand and supply are likely to frame the industrial policy choices as the process of VSI evolves.

We conclude the chapter with a summary of five industrial policy challenges posed by VSI in comparison with ISI and EOI. Not coincidentally, GVCs emerged in a period of continued deregulation and liberalization, as first noted by Feenstra (1998). Nonetheless, industrialization within the context of GVCs presents some of the old dilemmas of industrial policy and raises some new ones. For example, the rise of GVCs reflects the importance of market access as defined by “buyer” and “producer” lead firms, but the process of upgrading runs up against the same

³ This kind of de-industrialization occurs because productivity growth in the manufacturing sector is so rapid that, despite increasing output, employment in this sector is reduced, either absolutely or as a share of total employment. However, this does not automatically lead to unemployment, because with higher incomes, new jobs are created in the service sector on a scale sufficient to absorb any workers displaced from manufacturing. Paradoxically, this kind of de-industrialization is a symptom of economic success (Rowthorn and Wells, 1987, p. 5).

obstacles of market failure as identified in earlier eras of industrialization, having to do with incomplete capital markets or with the uncertainty of cost structures under a new production structure.⁴ At high levels of vertical specialization, trade protectionism can hurt domestic firms when their exports rely heavily on imported inputs. On the other hand, upgrading within GVCs requires some “defiance” of comparative advantage, typically encouraged by policy intervention (Chang, 2002).

5.2 Trade in intermediates, vertical specialization and upgrading

The twentieth century saw two waves of industrial policy. In the middle of the century, Latin American and South Asian developing countries adopted ISI policies in order to shift out of commodity production (characterized by competitive product and factor markets and a low income elasticity of global demand) and into production of manufactures. The logic, following the ideas of Prebisch (1954) and Singer (1960), was to boost the terms of trade to raise the income elasticity of demand for exports and to raise the productivity of domestic production.

ISI was always contentious because of its heavy reliance on the State. ISI regimes were criticized for discouraging innovation and encouraging rent-seeking (Shapiro, 2007). Nonetheless, ISI was a successful strategy for many countries for a number of decades, generating long periods of high growth in some cases.⁵

But with the Latin American debt crisis and the subsequent adoption of market-oriented structural adjustment, industrialization efforts shifted focus to global markets and specifically to export growth.⁶ EOI slowly became the accepted Latin American neoliberal development strategy (Dussel Peters, 2000).

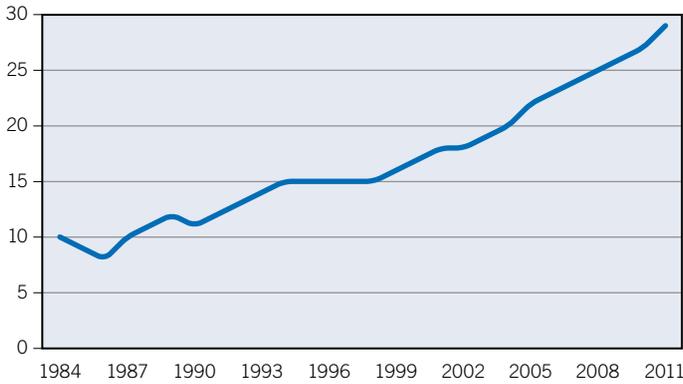
East Asian countries had moved to export-oriented growth earlier – in the late 1960s and 1970s – in part as a result of the emergence of buyer-led GVCs. These were large retailers and brand name firms that found they could lower costs and raise return on investment by outsourcing manufacturing to East Asia, beginning with Japan, but then moving to the Republic of Korea and Taiwan (China). These trade relations were generally not about intra-firm trade since they often did not involve FDI. Domestically owned supplier firms in East Asia were rapidly building capacity to manufacture and export. East Asian success involved strategic

⁴ On capital market failure, see Haque (2007). On costing information, see Rodrik (2004). For an overview, see Shapiro (2007).

⁵ See Bénétrix, O’Rourke and Williamson (2012).

⁶ See Dussel Peters (2000) and Jenkins (2012) for a review of the literature on structural adjustment in Latin America.

Figure 5.1 Developing countries' share of world exports of manufacturing goods, 1984–2010 (percentages)



Source: World Databank, World Bank Group.

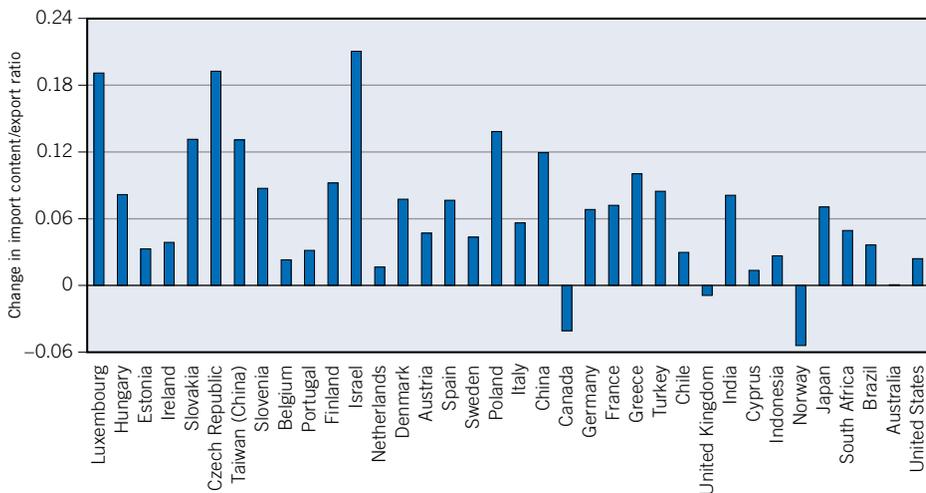
state interventions through the use of targeted credit and export subsidies, strict limits on inward FDI, and import protection to expand output, productivity, export competitiveness, exports and economic growth (Amsden, 1989; Evans, 1995; Wade, 1990). East Asian industrialization typically involved the strengthening of large, often conglomerate, domestic firms with close ties to domestic sources of finance and the developmental state.

Thus the new phase of industrial policy – with a GVC orientation – did not arrive suddenly with the crisis of 2008. It was instead the result of a long-term trend towards greater reliance by large corporations in industrialized countries on domestic suppliers in developing countries, that is, on the expansion of global production networks, and on the gradual development of manufacturing capacity among developing country supplier firms. As figure 5.1 shows, developing countries successfully expanded their share of world exports of manufactures over the past 25 years, just as Prebisch and Singer recommended.

