# Editorial

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**Biographical notes:** Olga Memedovic is UNIDO Staff Member, at Research and Statistics Branch. She holds a PhD (Econ) from Erasmus University Rotterdam. Memedovic has led various research projects, among them the *EU–LDC Trade and Capital Relations, Global Value Chains and Production Networks: Prospect for Upgrading by Developing Countries* and *Public Goods for Economic Development*.

## 1 Introduction

Parts 2 and 3 of this thematic issue bring together ten papers based on field observations in specific industries. While Part 2 includes five papers focusing on industries, such as agro-food, leather, white goods (domestic appliances) and electronics (semiconductors), the papers in Part 3 will be dedicated to the automotive industry. The purpose of providing these case studies is to deepen our understanding of how the dynamics of globalisation vary by these industries and to learn from the experiences of countries and firms taking part in global value chain (GVC)-engaged industrialisation. The reason for including these papers is that the technical and institutional specifics of industries – capital and technology requirements, skills, standards, regulations and the like, all matter for understanding the potential for technological learning and industrial upgrading. It is imperative that the conceptual models presented in the first part of this special thematic issue are tested and extended by real world case studies.

The selected papers use value chain analysis to address the following questions: what are the forces shaping the geographical division of labour in these industries; how are value chains governed in these industries and what are the implications for local technological learning, innovation and development; what are the sources of lead-firm market power and how do they affect the chain nodes local firms can occupy and control; what are the characteristics of the markets that specific chain is supplying; where is value added created and how is income distributed along a specific GVC; and what policies are required to foster local industrial upgrading?

## 2 The opportunities and risks of GVCs for local industrial upgrading and catch up

The key development challenges faced by developing and least developed countries (LDCs) are how they can reach the global frontier in technology and productivity

(UNIDO, 2005) and what industrial strategies and policies they should pursue to reach this goal. For this Special Issue the relevant question is: how do the dynamics of GVCs in specific industries affect the catching-up challenge?

What do the papers in this volume tell, in general, about this question? On the one hand, GVC can create new opportunities for developing countries and their firms to participate in global-scale production arrangements; to interact with leading Transnational Corporations (TNCs) and competitive markets; and to exploit niches where complementarities can be offered and where economic and knowledge gains can be captured. On the other hand, although the opportunities for industrial catching up can broaden in the GVC setting, leveraging them requires a thorough understanding of the requirements of lead firms and the dynamics of sector-specifics GVC as a whole. As international production fragmentation deepens organisationally and widens geographically, creating unprecedented interdependences between economies and global integration accelerates structural changes, the causal links between domestic resources and domestic capability building become more complex and economic adjustment through policy becomes more difficult.

Modularisation in some GVCs is extending competition beyond final products to specialised value chain segments and tasks, such as contract manufacturing, logistics, call centres and IT services. Suppliers are less likely to be dedicated to specific lead firms and can become generalists, often with global operations, offering integrated packages of products, including the bundling of manufactured goods and services, to various GVCs. Logistics firms can engage also in some manufacturing activities and in distribution. Transportation firms can offer integrated logistics services, and so on. The critical issues are how to monitor these continuous changes in the division of labour and how to act appropriately through structural policy so that national economies can benefit from globalisation?

While the rise of huge global suppliers creates new barrier to entry to the first tier, they can also create new market niches for specialised products and services that require flexibility, innovativeness and personalised contacts and can be served by small and medium sized enterprises (OECD, 2007a; OECD, 2007b; UNCTAD, 2007). But the drive for capability building can also create new hurdles. Engaging in a co-evolutionary process of outsourcing, offshoring and capability development generates new demands and requirements in terms of operational scale, management, expertise, employee skills, finance and intellectual property protection, which are difficult to maintain by frontline small enterprises only.

