

Global Value Chains: Impacts and Implications

Editor's Overview

Aaron Sydor
Foreign Affairs and International Trade Canada

Introduction

It is increasingly rare that a good or a service is entirely produced at one location and then exported to a final consumer. Rather, production of a good or even service involves an increasingly complex process with intermediate inputs and supporting activities sourced globally from wherever it is most efficient to do so. These complex international production arrangements have come to be known as global value chains (GVCs), a commonly cited definition of which is the following:

A global value chain describes the full range of activities undertaken to bring a product or service from its conception to its end use and how these activities are distributed over geographic space and across international borders.¹

Although difficult to measure, there is a growing body of evidence supporting the growing importance of GVCs. One of the most compelling pieces of evidence is that the ratio of trade to world GDP expanded from about 16 percent in 1990 to 27 percent in 2008, the year before the global financial crisis fully impacted global trade. With the onset of the global financial crisis, trade as a share of GDP fell to 22 percent in 2009 and has since rebounded to just over 24 percent as of the close of 2010.² Sturgeon and Gereffi (2009) show that increased trade in intermediate inputs, resulting from the global fragmentation of production, accounts for a considerable share of that growth.³ More rigorous measures have also been developed and show similar trends, such as indexes of vertical specialization developed by Hummels, Ishii and Yi (2001) and Yi (2003).

Multinationals (MNEs) play an important role in the development of GVCs through their decisions about where to source, what suppliers to use and what they will produce themselves. Statistics on the growing importance and scope of MNEs further supports the rise of GVCs. Between 1990 and 2008, total sales by MNEs increased from US\$6 trillion to more than US\$31 trillion – a roughly five-fold increase. Total assets increased by even more, rising by 1100% to nearly US\$72 trillion in 2008 while employment reached almost

¹ Adapted from the definition of global value chains used by GVC Initiative at Duke University <http://www.globalvaluechains.org/>

² Authors calculations based on data from the International Monetary Fund (IMF) and World Trade Organization (WTO). Reported as the ratio of imports to GDP.

³ Although trade in intermediate inputs accounts for a large share of growth in global trade, by a number of measures, its share has not increased. Sturgeon and Memedovic (2011) attribute this to a misclassification of certain goods and show that under an updating of the classification system, intermediate inputs indeed grow more quickly than the total trade.

79 million.⁴ It is estimated that the 500 largest multinationals now account for nearly 70 percent of global trade.⁵

The rapid growth and enormous scale of these figures illustrate the extent to which GVCs and multinationals have expanded over the past two decades. But, multinationals are not the entire story. They fail to capture all of the purchases, both domestic and local that are made as part of GVCs. Firms of all sizes, including small and medium sized firms (SMEs), are linked to global value chains as suppliers and customers, and in many instances will lead GVCs on their own.

GVCs During and After the Crisis

Although GVCs have been steadily gaining traction in policy and academic circles, they have achieved a new importance during and following the global financial crisis.⁶ Global value chains (GVCs) appear to have played an important role in the recent global economic crisis; they likely magnified the impacts of the crisis on trade flows, spread the impacts more quickly and among a greater number of countries but may have also moderated the impact of the crisis.

Although the global financial crisis initially started in the financial and housing sectors and in a limited number of countries, it quickly transformed into a global crisis. A significant amount of that spread was through the linkages within the financial sector and there are likely other conduits through which the crisis spread such as through impacts on consumer confidence and by acting as a demonstration effect.⁷ But, there is little doubt that linkages between countries through GVCs also contributed to the spread. As demand in the U.S. shrank, for example, production in China was reduced which was transmitted throughout the value chain reducing production in supplier countries as well. As a result, the collapse in global trade was far more severe than was expected and far greater than the fall in global GDP. This too can partially be explained by other factors such as the disproportionate impact of the crisis on demand for goods, which are more heavily traded, and even on export financing. But, there is considerable evidence that the coordination and extent of the collapse in world trade had a lot to do with GVCs.⁸ On the positive side, however, there is also evidence that by spreading the pain, the existence of GVCs reduced the overall impact of the crisis.⁹

Following the crisis, GVCs continue to garner attention. Pascal Lamy, Director-General for the World Trade Organization (WTO), has recently emphasized on a number of occasions the importance of global value chains and the need to develop value-added measures of world trade. In this vein, the WTO has recently launched the “Made in the

⁴ A figures from UNCTAD’s World Investment Report 2010.

⁵ World Trade Organization, http://www.gatt.org/trastat_e.html

⁶ Within the economic literature, the term “global value chain” is rarely used. However, we are treating the various languages of offshoring, outsourcing, trade in tasks and others all as falling within the rubric of GVCs.

⁷ The bursting of the housing bubble in the U.S., for example, may have brought attention to and caused similar bubbles to burst in other countries.

⁸ See, for example, Escaith, Lindenberg and Miroudot (2010), Cheung and Guichard (2009), and Bems, Johnson and Yi (2009)

⁹ See, for example, Freund (2009) and Conference Board of Canada (2010).

World” initiative to develop approaches in measuring and analyzing trade in value-added.¹⁰ The World Bank, WTO, and OECD have all recently held conferences on global value chains and many are developing work plans to address some of the main issues raised.