Global production networks started to become prominent in trade and development in the 1990s, beginning with China's entry into the world trade and production system. And in the early 2000s, as the dotcom boom faltered, computer and consumer electronics companies began offshoring their production facilities to low-cost locations.⁷ The share of world exports from developing countries continued to grow throughout this period (figure 5.1), but their composition also started to change as imports of intermediates increased steadily in the 1990s and accelerated in the 2000s, accounting for over 50 per cent of world trade for

⁷ Friedman (2005) gives some anecdotal support.

Figure 5.2 Change in vertical specialization, 1995–2005



Source: OECD STAN Database.

that entire period, according to data from the UN Comtrade database in Broad Economic Categories.

As Sturgeon and Memedovic (2011) note, intermediates’ share of world trade actually fell slightly in the 2000s, but that slight decline (leaving the share still above 50 per cent) obscures some important details. First, the share of generic (commodity-type) products in intermediates fell as more specialized intermediate goods began to account for a growing share of trade in intermediates. Second, the share of manufactured intermediates trade from developing countries increased significantly over this period, rising to 35.2 per cent in 2006 from 25.5 per cent in 1992 (*ibid.*, p. 14). Third, China is not the only country to experience a significant increase in exports of intermediate goods. China is the dominant developing country for exports of manufactured intermediate goods, with 8.6 per cent of the world total in 2006. The next largest export shares are derived from Mexico (2.4 per cent), Malaysia (1.7 per cent), India (1.3 per cent), Brazil (1.0 per cent) and Turkey (0.9 per cent) (Miroudot and Ragoussis, 2009).

Vertical specialization allows a more precise measure of a country’s involvement in a global production network. A sector in a given country that does only assembly, using all imported parts, will have a very high level of vertical specialization. A sector where most inputs are produced domestically will have a very low level of vertical specialization. Meng, Yamano and Webb (2011) show that at the national level (a weighted average of vertical specialization across manufacturing

sectors within a country), almost every country in their sample experienced a rise in vertical specialization between 1995 and 2005 (see figure 5.2). On the surface, this increase is neither a good thing nor a bad thing. The question is how it has altered state strategies for economic development, and this is linked to the issue of upgrading.

5.2.1 Upgrading and vertically specialized industrialization

The data on vertical specialization give a sense of the growth and size of GVCs, but what exactly is the relation between vertical specialization and economic development? Here we must consider the issue of upgrading in GVCs. Economic upgrading – often referred to as “industrial upgrading” or simply “upgrading” – is defined as the ability of producers “to make better products, to make products more efficiently, or to move into more skilled activities” (Pietrobelli and Rabellotti, 2006, p. 1). In the terminology of GVCs, upgrading is defined as “the possibility for (developing country) producers to move up the value chain, either by shifting to more rewarding functional positions or by making products that have more value added invested in them and that can provide better returns to producers” (Gibbon and Ponte, 2005, pp. 87–88). The focus of most studies of upgrading is on the degree of technological sophistication of production and especially on value added.

Humphrey (2004) and Humphrey and Schmitz (2002) identify four distinct types of economic upgrading: process upgrading, product upgrading, functional upgrading and intersectoral (or chain) upgrading. Process upgrading is productivity growth in existing activities in the value chain. Product upgrading is the move into higher value added products within the same value chain. Most case study work has been on functional upgrading, that is, the move into more technologically sophisticated or integrated aspects of a given production process. Bair and Gereffi (2001), for example, show how Mexican suppliers to US lead firms over time moved into some higher-valued aspects of the production of denim jeans. While in 1993 Mexican firms were involved solely in “assembly” (sewing), over time they adopted a variety of other functions, including the production of textiles, cutting, laundry and finishing and distribution. Nonetheless, the important functions of design and product development, finance, marketing and retailing remain solely the function of US firms.

However, economic upgrading is not always the most appropriate strategy for long-term sustainable growth. One identified path of upgrading from integrated or “full-package” production activities (also known as original equipment

manufacturing, or OEM) to original design manufacturing (ODM) and original brand name manufacturing (OBM) has been very beneficial for some firms in GVCs, such as selected East Asian apparel companies (Gereffi, 1999). However, it cannot work for everyone because risk and competition are much higher in the more advanced segments of GVCs. Some firms choose to remain in their more secure niche of OEM production without attempting to further upgrade. Thus, for those firms, economic “downgrading” is a business strategy. In Taiwan’s computer industry, for example, Acer decided it could upgrade by developing its own brand of computers and was successful doing so; its competitor, Mitac, initially opted to pursue an OBM strategy as well, but soon returned to OEM where the profits were lower but more secure (Gereffi, 1995, pp. 131–132).

5.2.2 VSI in theory and practice

Entry into a new industry and its export markets is often only possible by providing assembly of imported parts. This has been the typical pattern in the apparel, electronics and motor vehicles sectors. In these cases the early stages of VSI will be associated with high levels of vertical specialization and generally low value added in exports. Export processing zones promote such entry and export market access, but they also pose considerable challenges for economic upgrading.

Upgrading in GVCs is inherently complicated because it requires that a firm or group of firms move into higher value added aspects of the chain (thus capturing value added from others in the chain), and at the same time remain as active suppliers in the chain. That is, firms in a particular country will need to reduce the degree of vertical specialization and raise the scope or value of the inputs produced. Successful industrialization will thus correspond with declining vertical specialization. This was the experience of the denim jeans producers discussed above, who took on new aspects of the production process and lowered the levels of vertical specialization in the process.

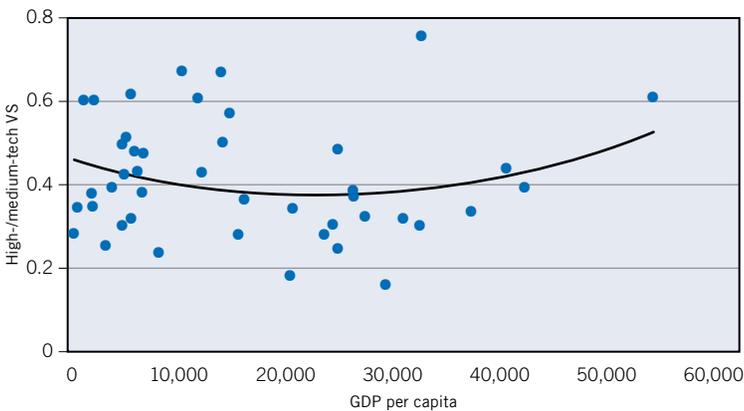
The garment industry in Eastern and Central Europe (ECE) provides an excellent example of how upgrading and downgrading trajectories have been intertwined. In the early 1980s, some of the ECE economies began to carry out outward-processing trade (OPT) for non-Soviet markets in Western Europe, primarily with German buyers and contractors. Given their legacy as established industrial economies, the emphasis on apparel exports might be considered economic downgrading. Within apparel, more advanced economies like Slovakia were able to move more quickly from OPT to full-package export production (OEM), and eventually

to ODM and OBM, while less developed economies such as Bulgaria had far more difficulty moving beyond basic OPT contracting. However, in ECE economies, it was often easier to develop ODM and OBM upgrading strategies for the domestic retail market than for more discriminating fast-fashion markets in Western Europe (Evgeniev and Gereffi, 2008; Pickles et al., 2006).

