

Global commodity chains, global value chains and global production networks

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Introduction

Geography offers various tie-ins to International Political Economy (IPE). Geographical concepts and theories that deal with the interplay of economics and politics are abundant and diverse, and it is not possible to present all of them in a single book chapter. This chapter focuses on global commodity chains (GCCs), global value chains (GVCs) and global production networks (GPNs). While the latter is a genuinely geographical approach, GCCs and GVCs have been coined by sociologists. All three have found wide application in Economic Geography, shaping the way representatives of the discipline see the geographies of global production. Research on GCCs, GVCs and GPNs has been widely published in the *Review of International Political Economy*, demonstrating that there is a considerable interest in these approaches among scholars and students of IPE.

The empirical backdrop to GCCs, GVCs and GPNs is globalisation: processes of production and consumption are increasingly linked across national borders. By now, exports of intermediary goods exceed exports of final and capital goods. More and more components are traded internationally for subsequent use in production. As Gereffi (2014) remarks, there has been a strong shift from trade in goods to trade in capabilities, tasks and value added. Others speak of offshoring/spatial relocation in this regard, and Cattaneo, Gereffi and Staritz conclude that due to the increasing fragmentation of production across the globe, transnational value chains 'have become the world economy's backbone and central nervous system' (2010: 7).

This phenomenon is not as new as it seems. Prior to research on GCCs, GVCs and GPNs, scholars such as Dicken (1976) and Watts (1981) pointed out that countries from the periphery of the world economy became sites for the more routine, low-skilled segments of increasingly globalised production. Other activities – marketing as well as research and design – remained in economically more advanced parts of the world. 'Branch plant' investment offered little in terms of linkage opportunities, reinvestment of profits, skill formation and technology transfer. A different pattern emerged with the rise of 'performance plants'. These are marked by autonomy, complex functionality, specialised markets, heightened product and processes technologies as well as qualified workforces (Phelps *et al.* 2003; Pike 1998). New opportunities arose for the host regions of such plants because of their embeddedness – for instance through deeper

localised backward and forward linkages (Turok 1993). The extreme cases of branch plants and performance plants point at the range of developmental outcomes in globally fragmented production. Explaining these outcomes is the purpose of research on GCCs, GVCs and GPNs.

This chapter begins with an overview of GCCs and GVCs, introducing the frameworks that have been developed in this context and showing how the two approaches have evolved since the mid-1990s. It then summarises extensions to GVC research. The third main sector deals with the analytical framework advanced for GPNs, including recent efforts to turn it into a theory. The last main section builds inroads into better incorporating the state into research on GVCs and GPNs by focusing on industrial policy. Throughout the text, I provide empirical examples from my own research on value chains and production networks in the oil and gas sector.

It should also be said what this chapter is not. It is not an in-depth survey of research on GCCs, GVCs and GPNs. Instead, key conceptual contributions are presented to provide readers with an overview that may serve as a starting point for further engagement with the corresponding literature. Some related concepts – in particular the filière approach by French scholars and Michael Porter's contributions on value chains – are not covered. While I mention varieties of capitalism and suggest how this branch of research may enrich the GPN approach, other potential tie-ins such as new regionalisms are not addressed. Further to that, I do not address the increasingly large policy-oriented literature that refers especially to the GVC approach, most importantly by the International Monetary Fund, World Bank and World Trade Organization.

Commodity and value chains

Research on GCCs goes back to an edited volume – *Commodity Chains and Global Capitalism* (Gereffi and Korzeniewicz 1994) – published in 1994. It brings together papers presented at a conference on ‘the political economy of the world system’ held two years earlier. In distinction from the often state-centric analyses of that time, the starting point of *Commodity Chains and Global Capitalism* is the conviction that industrial production has ‘dispersed to an ever expanding network of peripheral and core nations alike [...]. In today’s global factory, the production of a single commodity often spans many countries, with each nation performing tasks in which it has a cost advantage’ (Gereffi, Korzeniewicz and Korzeniewicz 1994: 1).

These transnational networks – clustered around single products – constitute GCCs, which are represented as linear and sequential chains. As depicted by Figure 10.1, each node within a GCC comprises the interaction of all players involved in the acquisition and organisation of inputs, including labour, their transport, distribution and consumption. The dynamics of GCCs result from organisation strategies and competitive relations between firms. The main analytical purpose of the approach is ‘to focus on the creation and distribution of global wealth as embodied in a multidimensional, multistage sequence of activities’ (Gereffi, Korzeniewicz and Korzeniewicz 1994: 13). In other words, the competitive relations in and strategic organisation of globally fragmented production is meant to explain the global distribution of wealth – that is, uneven development in the capitalist world economy.

The idea of better understanding the capitalist world economy by analysing individual products along chains predates *Commodity Chains and Global Capitalism*. In a seminal article, Hopkins and Wallerstein define a commodity chain as ‘a network of labor and production processes whose end result is a finished commodity’ (1986: 159; see also: Arrighi and Drangel 1986; Hopkins and Wallerstein 1977). They suggest that after having identified the chain from resource extraction to manufacturing to consumption, researchers should focus on four aspects: (1) the

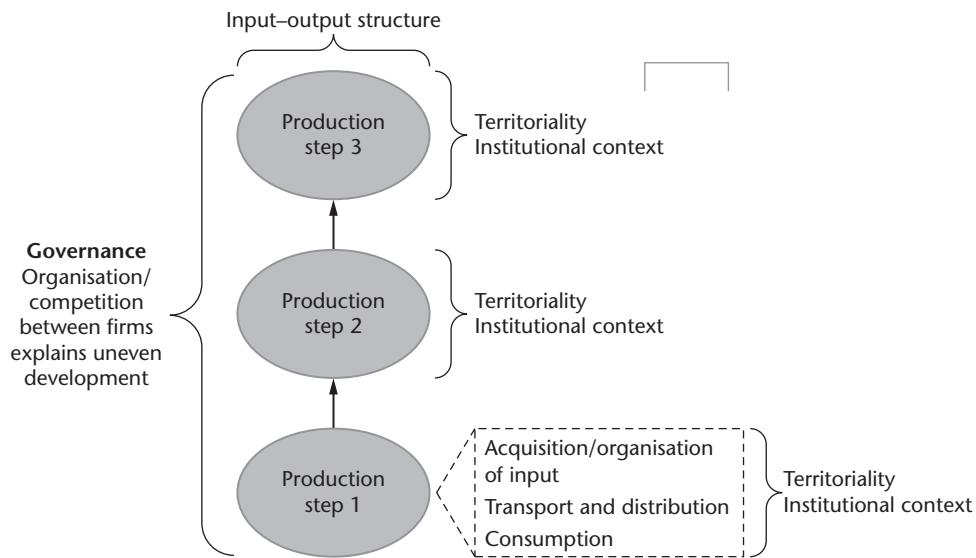


Figure 10.1 Conceptualisation of GCCs and relating analytical dimensions

Source: Author's own compilation.

flows to and from each node in the chain as well as the operations that occur around it, (2) the organisation of production within the node, (3) the dominant organisation of production throughout the chain and (4) the geographical location of each node. Gereffi (1994) converges these analytical steps into three dimensions of GCCs: input–output structure, territoriality and governance. In another publication, he (1995) adds the institutional context as a fourth dimension. It has received rather little attention ever since.