The WTO in particular has a very focused interest in GVCs relating to the calculation of value-added trade. With the rise of GVCs, trade flows, which are expressed on a gross basis, may become increasingly inflated as a product is counted multiple times when it crosses a border as part and again as a final product. This can have the effect of multiplying the impact on trade flows of changes in demand as was observed during the financial crisis. It also has the impact of making trade appear to be more important than it actually is and on the distribution of bilateral trade flows and bilateral balances – although importantly, not on overall trade balances. It is therefore hoped that by developing a value-added measure of trade, that this will allow countries to have a better understanding of the “true” trade linkages between countries as well as producing a more accurate representation of the role of trade for national economies. Having a value-added measure of trade could also be used to produce a more accurate assessment the impact of exchange rate movements on bilateral trade flows, an issue of current importance given concerns over global imbalances.¹¹

How GVCs Fit Into Economic Theory

Since David Ricardo expressed his views in 1817, international trade theory has been governed by a belief in comparative advantage which loosely states that each participant in trade will specialize in producing that good in which it has comparative advantage. Comparative advantage under Ricardo is simply measured as a cost advantage, without being explicit as to the source of the advantage, although is generally interpreted and modeled as a difference in technology or geography. Heckscher and Ohlin built on this foundation arguing that differences in factor endowments determine differences in relative costs. This produces, for example, the now well-known result that labour intensive countries should specialize in producing labour-intensive products and capital-intensive countries in capital intensive products.

In these classical models it is recognized that firms or even individuals trade, but that differences in technology (as in Ricardo’s example) or endowments (as in the H-O model) are specific to different locations, usually assumed to be countries. Under the so called “new trade theory” developed by Paul Krugman in the 1980s it is no longer only the differences that matter. Even countries that are similar will engage in and benefit from trade if each specializes and as a result becomes more efficient in production. Again, it is firms or individuals that trade, but the potential gains from specialization are characteristics of the industry.

An additional element of the new trade theory is the importance of geography. In order to minimize transportation costs, firms will have a preference to locate close to customers as well as to suppliers. Those firms that can lower costs in this way gain an advantage over competitors. Large population centers thus become a magnet for production, which is self reinforcing as upstream and downstream activities follow and

¹⁰ See http://www.wto.org/english/res_e/statis_e/miwi_e/miwi_e.htm

¹¹ See, for example, the presentation by Kei-Mu Yi, Senior Vice President and Director of Research, Federal Reserve Bank of Minneapolis. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/0,,contentMDK:22894003~menuPK:2644066~pagePK:64020865~piPK:51164185~theSitePK:239071,00.html>

industrial clusters emerge. But, once again, the differences in transportation costs and the relative importance of being close to suppliers and to customers, also known as agglomeration effects, are characteristics associated with the industry.

If classical theory focuses on differences in characteristics between locations, and new trade theory focuses on the characteristics of individual industries, more recently, heterogeneous firm theory, which is often called new new trade theory, focuses on the characteristics of individual firms. New new trade theory recognizes that within a given industry and in a given location there can be a great degree of variation between firms. There will be many firms that do not engage in international trade, those that do tend to be more productive and the subset of those that both trade and invest abroad tend to be even more productive.

Within new new trade theory, opening to international trade allows for the best firms to expand and replace weaker firms resulting in increased productivity, higher wages and improved standards of living. Under both classical and new trade theory, much of the gains from trade occur as a result of the movement of resources between industries¹², under new new trade theory much of the benefits from trade occur as a result of the shifts within industries. Additionally, under new new trade theory, trade takes place as a result of the differences between individual firms that possess a technology (i.e. process, product, or management) or intellectual property (IP) that makes them better able to compete internationally. This produces a second source of benefit from exchange in that as individual firms expand, they can spread fixed costs of innovation across a larger customer base, increasing the incentives to innovate. As a dynamic benefit that accumulates over time, much like compound interest, this potentially is a critical gain from trade.

Just as trade theory has developed to identify a number of drivers at various levels of disaggregation (i.e. country, industry and firm), the theory of FDI is also focused through multiple lenses. The most commonly used theory of FDI is known as the “Eclectic Theory of FDI” precisely because of its multiple drivers, indeed it is often simply referred to as the “OLI” theory because it is a mix of three theories; Ownership advantage, Location advantage, and Internalization advantage. *Ownership advantage* is, in a sense, similar to heterogeneous firm trade theory in that it focuses on specific firm-level advantages such as technology or management practices. A multinational can expand internationally and enter new markets because it is employing better technology, superior management practices or similar firm-specific advantages compared to rivals. Economies of scale, as described in new trade theory may also be thought of as belonging in this category as they are realized at the firm level. However, while new new trade theory explains why some firms might export and others do not, ownership advantage explains why a foreign multinational will invest in a foreign location and succeed against domestic firms which would otherwise be expected to have an advantage in their own market. *Location advantage*, on the other hand, relies on the firm having an advantage that derives from the home location of the firm. Location advantage also impacts on where the firm will locate activities. In this sense, the location advantage theory is comparable to classical theories of trade with comparative advantage. *Internalization* relies on a transaction cost model of the firm extended to the multinational by McManus (1972). Essentially, a multinational must decide whether to serve a local market through an arrangement such as licensing or franchising (i.e. outside of the ownership structure of the firm) or to serve the

¹² Gains from trade in these models can be a result of reduced costs from economies of scale or more efficient use of resources as well as from reducing distortions as one moves closer to perfect competition and from increased product variety.

market by investing. An important factor in making this decision will be how difficult it is to undertake a contract. In a jurisdiction with strong private property rights and enforcement mechanisms as well as developed markets for the goods or services to be contracted for, then it is more likely that the firm will be willing to undertake a contractual agreement such as licensing or franchising. However, if the opposite is the case, then the firm will desire to keep those activities within the firm.

