

‘Comprehending the internal dynamics of GPNs: towards the typology of firm’s repositioning strategies’

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Introduction

Researchers on global value chains (GVCs) and global production networks (GPNs) insist that these key structural architectures represent crucial organizational platforms for the coordination of production in the primary, manufacturing and service sectors on a global basis (Cattaneo, Gereffi, and Staritz 2010; Yeung and Coe 2015). Despite acknowledging some differences between these two schools (Henderson et al. 2002; Bair 2005, 2008; Sturgeon, Van Biesebroeck, and Gereffi 2008; Barrientos, Gereffi, and Rossi 2011), the network metaphor is closer to reality and it will be preferred here (MacKinnon 2012; Glogar 2013; Yeung and Coe 2015). Therefore, the term global production network will be used henceforth. Importantly, studies embedded within this broad and converging stream of research have significantly enhanced the understanding of the dynamics underlying the changing economic geography of the world (Coe et al. 2004; MacKinnon 2012; Ponte 2014). Over the last 25 years, the GPN research framework developed from a primarily analytical tool to a theory aimed at unravelling the causal mechanisms behind the emergence and evolution of these backbones of the global economy (e.g. Ernst and Kim 2002; Humphrey and Schmitz 2002; Sturgeon 2002; Gereffi, Humphrey, and Sturgeon 2005; Coe et al. 2004; Coe, Dicken, and Hess 2008; Barrientos, Gereffi, and Rossi 2011; Yeung and Coe 2015). A significant amount of attention has been devoted by researchers to the investigation of possibilities for various types of upgrading. Humphrey and Schmitz (2002) argued that the scope for upgrading depends on the type of upgrading and the type of GPN governance. However, recent studies revealed the considerable versatility of the modes of governance, even within a single GPN (Patel-Campillo 2011; Horner 2014; Ponte 2014; Yeung and Coe 2015). This insight leads to a need to reconsider the relevance of possibilities for particular types of upgrading, which until now have been derived from ideal types of GPN governance. Namely, it is argued that the dissonance in the literature over possibilities for functional upgrading (Humphrey and Schmitz 2002) can be attributed, firstly, to the fact that the modes of governance existing even within a single GPN are quite variegated and prone to change over time, and secondly, to the fact that functional upgrading represents a rather diverse category in reality.

Moreover, much less attention has been paid to a normative perspective, i.e. to possible policy implications for those governments of *developed* nations and regions, where economies are dominated by lower-tier suppliers located at the bottom of the GPN hierarchy (for an exception, see Birch 2008). This neglect contrasts with a number of studies dealing with challenges and implications stemming from a GPN perspective for local firms in developing countries (e.g. Gibbon 2001; Humphrey and Schmitz 2002; Humphrey 2006). Acknowledging profound heterogeneity and flux in governance modes exerted even within the same network (Glogar 2013; Yeung and Coe 2015) as well as the large multiplicity of repositioning choices of companies engaged in these networks might, arguably, also represent a mid-step towards deriving specific implications stemming from a GPN perspective for the design of public policies in both developed and developing countries.

Therefore, the aim of this paper is to deepen the understanding of the multiplicity of possible repositioning strategies of firms engaged within GPNs and thus to underline the variegated and flux nature of contemporary GPNs. This goal is achieved by conceptualising several types of functional upgrading (arguably one of the most desirable types of upgrading strategies – see Humphrey and Schmitz 2004) as well as downgrading, which has received only limited attention so far. Consequently, it is argued that acknowledging different types of functional upgrading and of downgrading would contribute not only to enhancing understanding of the multiplicity of strategies of suppliers integrated in GPNs, but in conjunction with recognizing variegated and unstable nature of modes of governance even within the same GPN (Gereffi and Lee 2012) would pave the way towards two important research arenas. First, from a conceptual point of view, acknowledging the large variety of repositioning strategies (as well as the dynamism of entrances and exits to/from GPNs) would open up the discussion on one of the fundamental dilemmas of GPNs, namely their stability and flux. Second, from a policy perspective, this research could also create scope to develop much more targeted policy interventions that might support desirable types of repositioning.

The article is structured as follows. First, recent theoretical developments within GPN research are outlined, and then attention is turned to repositioning strategies, introducing several types of functional upgrading and downgrading. Lastly, the conclusion summarizes the key arguments of the paper, outlines some tentative policy implications, and suggests avenues for future research.