While input–output structure and territoriality constitute mostly descriptive dimensions, analyses of governance allow for explanations of geographically uneven development.¹ Gereffi (1994) distinguishes between buyer-driven and producer-driven chains. The latter are controlled by large conglomerates – for example in the automotive sector. Production is capital and technology-intensive, which creates entry barriers. Innovation occurs in production (through new production techniques, whose development is expensive). This means that lead firms can hardly pass full production on to suppliers because potential suppliers lack the necessary technologies or would share them with competitors. Import substitution strategies – in particular in Latin America prior to the 1980s – concentrate on producer-driven GCCs, with the state intervening in the economy through joint venture obligations, the creation and support of state-owned enterprises and similarly intrusive measures. Corporatism and the nationalisation of industries considered of strategic relevance also mark this approach.

Buyer-driven GCCs – most common in the apparel sector – are controlled by hollowed-out firms that do not engage in production. They control design and marketing, which constitute critical entry barriers. The reason for this is that in buyer-driven chains, innovation lies in design and marketing. Production does not require much capital or sophisticated technologies. It is intensive in labour. Hence, production can easily be outsourced via contract manufacturing. Buyer-driven GCCs stand at the core of export-oriented industrialisation, as exemplified by several countries in East and South-East Asia. The state – albeit often being labelled ‘developmental’ and in fact taking a decisive role for industrialisation – primarily assumes the role of a

facilitator that creates conditions conducive to development through the provision of adequate infrastructure, easy access to credits and similar means. Foreign investment and a bias towards capital vis-à-vis labour, leading to low wages and weak trade unions (or their outright absence), play a major role for such development strategies.

The dichotomy of buyer and producer-driven chains must not be misunderstood as a simplification. There is considerable variety within the two categories. The distinction of buyer and producer-driven GCCs guides analyses by pointing out which firms decide how the respective chain is organised. It is not a final outcome of such investigation. For example, Taplin's (1994) paper on strategic organisation of GCCs in the apparel sector reveals that even within the boundaries of single sectors, generalisation is hardly feasible: outsourcing for fashion-oriented apparel is very different from outsourcing for mass product apparel, although both chains are buyer-driven. Thus, it is misleading (yet common) to speak in singular of *the* apparel GCC or *the* electronics GCC. Commodity chains are not sector-specific, but they vary at the level of individual firms and products.

At a workshop held in the year 2000, leading scholars agreed to adapt the rather incoherent terminology in their publications, from then on speaking of value chains instead of commodity chains. In addition to the new label, governance has been refined. A fivefold typology – drafted by Gereffi, Humphrey and Sturgeon (2005) – helps to describe and explain the main differences among various forms of chain governance.² The three authors argue that the form of governance that marks a particular GVC depends on the complexity of transactions, the feasibility of codifying transactions and the capabilities in the supplier base (see also Table 10.1):

- In market relations, the costs of switching to new partners are low for all parties. Such linkages depend on easily codified transactions, simple product specifications and the availability of suppliers that have the capability to make the products in question with little support from the buyers. Market linkages do not have to be completely transitory, as it is typical of spot markets. They can persist over time, with repeated transactions.
- Suppliers in modular value chains make turn-key products to a customer's specifications. Turn-key products are less generic and more complex than those interchanged in market relations. Supplying complete modules allows for the internalisation of tacit information and reduces transaction costs, including the buyer's need for direct monitoring. Technical standards simplify interaction by reducing component variation and by unifying process and product specifications.

Table 10.1 Governance of GVCs and its determinants

| Type of governance | Complexity of transactions | Feasibility of codifying transactions | Capabilities in the supply-base |
|--------------------|----------------------------|---------------------------------------|---------------------------------|
| Market | Low | High | Medium |
| Modular | Medium | Medium | High |
| Relational | High | Medium | Very high |
| Captive | Low | High | Low |
| Hierarchy | Very high | Low | Very low |

Source: Adapted and altered from Gereffi, Humphrey and Sturgeon (2005: 87).

Note

Gereffi, Humphrey and Sturgeon only distinguish between high and low. The finer differentiation in Table 10.1 reflects my own description of the types of governance from the previous lines.

- In relational value chains, interaction between buyers and sellers is very complex because of high levels of asset specificity. The availability of highly competent suppliers – a key condition for relational GVCs – provides a strong motivation for lead firms to outsource so as to gain access to complementary competences. Tacit knowledge must be exchanged. The mutual dependence that arises can be regulated through reputation, social and spatial proximity and the like.
- Captive relations involve small suppliers that are dependent on much larger buyers. Control and monitoring of production is high because of low supplier competence. Captive suppliers are confined to a narrow range of tasks – for example, they are mainly engaged in simple assembly. They depend on the buyers for complementary activities such as design, logistics, component purchasing and process technology upgrading. The suppliers hence face significant switching costs.
- Hierarchy or vertical integration is about managerial control, flowing from headquarters to subsidiaries. When product specifications cannot be codified, products are complex and/or competent suppliers cannot be found, the corresponding production must take place in-house. This form of governance may also result from a need to exchange tacit knowledge between value chain activities as well as a need to effectively manage complex webs of inputs and outputs, controlling key assets such as intellectual property.

This fivefold typology is more than a refinement of the distinction of buyer and producer-driven chains. GCC analysis is focussed on firms driving chains. Research on GVCs, meanwhile, has shifted to governance as coordination. It concentrates on inter-firm relations within specific chains, whereas the distinction of buyer and producer-driven chains implies a focus on lead firms. As Bair (2005) points out, research on GCCs stands in the tradition of world system analysis because it aims at showing how the periphery of the world economy is dominated by the core. It is meant to uncover how commodity chains structure and reproduce a stratified and hierarchical world-system. The more recent literature, conversely, is influenced by Business Studies. It aims at deriving policy implications.