The concept of global value chains fits into and builds on this evolution of our understanding of why and how trade and FDI occurs. Feenstra and Hanson (1996, 1997), for example, begin with a Heckscher-Ohlin type model but divide the production process for any particular final good or service into activities. These activities can then be allocated to the location where they are most efficiently performed. Grossman and Rossi-Hansberg (2008) provide a similar model for trade but instead of activities focus on tasks. The difference between activities and tasks is in a sense an issue of aggregation. Where an activity may be legal services, for example, that activity may be broken into separate tasks such as the high valued legal advice and the more routine aspects such as filling out paperwork.¹³ The implication being that, more routine tasks can be performed in a low-skilled environment while higher-valued tasks will be performed in a high-skilled environment. One implication being that it becomes more difficult to predict who will bear the impact of globalization. In the past an industry or an occupation could be thought of as being impacted by trade. Within a trade in tasks environment what matters is how routine tasks are, how they are delivered and if they can be codified. An additional difference between the two models is the role of the firm. The Feenstra and Hanson model, although not explicitly stated, could potentially be interpreted as describing arms-length transactions as there is assumed to be a technology difference between home and host country (i.e. outsourcing). In the Grossman and Rossi-Hansberg model, it is possible to interpret the model as describing transactions as being internal to the firm as technology levels are the same between the two locations (ie. offshoring). Even so, these models do not explicitly consider the role of the multinational enterprise. There is no clear decision to offshore (invest) or outsource (contract). Antras (2003, 2005) takes an important step in forming that link between trade and investment theory by enhancing our understanding of how firms make the decisions where to locate various activities and whether or not to exert direct control (i.e. the decision to perform the activity within the firm or to source it from outside the firm). Clearly though, more work is still required to solidify the link between theories of trade and FDI that is critical to the operation of global value chains.

This volume attempts to further elaborate on the link between trade theory, firm location and GVCs with the practical focus of understanding if the gains predicted by trade theory still hold in the presence of GVCs. The volume also explores the drivers of the growth in GVCs, trends in Canada as well as other countries, it looks at some key “high valued” sectors and ends with an examination of some the potential policy implications.

¹³ The difference between tasks and activities is important but beyond the scope of this article. The more generic term “activities” will be used throughout the article but is not expressing a preference for one over the other.

Theory

The first section of the volume further explores the relationship between global value chains and trade theory. Steven Globerman in his chapter “Global Value Chains: Economic and Policy Issues”, reviews the theoretical underpinnings of international trade and firm location. He does not see a need for a new theory to explain GVCs as they can be fit into existing trade theory. Globerman suggests that GVCs in essence are trade at a more granular level and increasingly in services, but would be driven by the same factors that we have come to understand under standard trade theory and as outlined in the previous section - including comparative advantage. As such we would also expect trade under GVCs to produce the same benefits that would be expected from any international exchange but by trading at a finer level and extending trade to include more services should result in additional gains from trade.

Following this line of argumentation, that GVCs do not need a new theory, Globerman argues that it is then also unlikely that there are significant impacts for policy, at least overall. Improvements to infrastructure, investments in R&D and education, and reducing barriers to trade would all be beneficial under GVCs, just as they would with traditional trade. However, he does note that the greater level of competition at a finer level might strengthen the case for such policy actions and require policy to become more granular as well.

In his paper “Integration of the North American Economy and New-paradigm Globalization” Richard Baldwin analyzes the potential implications of the rise of GVCs using a new trade theory framework. This compliments the aforementioned models developed by Feenstra and Hanson (1996, 1997) and Grossman and Rossi-Hansberg (2008) which are based on the classical models of trade. New trade theory is Baldwin’s model of choice as it allows for analysis of the distribution of activity within North America¹⁴ which can be characterised as a core (the U.S.) and periphery (Canada) rather than high-wage location and low-wage location as in the classical trade models. In this framework, the rise of GVCs is seen as changing the balance of forces that determine the geographical distribution of economic activity; toward the forces of dispersion and away from those of agglomeration. To put this in another way, the increased ease of coordinating activities across space and reduced costs of communication, that are thought to be behind the growth of GVCs, reduce the benefit of clustering activities (such as in the larger U.S. market) thus allowing them to become more disperse and to take better advantage of geographical differences such as in wages.

Baldwin finds that this “new paradigm globalization” has a number of important implications. Firstly, and consistent with the Rossi-Hansberg trade in tasks model, it becomes more difficult to predict who will be the winners and losers from globalization. This has implications for the ability of the winners of globalization to be able to compensate the losers and generally increases uncertainty for workers. These, in-turn, increase the difficulty for governments to prepare their populations for globalization such as through training as well for building the support for trade policy. A second impact is that as production becomes more mobile, policy differences between jurisdictions can have a greater impact. Baldwin calls this the “multiplier effect” and is similar to Globerman’s finding that competition takes place at a more granular level. Within a North American context, this multiplier would be expected to magnify positive (negative)

¹⁴ North America here refers specifically to Canada and the United State of America

impacts of changes that make the Canada-U.S. border more (less) transparent for trade flows.