Lead firms in industrialized countries operate at a high level of vertical specialization as they increasingly focus on aspects of production that involve core competence and add high value (such as pre- and post-manufacturing services, including R&D, design and marketing) and outsource the rest, thereby raising the import content of exports in the process. The famous example of Apple Inc. shows this pattern, as lower value added activities – largely production – have been outsourced to East Asia, while the US parent firm continues to undertake R&D, product design, marketing and finance activities from their US headquarters. Pressure on such lead firms to raise shareholder value encourages this model of rising vertical specialization (Milberg and Winkler, 2013, Ch. 6).

The picture that emerges is a U-shape relation between vertical specialization and value added per worker. Figure 5.3 is a scatterplot of the level of vertical specialization in medium-technology and high-technology industries in each of 45 countries and the per capita income in those countries. In the early phase of industrialization, vertical specialization tends to be high and falling. High-income economies will have high and rising vertical specialization. Countries in the middle may have the hardest task. Having reduced vertical specialization from

Figure 5.3 Vertical specialization and GDP per capita (in US\$), 45 countries, 2005



Note: Vertical specialization (VS) is the import content of exports in high-tech and medium-tech manufactures.

Source: Authors' calculations based on VS data reported in the OECD STAN Database.

early stages of assembly production, they must now innovate to create increases in value added per worker. Figure 5.3 does not represent proof of the U-shape relation between vertical specialization and industrialization. We present it here as a conceptual framework for thinking about the global consequences of GVCs. Future research will be needed to test and refine the hypothesis.

China has emerged as a dominant centre of global value chains in Asia. China's enormous success in the era of VSI is built on a variety of factors, including its huge domestic market and strategic use of industrial policies (see the chapter in this volume by Lo and Wu) which has made that country unique among emerging economies in terms of placing conditions on FDI, including (until WTO accession) majority domestic ownership in joint ventures and technology-sharing requirements. A remarkable feature of China's success is the size and geographical clustering of its electronics and apparel production (Appelbaum, 2008; Gereffi, 2009). The clustering of producers gives advantages from easier access to skills, equipment, lead firms and logistics networks.

The role of the State in China's successful record of rapid economic growth and poverty reduction has been closer to that of Japan and the Republic of Korea than any Latin American experience. Chinese development has some unique features beyond the obvious one of scale. China has had low unit costs and it has developed enormous flexibility and speed of response as a supplier within GVCs, based on careful regulation of its labour force and especially of rural–urban migration. Regional and municipal funding of infrastructure and enterprise development has encouraged the growth of industrial clusters with the capacity for large-scale, modular production. Foreign investment and foreign capital joint ventures with local enterprise are encouraged under tightly controlled conditions, including targeted use of Special Economic Zones that were monitored and evaluated and continued only when successful for the development of domestic industry. The undervaluation of the Chinese currency has served as a major subsidy to exporters (Brandt, Rawsky and Lin, 2005).

Although China has been the greatest success story in the era of VSI, VSI is not a strictly Chinese phenomenon. In Mexico, policies to attract foreign investment were initially successful, but have had only limited longer-term success in generating upgrading. There have been recurrent concerns about the inability of export processing zones or assembly-oriented maquila production to generate backward linkages to local suppliers, since Mexico has been attractive to a large degree because of its low labour costs (Dussel Peters, 2000). However, faced with the need to upgrade in order to confront Chinese competition, Mexico's maquiladoras have attempted to move up the value chain by adding new capabilities as the focus of assembly production shifted from relatively low-technology industries

like apparel and toys to higher-technology production complexes oriented to automobiles, electronics and aerospace, including the coordination of research and development and other headquarters functions (Carrillo and Lara, 2005). Costa Rica has also made explicit efforts to promote VSI by negotiating Preferential Trade Agreements (PTAs) with the United States, the European Union and China that increased the proportion of the country's total exports that are linked to GVCs involving FDI to 43 per cent (Monge-Ariño, 2011).

VSI presents challenges for policy in middle-income and high-income countries as well. Middle-income countries face a problem of having achieved a threshold level of decline in vertical specialization relative to other developing countries, but a further move to increase incomes may require innovation and the possibility of raising levels of vertical specialization in the process of outsourcing lower value added work. The difficulty of switching to this more innovative stage may account as one of the important factors for the “middle-income trap” (Jankowska, Nagengast and Perea, 2012; Ohno, 2009).

Finally, vertical specialization in the industrialized countries appears to have led to a decline in the employment elasticity of innovation. The most innovative US companies generate little employment in the United States, where employment is dominated by the low-wage retail sector. For example, according to Davis (2012), total US employment in 2012 in six of the most innovative firms – Apple (60,400), Microsoft (90,000), Facebook.com (3,000), Cisco (71,825), Google (32,467) and Amazon.com (33,700) – was 291,392. This is a tiny number of jobs, less than the employment of a single, mid-sized supermarket chain, Kroger (338,000), and about one-eighth of Walmart's total of 2.2 million employees in 2011.

5.2.3 “Social upgrading” and VSI

An additional consideration in the analysis is how economic upgrading is translated into social outcomes regarding employment, wages, labour standards and environmental standards. Economic theory (e.g. the neoclassical theory of income distribution) assumes that wages will rise with increases in productivity, and thus that the connection between economic and social upgrading is automatic. And much of the case study literature on industrial upgrading focuses on “success stories” in which economic and social upgrading coincide. A recent empirical study finds that this happy coincidence is not generally the case. Bernhardt and Milberg (2013) define economic upgrading in terms of export market share and unit value growth and social upgrading in terms of employment and real wages. Using detailed sectoral data on apparel, horticulture, mobile phones and tourist

services, they find that economic upgrading in GVCs corresponds with social upgrading in only 16 of 30 cases. They conclude that economic upgrading is a necessary but not sufficient condition for social upgrading.