Following this re-orientation, GVC research is driven by a strong interest in the prospects of development in value chains. A first proxy for such development is the distribution of profits and risks among all parties involved. It relates to the question of who is powerful and who is not, as powerful actors capture more profits and make others take risks to a disproportionate extent. The five types of governance illuminate power asymmetries. In captive relations, power is exerted directly by lead firms on suppliers, which is analogous to the direct administrative control that headquarters exert over subsidiaries of a vertically integrated firm. In relational value chains, the power balance is more symmetrical, given that all parties contribute key competences. Modular GVCs and markets are characterised by low asymmetries because suppliers and buyers work with multiple partners and switching partners is relatively easy (Gereffi and Lee 2012). With regard to regional development, this implies that relational GVCs lead to better outcomes for the host region of the suppliers, whereas captive GVCs and vertical integration are disadvantageous. Modular and market relations stand somewhere in-between.

The last component of GCC/GVC studies that needs to be addressed in this overview is upgrading. In GCC research, upgrading is not an issue of major interest (because GCC research concentrates on uneven development in the capitalist world economy, not on the prospects of development therein). The term appears only in two chapters of *Commodity Chains and Global Capitalism*, being understood as a continuous process towards more sophisticated, more value-adding activities (Korzeniewicz 1994; Lee and Cason 1994). To research on GVCs, meanwhile,

upgrading is central, as it is seen as the path towards development. Humphrey and Schmitz (2002; see also: Kaplinsky and Morris 2001) identify four types of upgrading:

- Process upgrading means that firms manage to transform inputs into outputs more efficiently by re-organising the production system or introducing new technologies. This matters particularly to firms new to global markets and GVCs, as their key challenge is to attain consistency in quality and to increase the speed of production.
- If firms upgrade their products, they will move into more sophisticated product lines. Suppliers usually start by catering for the low end of the market and then move on to upper market segments. They learn by exporting, but such sequences do not necessarily occur and face various obstacles.
- Functional upgrading entails acquiring new functions to increase the overall skill content of a firm's activities. Having started with mere assembly, suppliers may take control over the entire production process, including the acquisition of inputs. They later move on to design and marketing, and eventually sell their own brands.
- In chain upgrading, firms move into new but often related industries. For example, small enterprises that used to provide equipment and services to the fishing industry have benefited from Cape Town's efforts to position itself as an oil and gas hub, now servicing the offshore hydrocarbon sector.³ Engineering companies that once produced tanks for sugar refineries in Mauritius sell tanks to petro-chemical complexes today because the technical details of production are similar.⁴

Suppliers – or, more generally, firms that seek to upgrade – enjoy considerable advantages in some of these forms of upgrading, but they suffer from major inconveniences in others.⁵ These also relate to GVC governance. Generally speaking, if governance is asymmetric, suppliers will have easy and quick access to knowledge needed for process and product upgrading – most typically in captive relations. Opportunities for the other forms of upgrading, which are more promising regarding increasing value capture, are limited. Conversely, if chain governance is rather symmetric, suppliers are more likely to move to related industries and/or acquire new functions. The reason for this is that symmetric governance is associated with suppliers developing capacities on their own, especially in modular and relational GVCs. Yet, chain upgrading and functional upgrading depend on substantial investment and support from local institutions. Collective action through business associations, export consortia and local research facilities or the transformation of some local firms into large enterprises are necessary (Humphrey and Schmitz 2000).

Extensions of the GVC approach

In recent years, valuable extensions of the GVC approach have been made. This section cannot present all of them. It nevertheless builds inroads into important debates.

Considering that the GVC approach has its roots in Sociology, it tends to neglect the territoriality of value chains. Scholars with a background in Geography have further explored this dimension. Fold (2014) provides a framework for analysing the diversification of rural settlements, showing the impact of GVCs at this level. He suggests that the GVC approach has to better address how the creation, enhancement, capture and distribution of value affect places. In a similar vein, Neilson and Pritchard (2010) reveal the uneven insertion of ethical and fair sourcing schemes in India's coffee and tea plantation districts into GVCs. These mostly benefit large-scale plantations, which meet compliance criteria, while smallholders are unable to carry the cost of training and certification.

Bair (2005) goes beyond these approaches, ascribing explanatory value to territoriality instead of conceptualising it as an outcome of other features of GVCs. She argues that GVCs are influenced by their political and social embeddedness. Foodstuff GVCs, for instance, cannot be understood without taking into consideration regulatory mechanisms at various points of the chain (Ponte 2002; Stevens 2001). Salmon farming in Chile reflects historically developed social relations in the countryside (Phyne and Mansilla 2003). Arguably, these forms of embeddedness rather correspond to the neglected fourth dimension of GVCs: the institutional context. Nonetheless, the key message is that place-specific conditions shape GVCs, not just forms of governance.

Seeking to overcome a different weakness of the GVC approach, Bolwig *et al.* (2010) concentrate on horizontal dynamics. Horizontal dynamics are about the various relationships within a specific node of a value chain – for instance between migrant workers at a commercial farm and the owner of the farm. The typically vertical GVC perspective neglects these relationships. It fails to capture, for example, the numerous sources from which poor households generate income: food and cash-crop farming, harvesting of wild products, off-farm work and migrant remittances. These are individual chains, but what happens in one chain cannot be understood without taking the horizontal dynamics into consideration.

Dussel Peters (2008) criticises that the GVC approach conceptualises upgrading with regard to firms. For this reason, it leads to wrong conclusions on regional development. Dussel Peters highlights the contrast between the success of Mexico's apparel exports and the lack of broad-based benefits generated by the industry for its host regions. He concludes that in processes of upgrading, firms (or regions) must avoid the 'commodification trap'. They should concentrate on process innovation instead of product innovation so as to prevent simple assembly in captive relations. By taking the commodification trap into consideration, it can be explained whether the integration into a specific GVC contributes to socio-economic polarisation among and within regions or, alternatively, holds opportunities for broad-based development.

Taking these thoughts a step further, upgrading describes how a firm changes its position in and across GVCs. The developmental impact of such dynamics goes far beyond the individual firm and is not necessarily positive. For example, the upgrading by a specific firm may have negative effects on its suppliers if they fail to adapt to new requirements and hence drop out of the GVC. Bair and Werner (2011) accordingly criticise GVC literature for its inclusionary bias.⁶ Indeed, GVC research deals almost only with cases of successful integration into value chains, but the changing geographies of global production reflect moments of inclusion and exclusion. Processes of disconnecting or expelling from GVCs merit more attention, as they are a vital feature of uneven development.

