
Editorial

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1 Introduction

Sectoral research using the Global Value Chains (GVCs) approach can show how global integration is driving geographical dispersion and agglomeration and how these centrifugal and centripetal forces are playing out differently across vertical and horizontal segments of specific industries. In some global industries, lead firms tend to drive location patterns and shape the upgrading conditions for local firms (Sturgeon and Lester, 2004). In these industries lead firms (buyers) rely on, and in many instances substantially control, the activities of several tiers of suppliers. In other industries, however, first-tier suppliers have taken considerable control over the value chain by bundling more value chain tasks in their organisation and taking responsibility for lower tiers suppliers. The largest 'global suppliers' have grown quickly, capturing a rising share of jobs, if not profits, and raising entry barriers for new entrants. Sometimes, GVCs contain 'platform leaders', component suppliers that set *de facto* standards so unassailable that that even lead firms and global suppliers must adapt to them (Gawer and Cusumano, 2002, Sturgeon, 2008).

Part 3 of this Special Issue includes five papers that focus on the automotive industry in three different regions, North and South America and Asia. The selected papers clearly show how the combination of centripetal and centrifugal forces drives geographical dispersion and agglomeration in this industry and how different GVC governance patterns can offer different potential for supplier technological learning and innovation and local industrial upgrading.

2 Overview of the papers

The paper by Sturgeon et al. observes that the automotive industry has developed an elaborate set of global-scale value chain linkages, yet it displays a strong regional integration pattern at the operational level and still retains distinctive national and local elements. This variegated pattern is related to the forces of concentration and dispersion,

which are playing out differently across the segments of the automotive value chain. The character of value chain linkages also matter. The lack of open standards, the importance of systems integration for the performance of vehicles, and the complexity of many vehicle parts and sub-systems have made value chain linkages in the automotive industry more rigid than in other industries, such as electronics, where international standards are better developed and systems can be developed using parts from nearly any vendor. As a result, 'modular' value chain linkages are difficult to forge and maintain in the automotive industry, and firms are forced to share highly idiosyncratic tacit knowledge across either relational or captive linkages.

Sturgeon, Van Biesebroeck and Gereffi's paper shows that not only developing but also developed countries are confronted with serious challenges as they strive to maintain their competitiveness in the automotive sector. They discuss trends in the North American automotive value chain and the challenges these pose to the Canadian automotive sector. The gradual shift of North American production to the south of the United States of America and Mexico; the shift of value added and jobs from assemblers to parts suppliers; and the small, but rapidly growing, automotive parts' flow from China to North America, create serious challenges for Canadian automotive sector upgrading and for its sustainability. The paper outlines key policy recommendations for Canada to maintain the sustainability of this sector.

Quadros and Consoni's paper analyses different innovation strategies (closed/centralised and open/decentralised) pursued by lead TNC automotive assemblers' subsidiaries in Brazil in product development and their impact on technological learning, innovation and competence development in Brazil. Their findings point out that the closed innovation strategy pursued by Transnational Corporations (TNCs) resulted in low local industrial upgrading, while the open strategy contributed to raising local engineering skills and capabilities. This created other reinforcing benefits like growth in vehicles exports, product specialisation, and increasing local Research and Development (R&D) activity. The paper concludes that policy needs to be well informed about the consequences that different TNC strategies might have for local industrial upgrading.

A similar experience was observed in China. Holweg et al.'s paper, which focuses on the past, present and future of China's automotive industry, observes that a complex partnership structure between local and major lead players has developed, but the transfer of product development capabilities to local firms has not occurred. Inadequate local R&D capability and almost no product development activity carried out by joint ventures with local firms have resulted in a persistent reliance on foreign manufacturers. The export of components is rising fast but vehicle manufacturers still import key knowledge-intensive parts and components, or source from international suppliers with operations in China. The paper offers policy recommendations for establishing a national auto industry.

Nag's examination of trade specialisation patterns in auto-components in Asia shows that the number of countries involved in regional production networks in Asia has grown but that this has resulted in parts and components with small value added crossing several borders before being assembled in the final-component product and sold either in the domestic market or exported predominantly to developed countries. Nag's analysis points out that the institutional environment is important to reach economies of scale and efficiency and to develop the regional market. Since trade in components is more sensitive to trade barriers, to transport costs and to delays arising from rules of origin compliance, and since the volume of intra-industry trade in Asia is mainly a function

of world demand, the paper concludes that it has become compulsory for countries in the region to pursue deep and positive regional economic integration that facilitates connectivity, factor mobility, trade and location of production beyond national borders (Evans et al., 2006).¹

3 Concluding the special issue

The papers in this special issue clearly show that a multidisciplinary approach is needed to understand the complex and dynamic global economic integration phenomena in this age of globalisation. From this multidisciplinary approach several key messages emerged. First, the functional and spatial disintegration of GVCs and their reintegration in real time and space are triggering extensive and profound long-term structural changes in the global economy. GVCs are transforming the global geography of R&D, innovation, production, distribution and consumption. They are causing continuous changes in the international division of labour patterns and are creating international economic interdependences that are driving economic integration forward.