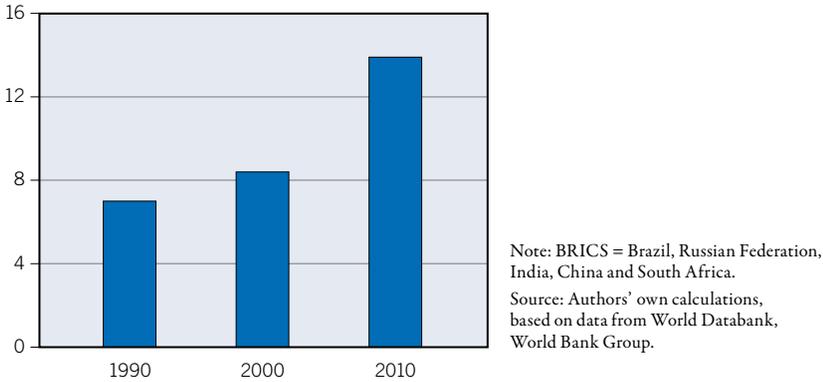
The GVC literature has highlighted the role played by “private governance” mechanisms to address these issues (Mayer and Gereffi, 2010). Examples of “private governance” include voluntary codes of conduct by lead firms in GVCs to regulate labour conditions under in-house corporate social responsibility campaigns or by hired third-party monitoring groups like the Fair Labor Association (FLA) and the Workers Rights Consortium. The role of the FLA in brokering complex agreements between Foxconn and its workers, Apple Inc. and the Chinese authorities seem like a success story for private governance. But there is considerable scepticism about the potential effectiveness of these private efforts. In response, a number of researchers have focused on the role of the State in upholding standards – thus another role for industrial policy. In particular, Piore and Schrank (2008 and 2006) found that labour monitoring by national-level government monitors has been very successful in raising labour standards in a variety of countries in Latin America and the Caribbean.

5.3 Industrial policy after the Washington Consensus

The crisis of 2008–09 made it apparent that the Washington Consensus had run its course, implying the end of the traditional EOI model discussed in the previous section. Economic growth under EOI was limited by the constraint of new or expanding export markets and the ability of countries to enter a niche area that had above-average growth potential and allowed space for upgrading. There was intense competition for these markets, as many countries and firms entered.

EOI was disrupted by a number of forces, ending with the devastating supply shock of the financial crisis in 2008 and the ensuing stagnation in the United States and Europe. The crisis poses a significant challenge to the buyer-driven nature of the export-oriented growth model. Demand (and certainly demand growth) in end markets has shifted from the United States and Europe to large emerging economies of India, China and Brazil. The share of world gross domestic product of the BRICS countries (Brazil, Russian Federation, India, China and South Africa) doubled between 2000 and 2010, reaching 16 per cent by 2010 (figure 5.4). At the same time, the productive capacities of these large emerging economies began to reach formidable heights in terms of technological sophistication and economies of scale.

Figure 5.4 BRICS share in world real gross domestic product, 1990–2010 (percentage)



Other political and economic factors at work over the last decade have also played a role in challenging the buyer-driven EOI model. These include:

1. The declining role of the World Bank, for political and economic reasons. On the political front, the policies of the Washington Consensus were increasingly viewed as ineffective in promoting development for many countries but also in exposing countries to external shocks, particularly those linked to short-term capital flows. On the economic front, the World Bank shrank in its relative importance in providing development assistance as large private donors, national development banks, government Aid for Trade and sovereign wealth funds expanded in their power and scope.
2. The declining significance of the WTO. With the failure of the Doha development round, the WTO has narrowed its focus to more technical issues of trade facilitation. In this political context, countries increasingly began to see regional trade liberalization as a tool for building policy space regionally, when before such space was viewed as limited to an internal market.
3. The expanded productive capacity of a number of emerging markets, including but not limited to China, Brazil and India. These countries became major participants in world production of manufactures and services and greatly expanded their presence in world trade in commodities and food products.
4. The financialization of the large non-financial corporations in the industrialized countries, firms that had traditionally been lead firms in GVCs. Financialization supported changes on the side of production, with management increasingly seeking to focus on “core competences” and to outsource the

remainder of the operation and shorten the time horizon for evaluating firm success. Maximization of shareholder value over the short term became the common objective of firm behaviour.

5. Expanded capability in emerging markets, leading to the increased capacity and bargaining power of large emerging market suppliers. Beginning in the early 2000s, firms such as Li & Fung and Foxconn gained more ability to set terms of the engagement with lead firms. This increase in supplier power has also been driven by other factors, including the growth of final demand in emerging economies themselves, the removal of international regulations that contributed to the fragmentation of production (e.g. the Multi-Fibre Arrangement in apparel), and technological trends that make the production of modular subassemblies more feasible in key industries, like electronics, aircraft, and autos.

As a result, the political power of the emerging market governments expanded, accompanied by the diminished role for the G8 and international organizations (such as the Washington institutions and the WTO) that have been dominated by advanced economies. Together, these factors have resulted in a decline in the buyer-driven logic of EOI and given rise to a new phase whose main political feature is regional industrial policy.

5.3.1 Regional integration with BRICS as the regional hubs

In the post-Washington Consensus world, the bigger economies are shifting their development strategies to regional production networks and to regional industrial policy. Industrial policy today is centered in emerging economies, especially the BRICS and their surrounding regions.⁸ China's upgrading strategy is on a global scale because it has become a large buyer of raw materials (Kaplinsky, 2010). China's emergence as a major global buyer means that South–South trade will continue to expand as a share of world trade. It also means that the upgrading objective will focus more on the processing of raw materials. To date, China has demanded unprocessed raw materials from the rest of the world, insisting on doing the processing itself. This establishes a clear space for upgrading in the developing world outside of China, with the aim capturing more of the value added from processing raw materials.

⁸ Jim O'Neill, the Goldman Sachs executive who coined the term "BRIC" in the early 1990s (which grew to include South Africa in 2010), now argues that a much larger number of "growth economies" (BRICS plus 11) fall into this category at present, including the Republic of Korea, Mexico, Turkey and Indonesia, among others (O'Neill, 2011).

The current South African development policy emphasizes regional integration as the basis for industrial upgrading, focused on mining, agriculture and pharmaceuticals (Davies, 2012). South Africa has announced a strategy of processing minerals shipped to China. The latter would prefer to do the processing itself. But for South Africa, the goal of upgrading will involve skills development and higher wages along with higher profits. Industrial policy, in this case, is aimed at shifting production from China to Africa. The regional dimension of South Africa's industrial policy is based on the view that a larger regional entity will have access to more minerals and raw materials, more productive and processing capacity and larger markets – all aimed at promoting upgrading.