There is also a certain lacuna in early GVC literature regarding upgrading as a socially beneficial process.⁷ The concept of social upgrading closes this gap. Social upgrading refers to the improvement in the entitlements and rights of workers and the enhancement of the quality of their employment. It means analysing labour as socially embedded instead of seeing labour as a productive factor. The prospects of social upgrading depend on numerous characteristics of different types of work, ranging from small-scale, household-based activities to knowledge-intensive professions. Beyond that, social upgrading results from bargaining between capital and labour, which is strongly influenced by the enabling legal framework. In consequence, irregular and outsourced workers are less likely to benefit from social upgrading than regular workers (Barrientos, Gereffi and Rossi 2011).

Starosta (2010a; 2010b) criticises that the GVC approach – and research on GCCs alike – typologically describes outer manifestations of global capitalism (the form). It fails to uncover underlying forces (the content). This becomes apparent regarding power: powerful firms dictate,

most importantly, who captures the profits generated in the chain. The fundamental question of why some firms are more powerful than others is left unanswered, at least in Starosta's reading of the aforementioned literature. What is more, the core interest of GVC research is the creation and capture of value. The approach operates without a theory of value, however.

Within the limits of this chapter, it is not possible to adequately summarise Starosta's complex application of Marxian theory to value chains. His articles and a contribution by Taylor (2007) may serve as a starting point for readers interested in GVCs from the perspective of Radical Economic Geography. As a side note, these lines also hint at the unfortunate fact that Marxist thinking is largely ignored in the mainstream research to which this chapter provides an introduction.⁸

Production networks

Geographers from Manchester and Singapore have advanced an alternative yet related analytical framework: GPNs. The key difference between GCCs and GVCs, on the one side, and GPNs, on the other, is that the GPN concept pays greater attention to the territorial dimension, meaning to how production networks interact with regions at a subnational scale.⁹ Because the GCC and GVC approaches have been shaped by sociologists, social relationships – or, more precisely, lead firm dominance and inter-firm coordination – stand at their respective cores. The GPN approach, meanwhile, reflects the principal interest of economic geographers: the mutual influence of firms and regions.

By applying a network heuristic, the GPN approach emphasises the diversity of horizontal and vertical connections in production processes. They are multi-scalar and comprise non-firm actors. Coe, Dicken and Hess accordingly argue that the approach provides a framework that aims to 'incorporate all kinds of network relationships'. It 'encompass[es] all relevant sets of actors' involved in the production of a specific good or the provision of a particular service (2008: 272; on the network heuristic, see: Dicken *et al.* 2001). In other words, the GPN approach is highly inclusive with regard to actors and structures that shape the geographies of global production, and hence account for development trajectories that mark different regions. Arguably, research on GPNs therefore covers more actors than GCC and GVC studies do, in particular non-firm actors such as public authorities and trade unions.

Laying the groundwork for research on GPNs, Henderson *et al.* (2002) propose three analytical categories to systematically examine how a specific place plugs into a specific GPN (see Figure 10.2, further below). First, value refers to the conversion of labour power into actual labour and to economic return or rent that results from the production of goods and services. The latter understanding has become much more important to empirical assessments. It implies

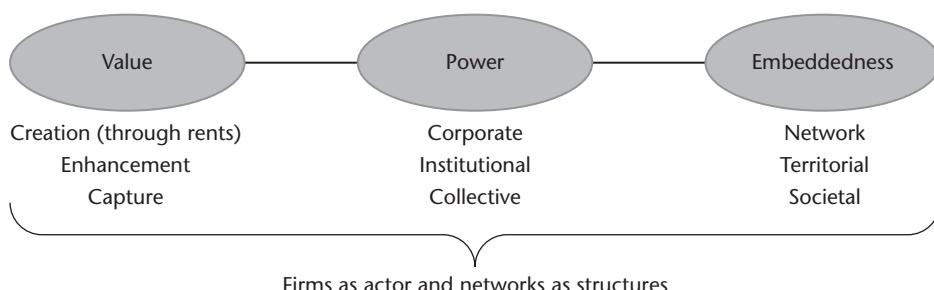


Figure 10.2 Value, power and embeddedness in GPNs

Source: Author's own draft, based on Henderson *et al.* (2002).

that value may be created through the control of human and natural resources (resource rent) and technologies (technological rent), uneven access to the financial system (financial rent) and infrastructure (infrastructure rent), the development of organisational capabilities (organisational rent), the harnessing of inter-firm relationships (relational rent) and the prominence of brand names (brand rent). If companies manage to influence policies in their favour, there will be a policy rent (Kaplinsky 2005). Different firms are able to create and generate different types of rents to different extents. Regions are marked by individual strengths and weaknesses regarding the creation of rents, which implies diverse ways of integration into GPNs.

Box 10.1 Value creation through rents in the Brazilian oil and gas sector

Brazil's oil and gas sector is dominated by the semi-statal giant Petrobras. Petrobras creates value from different rents. It benefits from a policy and resource rents because legislation on local content grants Petrobras privileged access to Brazil's vast hydrocarbon reserves, especially offshore, pre-salt deposits found in 2007. Petrobras is also the core player at a science and technology parks in Rio de Janeiro. At that park, foreign service providers such as Halliburton and Schlumberger adapt their technologies to the geological specificities of the Brazilian reserves. Other oil majors do not have the same access to these networks. This leads to an organisational rent. Petrobras itself is the technology leader for ultra-deepsea exploration, meaning that it benefits from a technology rent too.

Source: Scholvin et al. 2020.

Once created through rents, value is enhanced. Existing goods and services are made better in intra and inter-firm processes. They become more valuable because of knowledge and technology being incorporated into them. Demand for skilled labour increases at locations where value enhancement takes place and local firms are able to move towards more sophisticated types of rents of their own.

Yet, it is one thing for value to be created and enhanced in a region that has plugged into a GPN but quite another for value to be captured locally. Inter-firm relations are always about power, and power constitutes a proxy for who benefits more. As Coe and Yeung argue, a GPN 'can be seen as a series of exchange relationships, and variations in the power balance along the network will affect the ability of its members to capture value' (2015: 17). Value capture is also about bargaining between lead firms and the regions that plug into GPNs. The pertinent issues related to value capture are therefore matters of public policies that affect laws on ownership structures and repatriation of profits (Henderson *et al.* 2002). 'For the purposes of economic development, value must be retained within firms, or the parts of firms, based in the territory under question' (Coe and Yeung 2015: 172).