With the deepening of vertical specialisation in GVCs to include Research and Development (R&D) and innovation activities, new global markets for technology and knowledge-intensive skills are emerging, transforming the geography of innovation and creating even greater challenges and opportunities for developing country firms striving to catch up.[1] The greater complexity and multidisciplinary nature of scientific research, where many technologies and skills are used to create a product and to satisfy consumer needs, coupled with the higher costs and risks of R&D processes, require mobilisation of diverse knowledge bases that are rarely available within the boundaries of single firms or countries (The Economist, 2007). For lead firm in GVCs, competitiveness now depends on their ability not only to leverage GVCs to reach high cost cuts and efficiency but also to mobilise external and internal sources of knowledge to develop new technologies and products that meet specific market needs. Asia's rise as an important location for 'innovation offshoring' means that knowledge workers in Silicon

Valley now work directly with colleagues in Seoul, Taiwan's Hsinchu Science Park, Beijing, Shanghai, Bangalore, Delhi and Hyderabad. We therefore have to ask if the locus of innovation will shift as well (Ernst, 2008).

As it is now widely recognised that coordinated production and innovation sharing in GVCs allow for fast technological learning, innovation and development, leveraging GVCs for industrial upgrading and catch up has therefore become a central strategic goal for lagging developing countries and firms. Empirical work has also shown that developing countries taking part in GVCs are keener to invest in modernising their rules and regulations, physical infrastructure, ports and customs procedures and in general to have better connections with the global economy (Arvis et al., 2007). For governments at various levels, the challenge is how to reach this goal.

## 3 What strategies and policies for latecomer countries in the GVCs context?

According to the development literature, latecomer countries and firms can pursue catch-up strategies based on Gerschenkron's 'latecomer effect'. They can use the starting advantage of lower costs to gain new business and foreign exchange and then leverage this to acquire new knowledge, technology, markets and skills (UNIDO, 2002; Mathews, 2006, pp.2, 7). They can exploit their late arrival by tapping selectively into leading edge markets, rather than having to reproduce the entire previous technological trajectory or the entire value chain domestically (Gerschenkron, 1962). They can at first seek GVC engagement at their technological competence level and use co-evolutionary relationships with foreign buyers and global engagement to reach higher competence levels to produce more 'sophisticated', higher value added goods and services, with higher productivity and economic growth potential to catch up (Rodrik, 2006, p.12). Latecomers can achieve rapid economic growth while experiencing fast structural changes (Gerschenkron, 1962, p.7). By using various forms of institutional and organisational innovations to drive the process they can overcome some of the institutional and organisational inertia that can hold back their more established competitors.

But realising such GVC leveraging strategies is not an easy process. Many new policy challenges arise from the present global economic setting. Intensified international interdependences and time and distance compression wrought by GVCs have begun to collapse the orderly and predictable development stages. We can see that simultaneous industrialisation and de-industrialisation have occurred in a range of industries, like electronics, apparel, toys and consumer goods and in the agro-food (Whitakker et al., 2007; Willkinson, in this issue).

Specialisation in GVC can lead to marginalisation in low-value segments of the value chain or to isolation in a few export-oriented firms that remain detached from the rest of the domestic economy. Competition to attract and expand some of the R&D tasks of the leading firms can intensify and lead to a 'race to the bottom'. Lead firms in GVCs are not always 'developmental firms' and do not always pursue externalisation strategies that are beneficial for developing countries. Knowledge and technology are not provided as pure public goods in GVCs. And even if they are, they can only be useful when firms and nations have the necessary *absorptive* (Abramovitz, 1989; Bell and Pavitt, 1997) and *adaptive* capacity (North, 2005, pp.77–78)[2] to stimulate broad-based and sustainable upgrading. Building absorptive capacity requires time and investment in infrastructure,

education, training, market research, and in domestic R&D. Local firms must constantly invest in upgrading their skills and knowledge base**.** Building adaptive capacity calls for the purposive and coherent collective actions of society at various levels to build institutions that are flexible and open enough to adapt to new circumstances (for instance, flexible labour and financial market institutions).