Regional integration strategies, including PTAs but also economic cooperation agreements and production networks led by transnational corporations (TNCs), will increasingly be based on supply-side strategies, rather than the traditional demand-side considerations that usually justify regional integration. The logic of the supply side is different from the traditional demand-side logic of integration, which highlights expanding market size, market access and the possibility of capturing scale economies by serving this larger market. China, despite its global reach in terms of exports and imports, has long recognized the importance of the East Asian regional production network. Latin America is following suit through Mercosur and other regional initiatives. As noted above, South Africa is also shifting clearly to a southern African regional market strategy.

Brazil's development strategy has both similarities and distinctive elements compared to South Africa and China. Although Brazil belongs to Mercosur, a regional trade agreement that includes Argentina, Uruguay, Paraguay and Venezuela, this does not reflect a pan-Latin America vision analogous to that of South Africa, nor does it reflect the economic efficiencies of the less formal East Asian regional division of labour of which China is a part. Like South Africa in the Southern African Development Community (SADC), Brazil dominates Mercosur by its size and level of economic development, and thus enjoys relatively few supply-side or demand-side benefits of regional integration. However, Brazil is very concerned about the so-called "primarization" of its exports (Jenkins, 2012), whereby it emphasizes primary product exports with relatively low levels of processing.

A major challenge for Brazil is how to increase the technological content of its exports in order to upgrade into higher value activities in both the primary product and manufacturing sectors. Its largest trading partner, China, accounted for about 15 per cent of Brazil's exports and imports in 2010. From a GVC perspective, what is particularly notable is that the pattern of Brazil's exports to China is skewed to products (both primary commodities and manufactured goods) with a very low level of processing. The soybean value chain is a good example.

About 95 per cent of Brazil's soybean exports to China in 2009 were unprocessed beans. In contrast, there were virtually no exports of soybean meal, flour or oil to China. In order to pursue its strategy of promoting the Chinese soybean processing industry, China imposed a 9 per cent tariff on soybean oil imports, while the tariff on unprocessed soybean imports was only 3 per cent. More processed imported soybean products also paid a higher value added tax rate in China than unprocessed beans. This same protectionist policy of tariff and non-tariff barriers imposed by the Chinese government to protect its domestic producers was applied to a range of other primary and processed intermediate products from Brazil, including leather, iron and steel, and pulp and paper (Jenkins, 2012, pp. 28–29).

On the import side, Brazil has also been influenced by China's structure of international trade. In 1996, low-technology products accounted for 40 per cent of Brazil's imports from China, and high-technology products for 25 per cent. By 2009 the pattern was nearly reversed: high-tech products were 41.4 per cent of the total, and low-tech products 20.8 per cent. If we look at this trend in terms of the end use of imports, consumer goods imports from China to Brazil fell from 44 per cent to 16 per cent between 1996 and 2009, while the imports of capital goods doubled, from 12 per cent to 25 per cent, and parts for capital goods rose from 12 per cent to 25 per cent (*ibid.*, pp. 29–31). Thus, Brazil has been subordinated to occupy the lowest rungs of the value added ladder in its trade with China in recent decades, which poses long-term structural imbalances for Brazil if the situation does not change.

The regional focus has also gained support from smaller countries, which see regional connections as crucial to complementing their own capacities. Small countries can overcome the ephemeral nature of PTAs with the use of regional trade agreements that are supported by regional links among TNCs. Costa Rica, for example, has clear supply-side constraints related to productive capacity and skills and is looking to join forces with Mexico to enhance skills development. Nicaragua, whose apparel firms have been buying textiles from East Asia, is consciously pursuing supply arrangements with firms in Honduras and Guatemala. In sum, TNC links matter for political and economic integration in a way that was not the case previously.

This is not entirely a new situation: ASEAN had been driven in part by Toyota's search for a secure regional production network, and auto parts were an important consideration of the automotive firms that promoted the NAFTA. Today, China seeks likewise to secure its regional production system; South Africa has announced a regional integration and industrial policy to promote upgrading in raw materials production; and Brazil and its Mercosur neighbours are undertaking a broadening of that customs union to build supply-side capacity regionally.

5.3.2 Regional development strategies and new forms of industrial policies

The appeal of a region-based development strategy is not just about building a demand base or reducing transportation costs, although both of these do figure in. The logic of a regional industrial policy comes also from the legacy of regional trade agreements and existing TNC production networks. We are still in a world organized by supply chains, but where those production networks face a different set of constraints, the logic of regionalism comes to the forefront of development policy.

Regional supply chains are anchored in a new set of policies that go beyond trade liberalization toward a regional industrial policy. The private sector has a more important role than in previous regionalization efforts and with a broader set of industries involved, ranging from minerals to agriculture to apparel to mobile phones.

Industrial policy in this context is not just a return to the ISI policies of the 1960s and 1970s, but rather a new form that recognizes the elements in play, including new end markets, new products (consumer electronics, engineering services, Internet services and other business services) with new skills requirements and knowledge bases, and new sources of credit and aid. This form of regional industrial policy also accounts for the logic of GVCs, and in particular the shift in the structure of GVCs toward more regionally based systems that have emerged as a result of the factors listed above.

So what will the regional industrial policies of the post-Washington Consensus era look like? They will be driven by the recognition that regional supply chains are anchored in a different set of realities. Trade policy alone is not an adequate industrial policy to guarantee growth and development. Industrial policy will need to promote business directly and to build skills and capacity in response to private sector needs.

With the extensive participation of developing countries in these GVCs, industrialization strategy has changed, and “upgrading” within GVCs plays a greater role in achieving the goal of development policy (Baldwin, 2011; Milberg and Winkler, 2011). China’s manufacturing export boom was driven by careful connection with foreign multinational corporations, and especially production for western-branded goods such as apparel, footwear and toys, as discussed above. These were often buyer-led GVCs, in that the lead firm was a large foreign retail firm with brand identity and enormous power over competing suppliers globally. Although India’s IT services expansion was to a lesser extent the result of government policy than was China’s manufacturing success, it was nonetheless geared to the provision of business services “tasks” as part of GVCs in business and finance.

Export competitiveness remains a crucial feature of this phase, but exports are now the result of participation in global production networks and thus often depend on imports from other parts of the network. Thus vertical specialization can be high in a given sector and country in the initial stages of industrialization.

5.4 Industrial policy and the challenges of VSI

Unlike previous waves of thinking about industrial policy, in the GVC framework state policies are only one determinant of industrialization and social outcomes. Business strategies are the key driver of upgrading for both foreign lead firms and domestic supplier firms. Industrial policy under VSI must look at lead firms and their strategies, as well as States (and non-State actors, such as NGOs) in creating policies, strategies and campaigns that influence economic and social upgrading outcomes. Developing country supplier firms must connect closely to, and bargain with, diverse sets of lead firms. This contrasts sharply with ISI, EOI and state-led “late industrialization” strategies. VSI thus requires the State to find a complicated balance from the perspective of policy. Rather than present a full-blown theory of industrial policy in VSI, we identify six challenges that GVCs and VSI pose for industrial policy that were not present in the era of EOI.