The second analytical category that Henderson and his co-authors suggest is, hence, power. GPNs – and value capture in particular – are influenced by three forms of power: corporate power is about lead firms controlling their partners; subnational, national and international public authorities exercise institutional power, for example prescribing a certain local content or limiting the repatriation of profits; collective power is wielded by business associations, trade unions and similar organisations. Coe *et al.* (2004) add that cooperative relations between business associations, public authorities and trade unions – meaning organisations that often pursue opposed interests – are essential for plugging into and benefitting from GPNs.

Bringing power and value capture together, Coe and Yeung (2015) distinguish between the strategic partners of lead firms, specialised suppliers and generic suppliers. Strategic partners offer complete or at least partial solutions to lead firms by co-design or development in manufacturing and services. Specialised suppliers are not involved in these activities. They provide intermediate goods and services to lead firms, wielding less power and capturing less value. The input by specialised suppliers differs from that by generic suppliers regarding sophistication. The latter supply highly standardised and low-value products and services to lead firms, being even less powerful and capturing even less value.

Box 10.2 Strategic partners, specialised suppliers and generic suppliers in the oil and gas sector in Ghana

Oil and gas resources were found in Ghana in 2007. The town of Takoradi has become the hub for oil field operators such as Anadarko, Kosmos and Tullow. Because of the high risks that mark oil and gas exploration, such lead firms hardly ever take a specific block on their own. They cooperate with corporations of their like, which serve as strategic partners, bringing in capital and expertise. Firms such as Baker Hughes and Oceaneering are specialised suppliers. They possess outstanding skills in drilling and other technology-intensive activities outsourced by the oil field operators. Ghanaian enterprises are mostly generic suppliers. They handle in-country transport for the lead firms and specialised suppliers, for example.

Source: Information obtained by the author during field research in Ghana in October 2017.

The third category from the seminal article by Henderson and his co-authors is embeddedness. Network embeddedness captures the economic, institutional and social relationships in which firms participate in GPNs, for example the stability of their relations with other firms or the relevance of the network to their business. Territorial embeddedness is about the anchoring of GPNs at specific places – because of dependence on markets and resources or sophistication of local networks of small and medium-scale enterprises, for instance. Successfully plugging into a GPN means reinforcing the territorial embeddedness of lead firms, virtually tying them down. Hess (2004) adds societal embeddedness. It covers how firms are positioned within the wider cultural and historical context of a place or region. This form of embeddedness connects to the literature on ‘varieties of capitalism’.

As noted, regional development depends on how local firms plug into GPNs. This means that endogenous factors are not sufficient for regional development. Coe *et al.* (2004) argue that regional assets – which range from labour and resources to technologies and organisational forms such as clusters – interact with regional institutions (see Figure 10.3). Business associations, labour organisations and public authorities transform such assets. In the ideal case, regional assets are moulded so that they meet the demands of GPNs in terms of value creation and enhancement. Using the words of Coe and his co-authors, regional assets must fit with ‘the strategic needs of actors in the global production network’ (2004: 471), providing relevant economies of scale or scope. Localisation economies occur as a consequence and GPNs are held down, thus unleashing the economic potential of the region in consideration.

This implies that there is bargaining and cooperation between lead firms and regional institutions. These relations do not only aim at transforming regional assets. They also affect industrial and social upgrading, growth trajectories and, most importantly, value capture (for example with regard to local reinvestment of profits). Merely plugging into GPNs does not necessarily

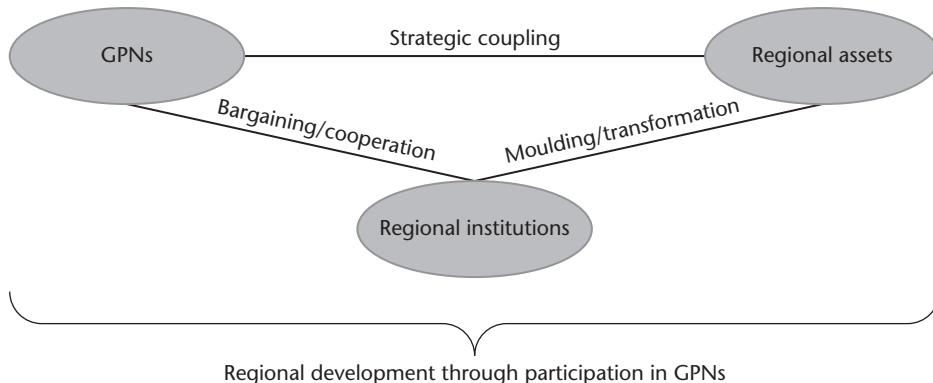


Figure 10.3 Regional development from the GPN perspective

Source: Author's own draft, based on Coe et al. (2004).

Note

Strategic coupling is explained further below.

lead to positive development outcomes. Regional institutions are the critical enablers not only of participation in GPNs but also of development through these networks.

In their recent book *Global Production Networks*, Coe and Yeung (2015) seek to turn the GPN approach into a theory. They suggest calling GPN research prior to this publication GPN 1.0 – that is, most of what I have summarised in the previous paragraphs. Their book, meanwhile, presents GPN 2.0. In order to advance a GPN theory, Coe and Yeung identify three drivers of market dynamics that have shaped the geographies of globalised production through increasing competition since the early 1990s: cost, flexibility and speed. Firms have to reduce costs, especially production costs, so as to remain competitive. This is achieved mainly by offshoring/spatial relocation – labelled a ‘spatial fix’ by Coe and Yeung. Flexibility results from firms specialising in the production of single components. Such a shift to core competences equals an ‘organisational fix’. Speed is due to technological innovation that facilitates the exchange of data over long distances and alters production in numerous other ways. It constitutes a ‘technological fix’ to increasing competition.

Coe and Yeung propose to begin with firm strategies. These reflect the just mentioned dynamics, and also comprise imperatives of creating new markets, achieving financial discipline (so as to perform well at stock markets) and mitigating risks that range from market volatility to natural hazards. Generally speaking, strategies aim to position firms better with regard to their cost–capability ratios. For example, lead firms in the electronics sector outsource production in order to decrease their costs. They remain highly capable because research and design is done in-house. Producers of mass apparel, conversely, depend on corresponding inputs from their buyers. They have low capabilities but also low costs.