Most discussions of global value chains begin by claiming that GVCs have grown in importance as a result of lower transportation costs, improvements to information and communications technologies (ICTs) or similar innovations. To date, however, there has not been any systematic evaluation of these claims. In his chapter “Causes of International Production Fragmentation: Some Evidence”, Russell Hillberry attempts to shed some light on this gap. Hillberry first evaluates the role of ICTs by looking at one specific formulation where ICTs are compliments to the use of imported intermediate inputs. He, however, fails to find a linkage between use of ICTs and growth in use of imported intermediate inputs. He next evaluates whether the introduction of new players into the global trading system contributed to the growth of GVCs. He does find some evidence that the opening of former communist countries did play a role in the growth of GVCs and hypothesizes that it may have been these countries’ unique combination of strong technical skills and low wages that lent themselves to producing technically complicated intermediate inputs. However, he also finds that these effects had largely run their course by 1996. Lastly, Hillberry examines the role of transportation modes. He shows that while containerized shipping may often be cited as a driver of the growth in GVCs, air transport may have actually been more important. It is important to keep in mind though that the quality of the data available to evaluate these various drivers is rather limited and thus any conclusions should be viewed with an appropriate level of caution. If policy makers are to better understand whether GVCs will continue to grow in importance, stagnate or even decline, it will be important to understand what drove their development. Further work in this direction would contribute to a better understanding of the forces at play.

Evidence

Measurement has probably been the most significant obstacle to developing a better understanding global value chains. It is nearly impossible to predict the impact of, or to design policy to influence, something that cannot be measured. A great deal of progress has been made in recent years to obtain better measures of global value chains. The chapters in this section take a variety of approaches to obtain better measures of global value chains in general or of specific aspects of GVCs.

The first chapter in this section, “International Comparative Evidence on Global Value Chains” by Koen De Backer and Norihiko Yamano provides a cross-country perspective of global value chains largely utilizing a recently developed comparable database of input-output tables for OECD and select other countries. Their data confirms the growing importance of GVCs as defined by the rising share of imported intermediate inputs compared to domestically sourced inputs for nearly all countries in their sample. The rising importance of GVCs is also seen in the author’s calculation of a vertical specialization index, which shows the growing role of intermediate inputs for exports (which they call VS1) and the growing importance of one country as a supplier of intermediate inputs that are then exported by a second country (VS2). It is interesting to note that Canada is often an outlier in these measures, first as one of the few countries that did not see a growing share of trade to GDP over the period 1995 to 2005 as well as falling measures of vertical specialization. These findings are likely due to the rapid rise of the Canadian dollar over this period, which discouraged manufacturing exports as well as the growing importance of resources which have fewer intermediate inputs that can be imported. Other resource producers, such as Australia and Norway, saw similar trends.

The authors are also able to show a regional dimension to GVCs with particular countries serving as a GVC hub in their region, such as Germany in Europe, the U.S. in North America and Japan and China in Asia.

The rise of China may be the most significant economic event of the current generation, and one that is intimately linked to the rise of GVCs. It is not clear to what extent China's rise was aided by the rise of global value chains, or vice-versa. But, there is no doubt that China plays a hugely important role in global value chains, especially those in Asia. China, as a huge and low-wage country, also epitomizes many of the fears in advanced countries related to the offshoring and outsourcing of activities. Alyson C. Ma and Ari Van Assche in their chapter "China's Role in Global Production Networks" explore in great detail how China is linked into Asian and global production networks¹⁵, the role of China's export processing zones and of foreign invested enterprises. The authors are able to make a number of broad and important observations about China's role in production networks. Firstly they cast some doubt on the extent and the speed to which China is moving into increasingly technologically-sophisticated exports. They reach this conclusion based on the high degree to which processing exports account for China's highest technology exports. Processing exports, having little domestic content and largely produced by foreign invested firms, suggests that China simply hosts these activities and provides a labour-intensive, likely assembly role, with minimal links to the broader economy. There is also little evidence that this has been changing over time. The story is reversed for all other technology categories, however, with processing zones playing an ever smaller role, and both domestic content as well as the involvement of domestic firms increasingly rapidly.

Ma and Van Assche additionally point to the important role that geography plays in China's participation in global production networks. For Asian countries, China can be seen as a low-cost location from which to serve global markets. Inputs are sourced from across the region, assembly or other mostly labour-intensive activities done in China, and then exported globally -back to Asian markets, but importantly to the West as well. Essentially, for Asian countries, China serves as a low-cost export platform to the world. For Western countries, however, China appears to play a more limited role. A much lower share of imports are sourced from Western countries and the markets served are mostly Asian rather than global.

The final paper in this section "Global Value Chains in Canada" by David Boileau and Aaron Sydor relies largely on a new dataset coming from the recently completed Survey of Innovation and Business Strategies (SIBS). One component of that survey collects new data on the involvement of Canadian companies in global value chains as well as offshoring and outsourcing. Many of the results are, additionally, comparable to the survey conducted within the European Union which allows important comparisons between the two sources. Boileau and Sydor find that Canadian companies are indeed actively involved in global value chains and on a similar level to most EU countries, although far below the most engaged countries, most notably the UK and Ireland. An additional important finding is that although the rate of offshoring and outsourcing are fairly small, they are roughly evenly matched by the rate of inshoring. Thus, and as the theory would predict, offshoring and outsourcing are not one-way exoduses from Canada, and advanced countries more generally, but rather circular movements that also involve the inflow of activities to Canada. In the view of the authors, this changes the discussion

¹⁵ A distinction being made between global production networks which are limited to merchandise trade and global value chains which includes services.

from one of how to deal with, if not prevent, offshoring and outsourcing, to one of how to make Canada an attractive location for high-valued activities and thus ensuring that the activities moving into Canada contribute to maintaining and improving the standards of living of Canadians. Some encouraging evidence is presented that Canada may be an attractive location for a number of high-valued activities. Research and development (R&D) activities are examined in some detail and shows that Canada appears to have a comparative advantage in performing R&D, a finding that is somewhat surprising considering Canada's relatively low R&D performance.