(1) Dis-integration of industry

The first challenge under VSI is to shift from the traditional industrial policy stance aimed at developing “industry”, where “industry” was conceived as a fully integrated production structure (e.g. Chenery and Watanabe, 1955). With GVCs, competitive improvements come not with the development of the fully integrated scope of activities in an industry, but by moving into higher-valued tasks associated with the industry. For example, subsidies aimed at encouraging the development of a vertically integrated industry might be extremely inefficient. Protective trade policies, which traditionally could be justified along infant industry lines to build capacity and learning-by-doing, might backfire in the context of GVCs if imports are crucial for export success. According to the OECD: “It can be argued that GVCs require more fine-grained policies given that GVCs impact economies on a much more disaggregated level. Different activities/stages/tasks in the production process are determined by difference factors; hence, for government policies to be effective, they may have to be targeted more at specific activities” (OECD, 2011, p. 35).

GVCs present a new set of externalities that result from coordination of networks, and these spillovers require state support, both for coordination to succeed and spill across sectors (Schrank and Whitford, 2009) and to reveal “the potential rate of return on new activities” (Rodrik, 2008). Experimentation and simultaneous “coaxing” of both upstream and downstream activity are key (ibid.). Chu (2011), for example, describes how China’s automobile industrial policy has been built on subsidies for learning and experimentation.

The corollary to this first challenge is the risk of “thin” industrialization, whereby a country enters an industry, but only in its low-skill aspects, such as assembly of electronics products and call centres in the IT sector, without the ability to “upgrade” within that GVC (see Dussel Peters, 2008; and Gallagher and Zarsky, 2007, on Mexico). This is a new form of the “low-level equilibrium traps” identified in earlier eras when countries were stuck producing low value added final goods. As in previous times, such traps require state response. For Chang (in Lin and Chang, 2009), what is required is policy that “defies” comparative advantage. Similarly, Shapiro (2007) writes that countries “need more than a market signal to displace the equilibrium trap”.

(2) Export promotion with liberalization of intermediate imports

The second challenge relates to the trade policy dimension of industrial policy. While traditional industrial policy may have included protection of domestic industry with an infant industry logic of import protection, competitive success under GVCs requires easy and cheap access to imports, in particular for necessary intermediates.

(3) Coordination with lead and supplier firms

The third challenge relates to the role of TNCs. Traditional industrial policy sought to build domestic capacity in order to eventually compete with leading TNCs. Since GVCs are governed by TNCs, industrial policy must relate to these lead firms in a very different way. The globalization of production has made industrialization today different from the final goods, export-led process of just 20 years ago. Now the issue facing firms and governments is less that of finding new, more capital-intensive goods to sell to consumers in foreign countries. Instead, it requires moving up through the chain of production of a particular commodity or set of commodities into higher value added activities.

This involves raising productivity and skills through mechanization and the introduction of new technologies. It also requires fitting into existing corporate strategies and connecting closely with a diverse set of lead firms.

At the same time, the capture of value within GVCs depends on the constellation of power among lead firms, supplier firms and workers. Since traditional trade policy was based on the presumption that industry value added accrued entirely to domestic actors, the issue of power within the production structure was less crucial to the analysis of national welfare.

(4) Promoting regional production networks

We have seen that GVCs have become increasingly regionalized and that the logic of regionalization is no longer simply the traditional goal of market expansion, but is now also based on GVCs, especially found in the electronics sector in East Asia and the apparel sector in southern Africa (Morris, Staritz and Barnes, 2011).

(5) Institutional support for social upgrading

The fifth challenge has to do with the translation of industrial upgrading within GVCs into sustainable domestic social gains, including employment and wage growth and improved labour and environmental standards. A number of recent papers have questioned the extent to which industrial upgrading necessarily brings such “social upgrading”. In exploring the conditions under which joint economic and social upgrading happens, value chain analysis highlights the importance of multi-stakeholder initiatives and linkages between commercial firms, workers and small-scale producers, which have facilitated joint upgrading in cases as diverse as cocoa farmers in West Africa, wage increases for apparel workers in Bangladesh, improved working conditions and wages in Foxconn factories in China, and the localization of tourism benefits in China (Barrientos, Gereffi and Rossi, 2011).

(6) Measuring value added in trade

The importance of vertical specialization means that value added in trade will not be the same as trade values measured by standard statistics. The large discrepancy between the two has been well documented in some cases (e.g. Linden, Kraemer and Dedrick, 2007; Xing and Detert, 2010, on Apple consumer electronics

products). The OECD (2011) reports that on a value added basis, the US–China bilateral trade imbalance is reduced by slightly more than half. This may have important implications for bilateral and sectoral strategy, since standard trade value statistics can give a distorted picture.

5.5 Conclusions

Rodrik argues that the theoretical case for industrial policy is overwhelming given the omnipresence of externalities and market failures, but that the empirical evidence is less clear. Even China, with its explosive economic growth and rapid export expansion, could be said to have adopted an experimental approach rather than a systematic industrial policy (Rodrik, 2008). In this chapter we have argued that the case for industrial policy has not diminished but rather has changed as a result of the globalization of production.

In a world absent of GVCs, policies normally operate in the space of trade protection or liberalization given the policy objectives. Policies as such mostly deal with how to affect the trade flows between home countries and trading partners (e.g. imports protection and/or export expansion). However, in a world where the GVC is the norm, exports and imports are entangled. Some exports might contain high import content, and some imports might contain high export content. Hence, the policies that affect exports and imports are no longer going to be as effective as they should be in a world absent of GVCs. Instead, policies should be designed to, in a sense, manage GVCs. As soon as we talk about managing GVCs, we are operating in the space of industrial organization rather than macro trade policies. For example, for some of the developing countries, the challenge is no longer about trade protection or liberalization; instead, it is about managing the relation between foreign lead firms and domestic low-value-adding firms for the purpose of industrial upgrading and capturing more value added in the value chain.

What is new about VSI is not the role of TNCs, so the question for the developmental state under VSI is not just about the role of TNCs in economic development. VSI is different from TNC-led development because of its reliance not on TNCs but on developing country manufacturing firms. This has created a qualitative change in world production and trade, and altered the menu of strategies for developing countries, fundamentally shifting development away from the strict TNC-led model of much of the EOI period and shifting trade more into intermediates. These new trade channels were not necessarily TNC-driven trade, but simply intermediates trade.