Similar to the aforementioned fivefold typology of GVC governance, Coe and Yeung distinguish between intra-firm coordination, inter-firm control and inter-firm partnerships. Intra-firm coordination means the internalisation and consolidation of value-adding activities. While inter-firm control combines externalisation to subordinate generic suppliers with strong control by the lead firm, inter-firm partnerships are about collaboration with strategic partners and specialised suppliers. The two authors derive the form that GPN governance takes from cost–capability ratios as well as the imperatives of market creation, financial discipline and risk mitigation. If all four determinants are high, inter-firm partnerships will dominate (as in electronics). A low market imperative and moderate risks lead to inter-firm control (for example in the

automotive sector). Intra-firm coordination results from low pressure on cost–capability ratios and a low financial imperative (as in retail).

The outcome of firm strategies are trajectories of value capture.¹⁰ These reflect continuous processes of coupling, de-coupling and re-coupling with GPNs. I elaborate on ‘strategic coupling’ in the next section. For now, it is sufficient to define it as ‘the dynamic processes through which [...] strategic interests between local actors and their counterparts in the global economy’ are coordinated (Yeung 2009: 213). Since the specificities of strategic coupling – it can be divided into different modes and types – are a proxy for value capture, they have far-reaching implications for regional development.¹¹ Figure 10.4 summarises the causalities that shape global production networks:

Without disregarding the insights gained through the GPN perspective and the progress that the concept has made since the beginning of this century, I close this section by elaborating on shortcomings of GPN 2.0.¹² Coe and Yeung’s book is somewhat thin on political and socio-economic context factors. For example, the two authors name different forms of regional integration and paradigms for economic policy at the national level, but these would have to be better integrated into their analysis, especially to make GPN 2.0 more attractive to IPE scholars with a background in Political Science. Varieties of capitalism are mentioned. There is, however, no in-depth engagement with the corresponding literature, which would be particularly insightful because Coe and Yeung’s thinking is guided by their own research experience on the Global North and the tiger economies in the Far East. I doubt that their approach can be transferred to other parts of the world without better recognising how these are different. To provide an example, it is fair to say that state-owned companies in many sub-Saharan African countries are not driven by considerations of cost, flexibility and speed.

Beyond that, further efforts are needed for the theory building that Coe and Yeung promise. Theories simplify reality through models in order to concentrate on a limited number of factors in causal relationships. If conditions A and B are met, outcome C will occur. Conditions D, E, F and G are put aside, being largely neglected as noise in the background. Of course, the causal chain from dynamics of contemporary capitalism to firm strategies to trajectories of value capture to regional development meets this definition of a theory. Throughout their book, Coe and Yeung tend to cover everything they find relevant, however. For instance, the conditions concerning value capture trajectories range from natural resources and labour markets to financial incentives for investors to the presence of other firms and the local knowledge base. Such a

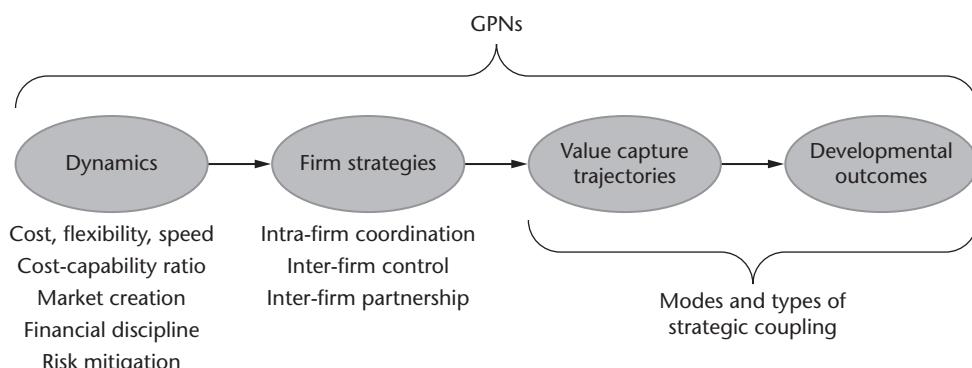


Figure 10.4 Causal chain according to GPN 2.0

Source: Author’s own draft, based on Coe and Yeung (2015).

catch-all framework makes for a valuable starting point, but it complicates the reduction necessary for theory building.

It has also been criticised that GPN analysis recognises territoriality only as far as it influences the production network in consideration. Place per se has received less attention. Yet, there are place-specific dynamics beyond the creation, enhancement and capture of value. These ought to be better reflected. As Kleibert and Horner (2018) suggest, GPNs of corporate services, especially financial services, are most suitable to showing the impact of plugging into GPNs on uneven development, for example in terms of a rural–urban divide or within world cities – that is, regarding places and regions from a more inclusive perspective.

Strategic coupling, the state and industrial policy

The last main section of this chapter serves the purpose of better tying research on GCCs, GVCs and GPNs to core interest of political scientific IPE, namely the interaction of economics and politics. Politics is not absent from the approaches presented here, but as Neilson, Pritchard and Yeung (2014) admit, politics – in particular the state – has received little attention in corresponding studies.¹³ This is not surprising because GCCs, GVCs and GPNs stand in a scientific tradition that seeks to overcome state-centrism. As Bair (2005) notes, research on GCCs and GVCs also emerged at a time when most countries abandoned state interference with the economy, favouring laissez-faire approaches and liberalisation instead.

Coming from the GVC perspective, Mayer and Phillips (2017) point out that states have facilitated the emergence of value chains by advancing policies of economic liberalisation, making GVCs a tool of development policy and accepting market concentration, meaning the increasing dominance of lead firms. States also regulate GVCs, now having largely privatised such regulation, for example via corporate social responsibility. They furthermore shape distributive outcomes, most importantly by pursuing policies that aim at competitiveness through less progressive taxation and the reduction of social welfare. Although Mayer and Phillips show that states outsource policies (and responsibly) across these three dimensions, states take the very decisions to do so.