The Global Production Network Perspective on the Globalised Economy

Over the last 25 years, a vigorous debate has been developing on the role of GPNs in the current globalised economy (Gereffi 1999; Humphrey and Schmitz 2002, 2004; Henderson et al. 2002; Cattaneo, Gereffi, and Staritz 2010; Barrientos, Gereffi, and Rossi 2011; Sturgeon, Van Biesebroeck, and Gereffi 2008). The research has helped to unravel various modalities of governance in these networks or chains (Humphrey and Schmitz 2002, 2004; Gereffi, Humphrey, and Sturgeon 2005; Crang et al. 2013) and subsequently to comprehend interesting cases in their evolutionary dynamics (Patel-Campillo 2010; Ponte 2014). Scholars have identified various mechanisms and processes integrating particular GPNs with particular regions, such as types of strategic coupling – respectively decoupling and recoupling (Yeung 2009; MacKinnon 2012; Horner 2014) – and they have analysed the interrelations of these economic meta-structures with a host of other actors such as governments, regulators, trade unions, NGOs, etc. (Smith et al. 2002; Ponte 2014). Milberg (2008) provided insights into the role of the “shareholder value revolution” under a swiftly expanding financialization process upon the corporate strategies of leading US firms; and fresh impetus for GPN research was recently provided by Yeung and Coe (2015), who identified three causal drivers of GPN dynamics, namely optimising cost-capability ratios, sustaining market development, and financial discipline induced by the growing financialization of the global economy.

The theory of global production networks represents a powerful tool for understanding the changing economic geography of the world (Gereffi 1999) as well as for understanding the challenges facing companies integrated into these networks (Humphrey and Schmitz 2004; Humphrey 2006). A key argument of the GPN approach is that a sizeable part of the world's production is, under the paradigm of vertical disintegration, organized by large

enterprises that command networks of suppliers at different tiers providing various intermediate goods, and that these networks are governed by different modes of governance (Humphrey and Schmitz 2004). These lead firms are championing the market “in terms of their brand names, technology, products/services, and marketing capabilities” (Yeung 2009, p. 330). However, for managerial reasons, lead firms deal directly with only a limited number of first-tier suppliers that provide them with key inputs such as the most sophisticated (sub)systems, even though this is not a universal model of governance (see Humphrey and Schmitz 2004). First-tier suppliers (often large transnational corporations) then command their own suppliers on second or third tiers. Obviously, in practice, various modalities of governance strategies can be found even in the same industry. For example, lead firms within the automotive industry employ not only contrasting strategies to penetrate new markets, but also sharply different modes of governance of their GPN (Sturgeon, Van Biesebroeck, and Gereffi 2008; Glogar 2013).

Importantly, there are intensive mutual linkages and learning processes among firms and other actors integrated into GPNs, which often span across regional and national borders, even though such knowledge diffusion is far from being automatic (Ernst and Kim 2002; Pavlínek and Žižalová 2014). Examples of benefits emanating from the engagement of suppliers within GPNs include improvement of management and logistics methods and systems, and improvements of technology standards, including systems for quality control, cooperation in R&D etc. (Isaksen and Kalsaas 2009). Consequently, Humphrey and Schmitz (2004) even explicitly talk about the “tutoring role” of buyers.

Essentially, each stratum of suppliers within GPNs/GVCs commands its own advantages, but also disadvantages and challenges. For example, the third-tier suppliers, which represent the most frequent type of suppliers in the regions outside the global economic cores (Csank 2013), have guaranteed demand (often in large volume) for standard goods produced with well-known technology, and obviously they do not have to bother with activities such as market research. Likewise, lower-tier suppliers are usually smaller firms operating outside the transformative imperative of financialization, as they are often financed outside the stock market and as such are not exposed to short-termism imposed by the annual profit expectations of shareholders (Yeung and Coe 2015). On the other hand, due to their limited capabilities, third-tier suppliers are easily replaced and, therefore, exposed to tremendous cost pressure induced by the permanent threat of being replaced by even cheaper suppliers. Cost pressure is not unique to third-tier suppliers, but, according to Glogar (2013), the specific situation of third-tier suppliers (often local SMEs) stems from the fact that they are frequently squeezed between large firms both from “above” (i.e. from higher-tier buyers) and from “below” (i.e. from large companies that supply them with basic production materials such as metals, plastic granules, energy etc.). Therefore, the bargaining power (and hence, the profit margin) of these lower-tier suppliers is very limited.

Even more important is the fact that, due to their focus on the production of large quantities of standardized goods, these firms are not usually expected to come with any sort of innovation except for cost-saving measures, i.e. process upgrading (Lane 2008; Csank and Vozáb 2010). As a result, even if these third-tier suppliers are integrated into GPNs orchestrated by high- or medium-tech lead firms, and even if a nearby research institution (e.g. a university) is investigating a potentially relevant topic, the space for their mutual cooperation as envisaged by triple helix or regional innovation systems theory is fairly limited (e.g. Lengyel and Leydesdorff 2011; Tödtling and Trippel 2005; Trippel 2011).