In terms of the drivers of offshoring and outsourcing, Boileau and Sydor report that push factors (those that drive activity out of Canada) are not particularly important, rather it is the pull factors of quickly growing markets and the opportunity to lower costs that are exerting a pull on some activities. As for barriers to offshoring and outsourcing, a number are identified that can be influenced by policy. Tariffs, for example, are identified by manufacturers as an important barrier which supports the need for continued tariff reductions. A number of the leading barriers though, deal with identifying potential suppliers, dealing with cultural and legal barriers and other factors that are expected when dealing with unfamiliar countries. These are areas where trade promotion programs, such as the Trade Commissioner Service (TCS) in Canada can play a role. Interestingly these factors of unfamiliarity show up as being more important for offshoring and outsourcing than they do for exporting for which export promotion programs were originally designed.

High Valued Activities

Most discussions of global value chains eventually lead to discussions about how to "move up the value chain". The preceding discussion of the theory underpinning GVCs made clear that activities will locate and grow in those locations that have a comparative advantage in those activities. That section also suggested that when trade is at a more granular level, small policy differences may also be more important. Thus it becomes increasingly important to understand what drives the location decision of the high-valued activities that are critical to maintaining and improving standards of living.

Research and development (R&D) is often viewed as among the most attractive and sought-after 'high valued' activities. Not only do R&D activities employ some of the most knowledge-intensive workers in an economy and provide high-paying jobs, R&D is also seen as having strong agglomeration economies (thus once you get some others might follow and it is more difficult to displace) as well as having significant spillovers (that is benefits beyond those that can be captured by the company performing the R&D). It is thus with great concern that policymakers in rich countries such as Canada see their share of global R&D falling and are concerned about their country's attractiveness as a location for performing this increasingly internationally footloose and highly desirable activity. But in "The Internationalization of R&D" Bronwyn Hall points out that it is actually rare that R&D activities are moved as there are large fixed costs in doing so and as already pointed out there are strong forces of agglomeration in R&D. Rather, for R&D activities, new facilities generally add to the R&D capacity rather than supplanting existing capacity. The statistics support this view - Canada along with most advanced countries are seeing their share of global R&D fall simply due to a growing share of R&D being performed in fast growing emerging economies. She does note, however, that in Canada a relatively high share of R&D is funded externally and the growth in that segment has been particularly slow since 2000. Although it is not clear what has been the cause of this stagnation, Hall finds it unlikely that there was a sufficiently important policy change over that period that

could account for the difference. A more likely explanation may be that, like much else, it has been a result of the rise of the Canadian dollar which has made Canada a relatively more expensive location in which to perform many activities, including R&D.

Headquarters (HQ) may also be viewed as a high-valued activity. There are the “headquarter activities” themselves - the services that the HQ provides to other parts of the organization, such as human resources, legal or accounting services, most of which tend to be high-knowledge well-paying jobs. Like R&D, HQs produce what may also be thought of as spillovers to the host jurisdiction by demanding legal, consulting and financial services. It is unlikely, for example, that a country could operate a thriving stock market without the presence of a sufficient number of large corporate headquarters. As Markusen (2005) notes, the loss of domestic service jobs associated with corporate head offices are among the biggest concerns in the trade policy area. Headquarters are different in at least one important respect, however, in that they make decisions that impact on the rest of the organization such as what type of activities are located where. To the extent that there may be links between the HQ and certain activities or a bias in the location decision, it may be extremely important where headquarters locate.

Michael Bloom and Michael Grant in their chapter “Valuing Headquarters (HQs): Analysis of the Role, Value and Benefit of HQs in Global Value Chains” looks at Canada’s attractiveness as a location for corporate headquarters managing a global value chain. After increasing for a number of years, and importantly through many of the years where Canadians were concerned about the “hollowing out” of corporate headquarters following some high-profile mergers and acquisitions, the number of headquarters in Canada and number of headquarter employees peaked in 2005 but has declined since. Probably more important than this recent decline in numbers, Bloom and Grant also note that relative to other countries, Canadian companies tend to be rather small and less global. Looking at the Fortune Global 500, for example, they note that while Canada has a number of companies that is roughly proportionate to Canada’s share of Global GDP, when measured by size (assets) and whether the company is considered a global leader, Canada ranks less well. Thus it appears that there is some evidence that Canada produces global companies, but there may be reason to believe that they are not growing to the global scale seen in many comparator countries.

Although it may appear that headquarters are not very footloose, many of the biggest companies have their headquarters at or close to where they were founded, headquarter functions can actually be reasonably mobile. High profile moves such as the recent move of Boeing’s headquarter from Washington State to Chicago are indeed a rarity. But, the opening of regional or function headquarters, the consolidation of an HQ post merger or acquisition and changing the roles, responsibilities and mandates of different parts of the organization can indeed be quite common. It is for this reason that Bloom and Grant also examine the factors that make a location attractive for an HQ. They find that the general business environment and economic growth are the most important factors. Additionally, HQs often locate in urban centers, attracted by good transportation systems (both urban transit as well as national and international), access to skilled labour, and cultural and other amenities that are attractive to knowledge workers. The strength of the IP system was also noted as an important factor.