The role of the developmental state is different under VSI than in the previous eras of ISI and EOI. We presented a conceptual framework regarding the relation between vertical specialization and the level of economic development, with development from high levels of VS requiring upgrading and a reduction in VS. Development beyond this point has often involved shedding activities to focus on core competence. Given the challenges of VSI in both developed and developing countries, it would appear that the State will once again play an important role in promoting economic development. This role, we argued, acknowledges the legacy of GVC development over the past 20 or more years, but also the recent indications of shifting end markets and changing institutions of global governance. This combination of factors means that industrial policy in the era of VSI will have some new features and respond to some new challenges. Efforts at regional integration with the BRICS countries as the regional hubs are already well under way.

References

- Amsden, A. 1989. *Asia's next giant: South Korea and late industrialization* (Oxford, Oxford University Press).
- Appelbaum, R. 2008. "Giant transnational contractors in East Asia: Emergent trends in global supply chains", in *Competition & Change*, Vol. 12, No. 1, pp. 69–87.
- Bair, J.; Gereffi, G. 2001. "Local clusters in global value chains: The causes and consequences of export dynamism in Torreon's blue jeans industry", in *World Development*, Vol. 29, No. 11, pp. 1885–1993.
- Baldwin, R. 2011. *Trade and industrialization after globalisation's 2nd unbundling: How building and joining a supply chain are different and why it matters*, CEPR Discussion Papers 8768 (London, Centre for Economic Policy Research).
- Barrientos, S.; Gereffi, G.; Rossi, A. 2011. "Economic and social upgrading in global production networks: A new paradigm for a changing world", in *International Labour Review*, Vol. 150, No. 3, pp. 319–340.
- Bénétrix, A.S.; O'Rourke, K.H.; Williamson, J.G. 2012. *The spread of manufacturing to the periphery 1870–2007: Eight stylized facts*, NBER Working Paper No. 18221 (Cambridge, MA, National Bureau of Economic Research).
- Bernhardt, T.; Milberg, W. 2013. "Does industrial upgrading generate employment and wage gains?", in A. Bardhan, C. Kroll and D. Jaffee (eds): *The Oxford Handbook of Offshoring and Global Employment* (Oxford, Oxford University Press).
- Brandt, L.; Rawski, T.; Lin, G. 2005. *China's economy: Retrospect and prospect* (Washington, DC, Woodrow Wilson International Institute for Scholars).
- Carrillo, J.; Lara, A. 2005. "Mexican maquiladoras: New capabilities of coordination and the emergence of new generations of companies", in *Innovation: Management, Policy & Practice*, Vol. 7, No. 2, pp. 256–273.
- Cattaneo, O.; Gereffi, G.; Staritz, C. 2010. *Global value chains in a postcrisis world* (Washington, DC, World Bank).

- Chang, H.-J. 2002. *Kicking away the ladder: Development strategy in historical perspective* (London, Anthem).
- Chenery, W.; Watanabe, T. 1955. "International comparisons of the structure of production", in *Econometrica*, Vol. 26, No. 4, pp. 487–521.
- Chu, W. 2011. "How the Chinese government promoted a global automobile industry", in *Industrial and Corporate Change*, Vol. 20, No. 5, pp. 1235–1276.
- Davies, R. 2012. *Keynote address of Minister of Trade and Industry*, South Africa, presented at the Capturing the Gains Global Summit, Cape Town, 3–5 Dec. Available at: http://www.capturingthegains.org/pdf/Rob_Davies_Keynote_CtG_Summit_Dec_2012.pdf [accessed 11 Oct. 2013].
- Davis, G. 2012. Correspondence with the authors, University of Michigan School of Business.
- Dean, J.; Fung, K.; Wang, Z. 2007. *Measuring the vertical specialization in Chinese trade*. USITC Working Paper No. 2007-01-A (Washington, DC, USITC).
- Dussel Peters, E. 2000. *Polarizing Mexico: The impact of liberalization strategy* (Boulder, CO, Lynne Rienner).
- . 2008. "GCCs and development: A conceptual and empirical review", in *Competition & Change*, Vol. 12, No. 1, pp. 11–27.
- Escaith, H.; Lindenberg, N.; Miroudot, S. 2010. *International supply chains and trade elasticity in times of global crisis*, WTO Staff Working Paper ERSD-2010-8 (Geneva, WTO).
- Evans, P. 1995. *Embedded autonomy: State and industrial transformation* (Princeton, Princeton University Press).
- Evgeniev, E.; Gereffi, G. 2008. "Textile and apparel firms in Turkey and Bulgaria: Exports, local upgrading and dependency", in *Economic Studies*, Vol. 17, No. 3, pp. 148–179.
- Feenstra, R. 1998. "Integration of trade and disintegration of production in the global economy", in *Journal of Economic Perspectives*, Vol. 12, No. 4, pp. 31–50.
- Friedman, T. 2005. *The world is flat: A brief history of the twenty-first century* (New York, Farrar, Straus and Giroux).
- Gallagher, K.; Zarsky, L. 2007. *The enclave economy: foreign investment and sustainable development in Mexico's Silicon Valley* (Cambridge, MA, MIT Press).
- Gereffi, G. 1995. "Global production systems and Third World development", in B. Stallings (ed.): *Global change, regional response: The new international context of development* (New York, Cambridge University Press).
- . 1999. "International trade and industrial upgrading in the apparel commodity chain", in *Journal of International Economics*, Vol. 48, No. 1, pp. 37–70.
- . 2001. "Beyond the producer-driven/buyer-driven dichotomy: The evolution of global value chains in the Internet era", in *IDS Bulletin*, Vol. 32, No. 3, pp. 30–40.
- . 2005. "The global economy: Organization, governance and development", in N. Smelser and R. Swedberg (eds): *Handbook of economic sociology*, 2nd ed. (Princeton, NJ, Princeton University Press and Russell Sage Foundation).
- . 2009. "Development models and industrial upgrading in China and Mexico", in *European Sociological Review*, Vol. 25, No. 1, pp. 37–51.