Second, in the GVC context the industrial upgrading process becomes more complex and challenging. The speed of GVC development introduces simultaneity and overlapping rather than sequencing in the developmental processes, challenging the old models of economic development and industrialisation. To support policy making in addressing various dimensions of structural changes, new conceptual frameworks, measurement tools, methodologies and data are needed to better understand and monitor the dynamics of global integration and its impact on industrial development. This special issue stresses that there is a pressing need to develop new firm-, industry- and society-level metrics to help better understand how resources are organised and distributed across national boundaries and to provide a better view of how domestic firms and industries are positioned in the global economy.

Third, the role of logistics service providers in GVCs has gradually changed in content and in complexity. They are becoming GVC coordinators and systems integrators. They also bundle some of their services with simple manufacturing tasks, like assembly and packaging. Useful insights have emerged from the supply chain management, freight distribution, transport geography and logistics literature for understanding current changes in the geography of production and consumption and their impact on local technological innovation and learning.

Fourth, globalisation proceeds through GVC spreading linking nodes of production, distribution, consumption and innovation that tend to concentrate in some locations. Locations compete based on their advantages in their local skills, specific local assets and favourable cluster-specific business environment that make the location attractive for investing in high value added functions in GVC and also a pleasant place to work and live. This assumes high-quality but low-cost infrastructure and information and communication systems; transparency, predictability and efficiency of regulatory systems; efficient quality infrastructure that guarantees world-class quality standards and short time-to-market cycles; business support and technology extension systems for quick adjustments to changes in markets and technology; and support for interactive learning and innovation processes by Small and Medium-Sized Enterprises (SMEs) and their clusters in collaboration with research institutes in national and regional innovation

systems. For acquiring technological competences, interaction between local and global knowledge networks (of regional and global value chains) is also needed, and this is best achieved at the regional innovation system and cluster level.

Fifth, there is no ‘one-size-fits-all’ strategy for upgrading. Since upgrading strategy is context specific and has to be tailor-made, value chain analysis, regional innovation systems and clusters can be used as complementary strategic tools for mobilising collective action by the concerned stakeholders from governments, academia and industry to formulate public good industrial policy. These tools can also help to understand the characteristics of the GVCs in which local firms participate and to leverage specific GVCs for industrial upgrading and catching up. To reap the benefits of global integration, the roles of the state (i.e. local, regional and national government agencies) and the roles of a variety of public institutions and organisations (especially those publicly owned companies and investment funds in emerging economies), need to be properly understood (*The Economist*, 2008). The state’s steering and coordination capacity and participation in public goods provision needs to be strengthened and redefined. The speed of changes in technology, vertical fragmentation in production and global economic integration puts a premium on fast technological learning and innovation by firms and based on government official’s technical competencies. This calls for flexible and responsive policy making and based on ongoing capacity building in the public sector to gain deep qualitative knowledge of the details of specific global industries and of the driving forces behind GVCs.

3.1 *Looking at the future*

Looking at future research of relevance for designing industrial policies the following key questions were put forward:

- What are the implications of the emerging geography of innovation, creating a handful of new but diverse and intensely competing innovation hubs in Asia, for industrial development in developing countries?
- What are the realistic options for industrial policies of the diverse group of developing countries and how can each of these policies leverage benefits from GVC and innovation network participation?
- What are the industrial upgrading strategies to pursue? What policies can host countries use to attract and expand R&D by TNCs for local technological innovation, learning and upgrading?
- What are the industrial upgrading strategies to pursue? How much national specialisation and engaging in interdependency with other societies is considered too much?
- What policies can host countries use to attract and expand R&D by TNCs for local technological innovation, learning and upgrading?
- What role are TNCs playing as collaborators with national universities in developing countries?
- What are the emerging patterns of externalisation in university–industry linkages through integration into innovation networks?

- What new possibilities are emerging for the international exchange of scarce human resources?
- What are the implications of generic technologies for industrial upgrading and economic growth?
- How will global production and distribution adapt to an environment where energy prices are likely to remain high? Can the logistics capabilities of developing countries respond to these challenges?

Empirical research and theoretical analysis that would contribute to a better understanding of these issues is called for.

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Notes

- 1 The notion of ‘deep’ integration refers to establishing or expanding an institutional environment that facilitates trade and location of production beyond national borders. Positive integration means policies designed to encourage trade and facilitate value chain fragmentations. In contrast, shallow integration refers to the lowering or eliminating barriers to trade in goods and services across national borders in the region. In this context, negative integration entails lowering trade barriers by national policies. New regionalism involves many elements of deep integration (Evans et al., 2006).