A Policy Perspective

As our understanding and measurement of GVCs improves, it will become increasingly important to deepen our understanding of the impact that the rise of GVCs

has for policy. To date, little work has been done on this issue. Baldwin notes, for example that identifying winners and losers in a GVC context is increasingly difficult. It is no longer the case that competition from international trade is limited to labour-intensive sectors while higher-skilled positions and services go largely unaffected. Within a global value chain context the nature of the task itself determines its ability to be offshored. Blinder (2009), for example, estimates that based on the nature of the tasks performed that nearly one-third of U.S. jobs are potentially offshorable.¹⁶ As it becomes more difficult to identify which positions could be offshored, labour markets need not only focus on developing knowledge and skills but also a flexibility to adapt to a rapidly changing global environment. Furthermore, there will be political economy implications due to the increased difficulty for the winners from globalization to compensate the losers which may erode support for trade even if the gains remain positive or may have increased as argued by Globerman. Probably the most significant policy implication stemming from the rise of GVCs and identified by numerous authors, including both Globerman and Baldwin in this volume, is that comparative advantage will be determined at a much more granular level and that small policy differences may be becoming increasingly important.

For Canada, there are few studies that examine the potential policy implications of global value chains. Trefler (2006, 2009), for example, identifies few new policy issues but rather focuses on policy actions that would likely be considered as good ideas in any event, the rise of GVCs simply adds greater incentive to do them. These include, investing in education, opening markets, and removing distortions that reduce investments in productivity-enhancing machinery and equipment. The new policies identified by Trefler are largely limited to increased flexibility, for example the need for retraining for displaced workers or increasing the portability of pensions. He also discusses the need to protect intellectual property (IP) as well as enforcing health and safety standards. Dymond and Hart (2008) hypothesize about the potential impacts of GVCs for Canadian trade policy. They identify a number of areas where the rise of GVCs could have significant impacts on international trade, for example making rules of origin more important as inputs are increasingly sourced globally and on trade disputes as the country of export may play a relatively minor role in producing the good in question. They also identify global value chains as largely being regional value chains and thus put a great deal of focus on ensuring that trade between Canada and the U.S. operates efficiently in order to enhance the competitiveness of both countries internationally.

The theoretical basis for GVCs covered in the first section of this volume found that comparative advantage still applies, but is now more dynamic and applied at a finer level of detail. As a result, small policy differences may now be becoming more important. If that is the case, corporate taxes may be one area where the rise of GVCs could have an impact on policymaking. The “conventional wisdom” would likely be that higher tax rates that are not offset by (direct or indirect) productivity – enhancing public services make a location less attractive to investors, all other things constant. Bev Dahlby in his chapter “Global Value Chains, Foreign Direct Investment, and Taxation” finds that this “conventional wisdom” may not be as straightforward as one might expect. Making a link between trade theory and public finance he incorporates corporate taxes into a modified Grossman and Rossi-Hansberg (2008) trade in tasks model. The model shows that changes to home country tax rates can influence a firm's decision to offshore vs. outsource (that is the decision to perform an activity abroad inside the firm and involve foreign direct investments vs outside the firm) and that the impact of a tax change in one country

¹⁶ Of course that does not mean that they will necessarily be offshored.

must be taken in the context of the tax rates of all of the countries in which the firm performs activities. This complex relationship between corporate income taxes and the location of productive activities by firms is supported by his review of the literature. Dahlby notes that the empirical literature has largely failed to produce a strong link between corporate tax rates and FDI. There is some evidence, albeit limited, that FDI has become more sensitive to difference in corporate tax rates in recent years, which would be consistent with the rise of GVCs.

During the global financial crisis, international trade fell to a much greater extent than did global GDP and by much more than most forecasters had expected. A number of reasons have been proposed for this overreaction of trade such as the double counting that occurs in trade due to GVC production, and the greater impact of the crisis on goods consumption relative to services. But an additional factor noted by some was the collapse in trade financing.¹⁷ Apart from its impact during the crisis, trade finance may be impacted by the rise of global value chains more generally. It is in this context that Jean-François Lamoureux and Todd Evans explore the potential impact of the rise of global value chains for trade finance in their chapter “Supply Chain Finance: A New Means to Support the Competitiveness and Resilience of Global Value Chains”. They propose that under GVCs the need for export financing changes. It is no longer simply the exporter’s competitiveness that matters, but also the competitiveness of all of the members of that exporter’s supply chain. They additionally argue that Canada has few supply chain leaders – that is the very large companies that are often at the head of GVCs and which may offer some of the supply chain financing options to their suppliers. Rather, most Canadian companies are lower tier suppliers in supply chains led by foreign companies resulting in limited supply chain financing options in Canada. This may put Canadian firms at a disadvantage relative to suppliers from other countries.

Just as export financing may be impacted by the rise of GVCs, so too may traditional logistics. As more intermediate inputs are moved and at potentially greater distances the efficiency of a country’s logistics system can have a greater impact. In “Logistics and the Competitiveness of Canadian Supply Chains” Jacques Roy compares the efficiency of Canada’s logistics system to that of other countries and finds that Canada’s comes up short, ranking 14th overall. Well behind first ranking Germany. Roy attributes that poor ranking to a combination of government policies such as towards infrastructure, customs and differences in regulations between provinces as well as to a failure on the part of business located in Canada to adopt industry best practices and slow or lower rates of adoption of new technologies. Improving Canada’s logistics system could contribute to making Canada a more attractive location internationally for those activities that make intensive use of logistics systems as well as improving the competitiveness of Canadian-based companies more generally.