Neilson, Pritchard and Yeung more narrowly argue that ‘state action [...] creates the enabling conditions that shape whether and how firms, regions and nations are able to engage with global markets, and their capacities to upgrade these engagements’ (2014: 3). Tariff and tax policies, the provision of education facilities and transport infrastructure as well as the state’s role in wage setting matter. These ideas are part of the aforementioned concept of strategic coupling. Strategic coupling is much more than state action though, as it captures the interaction of GPNs and regional institutions – the latter include countless private and public organisations. Coe and Yeung (2015) concentrate on forms of strategic coupling and their respective impacts on regional development, not on public policies. They distinguish three modes of coupling:

- Indigenous coupling is about inside-out processes. Local firms reach out of a region to participate in GPNs (or create new ones). These firms are autonomous and capture a considerable share of the value generated in the respective GPNs.
- Companies that meet the needs of a GPN perform functional coupling. The autonomy and value capture of companies involved in functional coupling are less than in indigenous coupling, although functional coupling is not necessarily an outside-in process that would merely aim at the host region of the firms in consideration.
- Structural coupling is limited to outside-in processes. Extra-regional lead firms connect a region to a GPN because of the region’s assets. Structural coupling is marked by little autonomy and little value capture for the regional firms.¹⁴

To avoid misunderstandings, strategic coupling is not always successful and certainly not automatic. Once achieved, the specificities of strategic coupling change over time, reflecting a continuous process of bargaining among all actors involved (Coe and Yeung 2015). In other words, regional development is not simply an outcome of the functional integration of firms from that region into a GPN. Rather, it ‘depend[s] on the ability of this coupling to stimulate processes of value creation, enhancement and [most importantly] capture’ (Coe et al. 2004: 469). This leads back to the aforementioned interaction between lead firms and regional institutions or, in a different wording, the relationships between the state and transnational companies.

GPN 2.0 provides little information on state–firm relations. Coe and Yeung (2015) dedicate six pages of their book to how lead firms bargain with public authorities on market access, property rights and non-economic issues. They point out that institutional capacities – and thus the ability to bargain successfully – vary from one state to another and that states are in a disadvantageous position in a highly interconnected global economy. This framework leaves much room for expansion, but readers of *Global Production Networks* are likely left with the impression that in the end, lead firms matter, whereas states do not.

Thinking about GCCs, GVCs, GPNs and industrial policy offers a way to better integrate the state into the concepts presented in this chapter. After neoliberal convictions guided economic policies for almost three decades, many states are once again heavily involved with the economy, pursuing industrial policy so as to bring about development. Arguments for state involvement with the economy – especially in the Global South – are that corporate power remains concentrated in the core of the world economy, in spite of an increasing integration of developing countries and emerging economies into global economic processes. Powerful corporations appropriate an increasing share of profits, leaving little for their subsidiaries and suppliers in the Global South (Kaplinsky 2005; Milberg and Winkler 2013). Due to non-tariff barriers such as high-quality standards, firms from the Global South often fail to upgrade (Dolan and Humphrey 2004). Manufacturing in such chains and networks, both for exports and domestic markets, tends to come along with inputs being imported instead of local backward linkages being created (Barnes and Kaplinsky 2000).

Against this backdrop, the apparent question for governments in the Global South is: how to replace uneven development by processes of catching-up with the Global North? The answer appears to be a well-designed industrial policy – one that not only facilitates strategic coupling but also moulds it in a way that brings about advantageous outcomes so as to structurally transform the economies of the Global South.

In research on GPNs, the state tends to be conceptualised as a mere facilitator of strategic coupling. Studies that refer to the GCC and GVC concepts hardly ever overcome such a perspective on the state and upgrading. The state acts as an inter-scalar mediator, taking initiatives to bring local networks and global lead firms together. Observations on economic policies are usually limited to issues such as export and import quotas, tariffs and free trade agreements (exceptions are: Bhatia 2013; Bridge 2008; Horner 2014). Horner (2017) builds inroads into better analysing the role of the state in GCCs, GVCs and GPNs. He suggests that the state not only shapes them as a facilitator of strategic coupling (through incentives for local production and subcontracting, for example). The state is also a buyer and producer – in the case of electricity generation, this covers public procurement of electricity generated by private firms and electricity generation by state-owned enterprises. Being a regulator, the state moreover controls prices, enforces local content and regulates capital–labour relations.

Providing an alternative framework that is focused on types of industrial policies instead of roles taken by the state, Gereffi and Sturgeon (2013) distinguish between (1) horizontal policies that affect an entire national economy (through the provision of cross-cutting public goods such

Box 10.3 The state, industrial policy and Argentina's oil and gas sector

Argentina is home to considerably large unconventional oil and gas deposits. These are exploited in joint ventures that involve the semi-statal company YPF and various private corporations. The government encourages the development of the hydrocarbon sector by guaranteeing natural gas prices far above the market level. Corresponding agreements are signed before exploration in a specific area begins. Hence, the state acts as a critical buyer. Taking the role of a facilitator, the government has also advanced the construction of a railway line that will connect the largest unconventional plays to the port of Bahía Blanca so as to reduce transport costs. In Argentina, legislation on local content – an essential means of regulating value chains and production networks – refers to the provincial level. It ensures that lead firms and specialised suppliers engage in subcontracting close to the sites where they operate.

Source: Information obtained by the author during field research in Argentina in May and November 2017.

as education or transport infrastructure), (2) vertical policies that target particular sectors in order to leverage dynamics along a complete value chain and (3) GVC-oriented industrial policy, which concentrates on specific segments of a few value chains. The latter is presented by the authors as the best option. It aims at capturing investment and improving a country's value-adding position by attracting global suppliers (instead of pressuring lead firms to invest locally), specialising in GVC niches (instead of intending to build vertically integrated domestic industries) and encouraging relationships among global suppliers and local firms.

Conclusion

Research on commodity chains, value chains and production networks has generated major insights regarding the geographies of global production and related uneven development. The three approaches provide corresponding analytical concepts and frameworks that have been presented in this chapter.

Research on GCCs began as an effort to advance world-systems analysis in a non-state centric manner. The main research interest was (and still is) how the core of the world economy dominates the periphery in transnational production processes, conceptualised as chains from resource extraction to final consumption. Focusing on lead firms, GCC analysis distinguishes between buyer and producer-driven chains. The input–output dimension and territoriality of GCCs have remained largely descriptive components. The institutional context has received little attention.

The GVC approach conceptualises governance as inter-firm coordination. Following Gereffi, Humphrey and Sturgeon (2005), five types of governance (market, modular, relational, captive and hierarchy) are distinguished. They derive from the complexity of transactions between firms, the feasibility of codifying these transactions and the capabilities among potential suppliers. Studies on GVCs aim at explaining the prospects of development instead of uncovering uneven development, which is the core interest in GCC research. For this purpose, four forms of upgrading (process, product, functional and chain) have been defined. They relate to GVC governance and the distribution of power among the chain participants.

Extensions of research on GVCs shed light on further critical aspects. These include development at particular places, place-specific conditions as determinants of GVCs, horizontal dynamics, the exclusion of actors and regions from value chains as well as social upgrading. It has been pointed out that upgrading by firms must not be confused with regional development, as the former only captures how individual firms change their position in and across GVCs. Such dynamics do not allow drawing conclusions on broad-based development. Marxist scholars have criticised GVC research for its lack of a theory of value.