Equally important are national strategies and policies that influence political, social and macroeconomic stability and the provision of market supporting and augmenting public goods. This includes rules and regulations like competition policies and property rights protection and efficient procedures dealing with these; trade facilitation; education; physical, knowledge and quality infrastructure; and business development services. Such social overhead capital cannot be generated through market mechanisms. The national strategies and policies also need to be complemented with supra-national regional or multinational collective actions. For instance, individual states can pursue policies to deepen regional economic integration that facilitate trade and location of production beyond national borders, but they will also need to deal effectively collectively with the positive and negative externalities and the provision of international public goods (financial stability, technological progress, environmental sustainability and international trade regime) (Sandler, 2004; Evans, 2006). The central challenge lies in how to create these conditions in the environment characterised by border-spanning GVCs, where the key technologies and drivers of innovation and new markets creation are controlled by lead firms that may be based outside the country.

Because firms innovate and learn best in the dense networks of enterprises, institutions and markets, collective action by coalitions of government, industry and academia should also be encouraged and mobilised at local sub-national and cluster levels to stimulate local firms to adopt common norms, expectations, values, attitudes and practices that nurture the culture of technology learning and innovation and that encourage knowledge transfer (Pietrobelli and Rabellotti, 2004; Cooke, 2005; Cooke and Memedovic, 2006). These coalitions are also needed to develop and to commit to a vision that can give direction to national industrial strategy and to identify and support building of the complementary competences that are required for setting up positive intra- and inter-value chain linkages, as technological learning and mastery may vary by firm, sector and technology (Nelson, 2003). This is especially important for developing countries striving to diversify their economic base and to move from traditional to non-traditional products and services.

Getting the policy formulation process right, by ensuring that firms, government and representatives of academia collaborate in formulating vision, strategies and policies, is important, as stressed by Rodrik (2004). But the most pressing need is for concerned stakeholders to understand and monitor the dynamic processes that are driving global integration and structural changes, so that they can fashion appropriate strategies and policies, and direct public investment to appropriate uses.

What policy mechanisms can latecomer countries use to catch up in the GVC context? First, policy makers at various levels – national and supranational (bilateral and multilateral) – can help local firms to understand the various kinds of organisational and institutional innovations and strategic approaches used by lead firms in GVCs and how these can influence local technological learning, innovation and upgrading. The goal should be to help local firms improve their capability to learn and master technologies and practices that are in use in countries and firms that operate at or near technological frontiers (Mathews and Cho, 2000; Mathews, 2002; Mathews, 2005; Mathews, 2006).

Second, policies and programmes can be set up to help latecomer firms to establish linkages with lead firms in GVCs to secure access to new markets, skills, knowledge, technology and relevant information that are controlled by these firms. These linkages can offer prospects for fast learning and acquisition of production capabilities (Ernst et al., 1998; Lall, 2000; Gereffi, 2006; Sturgeon, 2006). Leveraging global innovation networks by attracting R&D tasks may also help some firms to adjust to abrupt changes in technology and markets and, in some cases, it may also catalyse the development and the diffusion of innovative capabilities ahead of market signals (Ernst, in this issue).

Third, policies can be set with an eye toward leapfrogging in some technological areas by bypassing earlier technologies and standards and the outmoded skill and infrastructure requirements associated with them. New information communication technologies and the support of open source schemes for sharing information and creating inter-firm linkages in GVC can overcome time and distance constraints and can enable the compression of technological learning and innovation.

Fourth, the speed of change in technology, vertical fragmentation in production and global economic integration puts a premium on fast and continuous technological learning and innovation and on the policies and programmes that support them. The key policy areas include supporting generic, widely sought-after capabilities by deepening and broadening the local knowledge base; developing a mix of skills (analytical, synthetic and symbolic) that firms can use to adjust and to shift factors of production according to dynamic comparative advantages; strengthening specific local assets as a source of value creation; building a strong business environment for industrial clusters to grow and to differentiate a specific location and make it attractive to foreign buyers and investors; encouraging creativity and innovativeness in business, and fostering entrepreneurship and new firm creation.