International Experiences

The final section of the volume takes some tentative steps towards exploring how other countries have adjusted to the rise of global value chains with a view to drawing potential lessons for Canada.

Germany is of particular interest for those studying global value chains within manufacturing. Germany was, until recently, the world’s largest merchandise exporter and is often viewed with envy by policy makers in advanced countries due to its success in

¹⁷ See for example Mora and Powers (2009) and Cheung and Guichard (2009).

exporting relatively high-valued manufacturing products and its performance in fast-growing emerging economies. In a GVC context, Germany is situated in relative close proximity to low-wage offshoring destinations of Eastern Europe, both inside and outside of the EU as well as Russia, with abundant options for outsourcing and offshoring activities, but has maintained a vibrant manufacturing sector despite its relatively high wages.

In “The Role of Global Value Chains for German Manufacturing” Olivier Godart and Holger Görg develop a number of measures of global value chains to assess the extent to which German manufacturers are engaged in GVCs. The authors point out that despite the apparent opportunities for offshoring or outsourcing to near by low-wage countries, German manufacturing largely offshores or outsources to other high-wage countries within the EU, much as the U.S. is found to be the most important offshoring destination for Canada. Although the authors also note that growth for Eastern European countries is especially rapid. Even so, these countries are seen by German firms as part of a global offshoring and outsourcing strategy that includes low-wage countries globally and China in particular.

In addition to analyzing the extent and type of offshoring and outsourcing by German firms, Godart and Görg also look at the impact on German employment and wages. They find that the direct impact of offshoring by German manufacturers, including to low-wage countries in Eastern Europe or further abroad, has had an economically small negative impact on employment and on the wages of those engaged in the activities being offshored or outsourced. However, they also find a strong positive effect on the competitiveness of German manufacturing through improved labour productivity as well as a net positive impact on skill levels in Germany. This supports both the predictions of the economic theory as well as the evidence presented by Boileau and Sydor which emphasize the circular flow of activities for Canada. In both the German and Canadian cases, the offshoring or outsourcing of some activities to low-wage locations allows for increased competitiveness of domestic firms which translates into increased competitiveness, skills upgrading and the expansion of higher wage jobs.

Like Germany, the Nordic countries (Denmark, Finland, Norway and Sweden) also stand out as potential positive case studies for Canada when engaging in global value chains. The Nordic countries are situated on the periphery of and linked to a much larger economic bloc, they have strong public sectors with relatively even distribution of incomes, and they are seen as internationally competitive with high rates of innovation. Not only has growth in the Nordic countries often exceeded that of much of the rest of Europe but also stands in stark contrast to the recent performance of the countries on Europe’s southern periphery. It is in this context that Jyrki Ali-Yrkkö, Petri Rouvinen and Pekka Ylä-Anttila in their chapter “The Nordic Model and the Challenge from Global Value Chains” examine the characteristics of the Nordic economic model in an era of global value chains.

Although the authors identify the Nordic economic model as having some weaknesses, such as an apparent lack of an entrepreneurial culture, overall the system is viewed by the authors as coping well with the rise of GVCs. Specifically the authors identify the importance of being open to international trade and investment combined with a focus on investing in education and on innovation as sources of advantage that continue to serve these countries well in a GVC framework. As with Canada and Germany, the authors find modest levels of offshoring and outsourcing and observe that the domestic economy has shifted to higher value-added activities as a result, with a likely net positive economic gain.

While it is always difficult to draw lessons from one country and apply it to another, this is particularly difficult in the case of lessons from the Nordics for Canada. Although indirect labour costs to business are high in the Nordic countries, wage growth is kept in check and competitiveness maintained through a social contract that has evolved and developed over many years. Similarly, corporate champions play an important role in the Nordic model. It is difficult to see how this can be translated to the Canadian case, or even if this is desirable and something that will continue to serve the Nordic countries as GVCs strengthen. Furthermore, while the statistics indicate a relatively high level of participation in GVCs through offshoring and outsourcing, it also seems likely that language serves, to some degree, as a source of insulation from these forces. It is after all likely much more difficult to find fluent speakers of Finnish or Swedish in developing countries than it is for English, limiting some of the services that can be effectively offshored.

Further comparisons of different country's experiences with GVCs, offshoring and outsourcing seem an area where much more research should be undertaken. As better measures of GVCs are developed and special surveys of offshoring and outsourcing are conducted for additional countries, the scope for more detailed comparisons are increasing.

Concluding Thoughts

The studies in this volume represent an effort to better understand how global value chains function, what is driving their development and the potential implications for policymakers. To the extent that GVCs involve both the theory of international trade as well as that of FDI, it is hoped that this work will spur greater refinement of those linkages. It is somewhat surprising that more work has not been done on the drivers of global value chains. Difficulties related to measurement pose an important challenge for researchers, but this seems to be where some of the biggest advances are being made. All of the evidence seems to suggest that GVCs will not entail a transformative revolution in our understanding of trade or investment theory and there does not appear to be any fewer gains from trade – on the contrary, even greater gains seem possible. Rather, the biggest impact from the rise of GVCs may be that trade and competition is occurring on a much more granular level. Small policy differences may have a greater impact for outcomes – wages, jobs, and productivity improvements. Understanding what policy differences matter most for attracting and retaining the high-valued and innovative activities will contribute to improved standards of living.