The GPN approach is different from the GCC and GVC concepts insofar as it concentrates on the mutual relationship of firms and regions. The territorial dimension of production networks – in particular their institutional context – plays a critical role in addition to governance, which is the sole core of GCC and GVC research. What is more, the GPN approach is based on the conviction that one should focus on firms, especially lead firms and their strategies regarding cost–capability ratios, as decisive actors, not on products. One may add that GPN scholars appreciate complexity, where those who refer to GCCs and GVCs opt for simplification.

GPN 1.0 comprises three analytical categories: (1) value, which is created, enhanced and captured, (2) power wielded by corporations, institutions and collective actors, and (3) embeddedness within production networks, territories and societies. Politics is part of corresponding research since strategic coupling is conceptualised as continuous bargaining and cooperation between lead firms and regional institutions. The latter mould regional assets so that they fit the needs of GPNs. In GPN 2.0, efforts are made towards theory building. Coe and Yeung (2015) suggest that dynamics of contemporary capitalism explain strategies chosen by firms, for example vertical integration instead of outsourcing. These strategies stand at the core of GPN analysis because they account for trajectories of value capture, which explain regional development (or the lack thereof). Further to that, lead firms, specialised suppliers and generic suppliers are distinguished. They can be associated with various real-world types and three modes of strategic coupling (indigenous, functional and structural).

Still, GPN 2.0 remains thin regarding the impact of political and socio-economic contexts. The state tends to be conceptualised as a mere facilitator of strategic coupling, which is similar in GPN 1.0 as well as the GCC and GVC approaches. I have shown pathways to better reflect on politics and the state by relating the approaches presented in this chapter to industrial policy. Industrial policy can be seen a means to overcome uneven development through strategic coupling. It rests on the state not only being a facilitator of such processes, but also engaging with the economy as a buyer, producer and regulator. Coming from the GVC/GPN perspective moreover offers an alternative design of industrial policy, which does not have to be horizontal or vertical but may refer to specific segments within selected chains and networks.

Footnote

- 1 Acknowledgements: I am grateful to Jana Kleibert for comments and suggestions provided on the first draft of this chapter.

Notes

- 1 Since its very beginning, research on GCCs has been marked by a sharp contrast between, on the one side, scholars seeking to advance world-systems analysis and, on the other, researchers who hold a largely positive attitude towards the prospects of peripheral development in the capitalist world economy. Gary Gereffi, who has shaped the GCC and GVC approaches more than anyone else, belongs to the second camp.

- 2 In a similar but less cited approach to GVC governance, Sturgeon (2002) distinguishes between (1) commodity suppliers, which provide standard products through market relationships, (2) captive suppliers, which make non-standard products, for example by using machinery dedicated to the buyer's needs, and (3) turn-key suppliers, which produce customised products, for instance by relying on flexible machinery to pool capacity for several customers. The complexity of information exchanged between firms and the degree of asset specificity in production equipment determine which type of suppliers mark a specific GVC segment. Humphrey and Schmitz (2000, 2002) suggest that there are four types of firm interaction in GVCs, which reflect the need for inter-firm coordination. In addition to ordinary market relations and vertical integration/hierarchies, firms may interact in networks, which bring together partners with complementary capabilities, or quasi hierarchies, in which there are asymmetric capabilities.
- 3 Information obtained by the author during field research in South Africa in February 2014 and August 2016.
- 4 Information obtained by the author during field research in Mauritius in September 2017.
- 5 Further to that, the idea of upgrading as 'moving up the value chain' in order to obtain better results has been criticised as misleading by Ponte and Ewert (2009). Firms obtain better results through various strategies. Some of them equal upgrading, whereas other are actually about downgrading.
- 6 The same bias applies to research on GPNs, as Werner (2016) shows.
- 7 Admittedly, there is now an abundance of literature on labour in GVCs, with the edited volume *Putting Labour in Its Place* (Newsome et al. 2015) being a recent example of outstanding relevance.
- 8 There is, however, research on GVCs – and also on GPNs – that can be best labelled 'critical'. This includes the aforementioned studies on social upgrading and recent contributions on the exclusion of people and regions from production networks/value chains. For instance, Werner (2016) makes reference to Marxist terms, in particular to 'devaluation' as a driver of uneven development. Orthodox Marxist theorising – as pursued by Starosta – is absent from her article, however. McGarth (2017), meanwhile, applies Marxism in his critique of fundamental concepts from the GPN approach. He also shows pathways towards incorporating Marxist thinking – for example on 'primitive accumulation' – into analyses of what he calls articulations and disarticulations in GPNs. The empirical cases he presents are not related to Marxist concepts though.
- 9 As noted, territoriality is part of research on GCCs and GVCs, albeit a rather descriptive one. Further to that, territoriality in the GCC/GVC approach addresses a high level of spatial aggregation – core and periphery in the world economy, not the subnational region.
- 10 Value capture trajectories are meant as an alternative to the concept of upgrading, which is more common in GVC analyses. Coe and Yeung (2015) criticise that the upgrading account appears deterministic, mostly fits low-end suppliers and insufficiently reflects on institutional conditions. Most importantly, it tends to confuse means – that is, the enhancement of a firm's functional position in a GVC/GPN – with ends (a greater share in value capture), as indicated in endnote 5.
- 11 The modes of strategic coupling are presented in the next section. They constitute an abstract framework. The types, conversely, reflect real-world examples such as assembly platforms and innovation hubs. These types can be related to modes that mark them, relevant sectors, the likelihood of decoupling and, in consequence, trajectories of regional development.
- 12 More detailed reviews of this seminal book have been written by Dörry (*Economic Geography*, 93(2), pp. 209–211), Kleibert (*Journal of Economic Geography*, 16(2), pp. 539–540) as well as Scholvin, Revilla Diez and Breul (*Zeitschrift für Wirtschaftsgeographie*, 61(2), pp. 117–118).
- 13 A noteworthy exception is an article by Smith, who shows how the state, acting on different scales, is critical to the economic relations between the European Union and Tunisia. He concludes that 'the state continues to be centrally involved not only in setting the context within which [GPNs] operate, but also in the very constitution of forms of economic integration through GPNs[,] which articulate [...] interests across the EU and its southern neighbours' (2014: 22).
- 14 With regard to the aforementioned typology of firms and the example provided in Box 10.2, one may add that strategic partners of transnational companies and transnational companies themselves carry out indigenous coupling. Functional coupling applies to specialised suppliers and structural coupling to generic suppliers.

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