- . Forthcoming. “Global value chains in a post-Washington Consensus world: Shifting governance structures, trade patterns and development prospects”, in *Review of International Political Economy*.
- Gibbon, P.; Ponte, S. 2005. *Trading down: Africa, value chains, and the global economy* (Philadelphia, PA, Temple University Press).
- Hamilton, G.; Gereffi, G. 2009. “Global commodity chains, market makers and the emergence of demand-responsive economies”, in J. Bair (ed.): *Frontiers of commodity chain research* (Stanford, CA, Stanford University Press).
- Haque, I. 2007. *Rethinking industrial policy*, UNCTAD Discussion Papers No. 183 (Geneva, UNCTAD).
- Humphrey, J. 2004. *Upgrading in global value chains*, ILO Policy Integration Department Working Paper Series No. 28 (Geneva, ILO).
- ; Schmitz, H. 2002. “How does insertion in global value chains affect upgrading in industrial clusters?”, in *Regional Studies*, Vol. 36, No. 9, pp. 1017–1027.
- Jankowska, A.; Nagengast, A.; Perea, J. 2012. *The product space and the middle-income trap: Comparing Asian and Latin American experiences*, OECD Development Centre Working Paper No. 311 (Paris, OECD Development Centre).
- Jenkins, R. 2012. “Fear for manufacturing? China and the future of industry in Brazil and Latin America”, in *The China Quarterly*, Vol. 209, pp. 59–81.
- Kaplinsky, R. 2010. *The role of standards in global value chains*, World Bank Policy Research Working Paper Series No. 5396 (Washington, DC, World Bank).
- Lamy, P. 2011. “Global manufacturing and outsourcing of business functions”, in *Global Forum on Trade Statistics* (Geneva, Eurostat and WTO).
- Lin, J.; Chang, H.-J. 2009. “Should industrial policy in developing countries conform to comparative advantage of defy it? A debate between Justin Lin and Ha-Joon Chang”, in *Development Policy Review*, Vol. 27, No. 5, pp. 483–502.
- Linden, G.; Kraemer, K.L.; Dedrick, J. 2007. *Who captures value in a global innovation system? The case of Apple’s iPod*, Personal Computing Industry Center Recent Work Series (Irvine, University of California Irvine).
- Mayer, F.; Gereffi, G. 2010. “Regulation and economic globalization: Prospects and limits of private governance”, in *Business & Politics*, Vol. 12, No. 3, Article 11.
- Meng, B.; Yamano, N.; Webb, C. 2011. *Application of factor decomposition techniques to vertical specialization measurements*, IDE Discussion Paper No. 276 (Chiba, Institute of Developing Economies).
- Milberg, W. 2004. “The changing structure of trade linked to global production systems: What are the policy implications?” in *International Labour Review*, Vol. 143, No. 1–2, pp. 45–90.
- ; Winkler, D. 2011. “Economic and social upgrading in global value chains: problems of theory and measurement”, in *International Labour Review*, Vol. 150, No. 3, pp. 341–366.
- ; —. 2013. *Outsourcing economics: Global value chains in capitalist development* (New York, Cambridge University Press).
- Miroudot, S.; Ragoussis, A. 2009. *Vertical trade, trade cost, and FDI*. OECD Trade Policy Working Paper No. 95 (Paris, OECD).

- Monge-Ariño, F. 2011. *Costa Rica: Trade opening, FDI attraction, and global production sharing*, Staff Working Paper ERSD–2011–09 (Geneva, WTO Economic Research and Statistics Division).
- Morris, M.; Staritz, C.; Barnes, J. 2011. “Value chain dynamics, local embeddedness, and upgrading in the clothing sectors of Lesotho and Swaziland”, in *International Journal of Technological Learning, Innovation and Development*, Vol. 4, No. 1, pp. 96–119.
- OECD (Organisation for Economic Co-operation and Development). 2011. *Global value chains: Preliminary evidence and policy issues* (Paris).
- . 2013. “OECD–WTO trade in value added initiative (TiVA)”. Available at: <http://www.oecd.org/industry/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm>
- Ohno, K. 2009. *The middle income trap: Implications for industrialization strategies in East Asia and Africa*, GRIPS Development Forum (Tokyo, National Graduate Institute for Policy Studies).
- O’Neill, J. 2011. *The growth map: Economic opportunity in the BRICs and beyond* (New York, Penguin).
- Pickles, J. et al. 2006. “Upgrading to compete: Global value chains, clusters and SMEs in Latin America”, in *Environment and Planning*, Vol. 38, No. 12, pp. 2305–2324.
- Pietrobelli, C.; Rabellotti, R. 2006. “Clusters and value chains in Latin America: In search of an integrated approach”, in C. Pietrobelli and R. Rabellotti (eds): *Upgrading to compete: Global value chains, clusters and SMEs in Latin America* (Washington, DC, Inter-American Development Bank).
- Piore, M.; Schrank, A. 2006. “Latin America: Revolution or regulation”, in *Boston Review*, Vol. 31, No. 5, pp. 1–11.
- ; —. 2008. “Toward managed flexibility: The revival of labour inspection in the Latin world”, in *International Labour Review*, Vol. 147, No. 1, pp. 1–23.
- Prebisch, R. 1954. *International co-operation in a Latin American development policy* (New York, United Nations).
- Rodrik, D. 2004. *Industrial policy for the twenty-first century*, CEPR Discussion Paper No. 4767 (London, Centre for Economic Policy Research).
- . 2008. *Normalizing industrial policy*, The Commission on Growth and Development Working Paper Series, No. 3 (Washington, DC, World Bank).
- Rowthorn R.; Wells, J. 1987. *De-industrialization and foreign trade* (Cambridge, Cambridge University Press).
- Schrank, A.; Whitford, J. 2009. “Industrial policy in the United States: A neo-Polanyian interpretation”, in *Politics & Society*, Vol. 37, No. 4, pp. 521–553.
- Shapiro, H. 2007. *Industrial policy and growth*, UNDESA Working Paper Series No. 53 (New York, United Nations Department of Economic and Social Affairs).
- Singer, H. 1960. “The distribution of gains between investing and borrowing countries”, in *American Economic Review*, Vol. 40, No. 2, pp. 473–485.
- Staritz, C.; Gereffi, G.; Cattaneo, O. (eds). 2011. Special issue on “Shifting end markets and upgrading prospects in global value chains” in *International Journal of Technological Learning, Innovation and Development*, Vol. 4, No. 1–3.

- Sturgeon, T. 2001. "How do we define value chains and production networks?", in *IDS Bulletin*, Vol. 32, No. 3, pp. 9–18.
- ; Memedovic, O. 2011. *Mapping global value chains: Intermediate goods trade and structural change in the world economy*, UNIDO Working Paper Series No. 5 (Vienna, UNIDO, Development Policy and Research Branch).
- Wade, R. 1990. *Governing the market: Economic theory and the role of government in East Asian industrialization* (Princeton, Princeton University Press).
- Xing, Y.; Detert, N. 2010. *How the iPhone widens the United States trade deficit with the People's Republic of China*, ADBI Working Paper Series No. 257 (Tokyo, Asian Development Bank Institute).