References

- Antras, Pol (2005), "Property Rights and the International Organization of Production", *American Economic Review, Papers and Proceedings*, 95 (2), pp. 25-32.
- Bems, Rudolfs, Robert Johnson and Kei-My Yi (2009) "The collapse of global trade: Update on the role of vertical linkages" in *The great trade collapse: Causes, Consequences and Prospects* ed Richard Baldwin VoxEU.org e-book.
- Blinder, Alan (2009) "How Many Jobs Might Be Offshorable" *World Economics*, April-June 2009, 10(2): 41-78.
- Caves, Richard E. (1971), "International Corporations: The Industrial Economics of Foreign Investment," *Economica*. 38: 1-27.
- Conference Board of Canada (2010) "Lessons From the Recession and Financial Crisis: Lesson 7 – Integrative Trade Can Pull Us Down and Up", The Conference Board of Canada, June 2010.
- Cheung, Calista and Stephanie Guichard (2009) "Understanding the World Trade Collapse" OECD Economics Department Working Paper No. 729.
- Dunning, John H. (1997), "Trade, Location of Economic Activity and the MNE: A Search for an Eclectic Approach," in Bertil Ohlin, Per Ove Hesselborn and Per Magnus Wijkman (eds.), *The International Allocation of Economic Activity*, London: Macmillan, 1977.
- Dymond, Bill and Michael Hart (2008) "Navigating New Trade Routes: The Rise of Value Chains, and the Challenges for Canadian Trade Policy" C.D. Howe Institute
- Escaith, Hubert, Nannette Lindenberg and Sébastien Miroudot (2010) "International Supply Chains and Trade Elasticity in Times of Global Crisis" World Trade Organization, Staff Working Paper ERSD-2010-08.
- Feenstra, Robert (1998), "Integration of Trade and Disintegration of Production in the Global Economy", *Journal of Economic Perspectives*, Fall, pp.31-50.
- Freund, Caroline (2009) "The Trade Response to Global Downturns: Historical Evidence" World Bank Policy Research Working Paper 5015.
- Grossman, Gene and Esteban Rossi-Hansberg (2008), "Trading Tasks: A Simple Theory Of Offshoring", *American Economic Review*, 98 (5), pp. 1978-1997.
- Helpman, Elhanan, Marc J. Melitz and Stephen R. Yeaple (2004), "Export Versus FDI with Heterogeneous Firms," *American Economic Review* 94(1), March: 300-316.
- Helpman, Elhanan (1984), "A simple theory of international trade with multinational corporations," *Journal of Political Economy* 92(3): 451-471.

- Hummels, David, Jun Ishii and Kei-Mu Yi (2001) "The Nature and Growth of Vertical Specialization in World Trade" *Journal of International Economics*, Elsevier, vol 54(1) June pp 75-96.
- Krugman, Paul (1981), "Intra-industry Specialization and the Gains from Trade", *Journal of Political Economy*, 89(5), October: 959-973.
- Krugman, Paul (1980), "Scale Economies, Product Differentiation and the Pattern of Trade", *American Economic Review*, 70(5), December: 950-959.
- Krugman, Paul (1979), "Increasing Returns, Monopolistic Competition, and International Trade", *Journal of International Economics*, 9, November: 469-480.
- Markusen, James (2005) "Modelling the Offshoring of White Collar Service From Comparative Advantage to New Theories of Trade and FDI", Boulder: University of Colorado, mimeo.
- McManus, John (1972) "The Theory of the International Firm", in Paquet, G (ed), *The Multinational Firm and the Nation State*, Toronto, Collier-Macmillan pp 66-93.
- Mora, Jesse and William M. Powers (2009) "Decline and gradual recovery of global trade financing: US and global perspectives" in *The great trade collapse: Causes, Consequences and Prospects* ed Richard Baldwin VoxEU.org e-book
- Sturgeon, Tim and Gary Gereffi (2009) "Measuring Success in the Global Economy: International Trade, Industrial Upgrading, and Business Function Outsourcing in Global Value Chains", *Transnational Corporations*, Vol 18, No. 2, pp 1-36.
- Sturgeon T and Olga Memedovic (2010) "Measuring Global Value Chains: Intermediate Goods Trade and Structural Change in the World Economy", UNIDO Working Paper [to be numbered], Vienna 2001.
- Sydor, Aaron (2011), "The Evolution of Global Value Chains", *Canada's State of Trade: Trade and Investment Update – 2011*, Ottawa: Minister of Public Works and Government Services Canada: 85-101.
- Sydor, Aaron (2007), "The Rise of Global Value Chains", *Canada's State of Trade: Trade and Investment Update – 2007*, Ottawa: Minister of Public Works and Government Services Canada: 47-70.
- Trefler, Daniel (2006) "Policy Responses to the New Offshoring: Think Globally, Invest Locally" *Industry Canada Working Paper 2006-1*.
- Trefler, Daniel (2009) "Canadian Policy Responses to Offshore Outsourcing" *Industry Canada Working Paper, 2009-01*.
- Yi, Kei-Mu (2003) "Can vertical Specialization Explain the Growth of World Trade?" *Journal of Political Economy*, Vol. 111, No. 1 pp 52-102.