Implementing these policies calls for flexible and responsive policy making based on ongoing capacity building in the public sector. The first step should be to gain, through research as presented in this volume, deep qualitative knowledge of the details of specific global industries and the patterns of dispersion and agglomeration that exist and are emerging around the world. Failure to grasp these trends can mean misdirected resources, or even worse, missed opportunities as high value GVC niches are filled by places with more effective, flexible and dynamic policy regimes.

In sum, the intensified international interdependences from GVCs raise the benefits of good, timely and flexible national policies, and at the same time raise the costs of their failure.

## 4 Overview of the papers

### *4.1 Linkages with the GVC do not automatically result in upgrading and catching up*

GVCs are present in LDCs but studies dealing with the impact of GVCs on these countries are scarce. GVCs often represent one of the few options for LDCs' local firms and suppliers to get access to larger markets, new technologies and skills. Pietrobelli's paper uses primary and secondary empirical evidence to explore and discuss upgrading prospects for LDCs in agro-food GVCs. His findings point out that opportunities exist, but to realise them depends on many factors. But there are risks too: lead firms are not always interested in investing in local capability building and they may also switch

to other suppliers. Suppliers can also choose to 'trade down', to focus on economies of scale, high specialisation and simple technologies, and can aim at mass markets through large-scale retailers, as discussed by Gibbon and Ponte (2005).

The division of labour in the global leather value chain follows a pattern similar to other global industries. Memedovic and Mattila's paper shows that the global leather value chain is made up of local clusters of farms, slaughterhouses, tanneries and manufacturers, and of lead firms like branded marketers, retail chains and branded manufacturers. Lead firms exercise tight governance of the supply chain through their superior design and market information, making upgrading difficult for manufacturers. Empirical work confirms that linking up with these lead firms can provide better access to market information and good learning experience, but the risk is that dependency on a few or even one buyer can develop.

Bongalia et al.'s paper takes an evolutionary approach and elaborates on firms' resources and capabilities and brings new insights on emerging economies' firm-level upgrading. The paper analyses the emergence of a regional leader from Turkey, Arçelik, which upgraded from original equipment manufacturing to original brand manufacturing in the white goods industry and became a leading international producer.

### *4.2 The role of convention analysis in the studies on agro-food system*

Wilkinson explores the strengths and limitations of GVC analysis in agro-food from the perspective of transaction cost and convention theory frames of reference. Wilkinson argues that the transaction cost and convention theory underpinnings of GVC analysis are complementary in the discussion of different GVC governance patterns. But in the context of conflicting value systems, convention analysis with social network analysis is the most appropriate way of explaining the broader shifts in values that have occurred in agro-food. The informal economy transition to artisan niche market status and the current centrality of consumption are discussed as two phenomena illustrating the relative strengths of a convention-based analysis.

### *4.3 The growing organisational and geographical mobility of innovation*

The paper by Ernst in this Special Issue offers conceptual building blocks and empirical evidence to analyze the growing organizational and geographical mobility of innovation. Ernst shows that an important lesson learned from Asian experience, especially in electronics, is that the geography of global innovation networks is driven by a combination of pull (the attractiveness of locations for foreign partners); push (changes in technology and organisational innovation); and enabling factors (favourable business environment conditions) (Ernst, 2005).

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## Notes

1 This is in contrast with the prevailing view that R&D tasks are more tacit and 'sticky', thus belonging to the domain of 'core' competences that would usually remain under the leading firm and its home country control (Ernst and Lüthje, 2003; Ernst, 2008).

2 According to North (2005, pp.77–78), the adaptive capacity of a country implies a set of institutional, technological and co-evolutionary developments. Adaptive efficiency of society is determined by a set of institutions ('rules of the game') that readily adapt to new circumstances and these institutions also depend on the informal constraints of society that cannot be created in a short period of time as they are part of the evolutionary process that requires a long period of time.