Therefore, under these unfavourable structural features of economies dominated by lower-tier suppliers, public policies aimed at stimulating socioeconomic development by supporting innovation via the promotion of cooperation between firms and academic R&D institutions are to a large extent misleading. Instead, given the narrow profit margins of lower-tier suppliers, as well as their limited growth potential stemming from their modest capabilities and consequent low-road strategies of competitiveness, one of the key concepts of GPN research – upgrading – seems to be of vital relevance for these firms.

Nevertheless, exploration of options for various types of repositioning strategies, as well as the elaboration of potential policy implications for developed but non-core regions, remains at the edge of current research interest. According to available knowledge, there is just a single article that addresses the complexities of upgrading for firms located in a highly developed country (Isaksen and Kalsaas 2009, regarding the Norwegian firm HARA). Nevertheless, while this article succeeded in providing a detailed anatomy of upgrading in the case of a particular company, it did not derive any specific policy implications. Consequently, there is a considerable gap in the literature, especially for the design of supportive policies.

The existing research indicates that the options for upgrading are closely related to the modes of governance of GPNs (Lane 2008), which range from quasi-hierarchies to networks (Humphrey and Schmitz 2002). Nevertheless, research has shown that the type of governance varies not only among different GPNs within the same industry (for example, Erkus-Öztürk and Terhorst 2010, on tourism; Glogar 2013, on automotive; Tiits and Kalvet 2012, on telecommunications), but even among particular firms integrated within the same GPN (Isaksen and Kalsaas 2009). Therefore, recent research led Gereffi and Lee (2012, p. 29) to acknowledge that “most global industries are made up of a mix of these governance structures in different parts of the global supply chain, and these structures change over time and across different regions and country settings”. Multiplicity in network configurations has also been recently emphasized by Yeung and Coe (2015). In addition, Ponte (2014) argued persuasively that, while much of the existing literature has conceived GPNs as unipolar governance systems (i.e. driven by lead firms) and few scholars employ a bipolar conceptualization of GPNs, their governance should be reconceptualized as a continuum between unipolarity and multipolarity. The multipolar conception of governance of GPNs has already proved helpful in explaining the evolutionary dynamics of GPNs and, especially, for accommodating strategic actions of powerful actors outside the network, such as governments, standard developers, international NGOs, certification agencies, labour unions, and consumer associations (Ponte 2014).

Moreover, it was recently demonstrated that the power asymmetry within the GPN can not only be moderated, but even completely reversed by the joint action of firms and the regulator (Patel-Campillo 2010, on the case of Dutch producers of cut flowers). Furthermore, Isaksen and Kalsaas (2009) have shown that the power asymmetry between the lead firm and its suppliers may change fundamentally during the production cycle of a given product. Namely, during the phase of product development, the relationship can be characterised as network, but during the production phase, the governance shifts to quasi-hierarchy mode, when the lead firm *inter alia* insists upon an open-book approach disclosing a detailed cost-structure of its suppliers (Isaksen and Kalsaas 2009). Therefore, the typology of GPN governance (e.g. Gereffi, Humphrey, and Sturgeon 2005) should not necessarily be applied at the level of

the whole GPN, but instead it could represent a useful tool for comprehending modes of the relationships of a particular company.

All these examples pervasively show that the existing power relationships in which a particular supplier is engaged should not be considered as pre-given and everlasting, but rather as dynamic and protean. Thus, from a supplier's perspective, its current position within the GPN power structure should not be taken as a sort of destiny, but rather as a point of departure. Therefore, building upon the Yeung and Coe (2015) causal drivers, it can be expected that if firms are able to enhance their cost-capabilities ratio and/or improve their market development competence and thus pursue a suitable repositioning strategy, and provided that companies are supported in their efforts by a suitable public intervention, there is a reasonable chance that limitations associated with their unfavourable mode of integration into GPNs can be overcome. Hence, the modalities of repositioning strategies of suppliers within GPNs come to the forefront through a judicious mix of private and public action.

Upgrading and Downgrading – The Repositioning Dynamics within Global Production Networks

Upgrading has recently been defined as a shift “to higher value added activities in production, to improve technology, knowledge and skills, and to increase the benefits or profits deriving from participation in GPNs” (Barrientos, Gereffi, and Rossi 2011, p. 323). Upgrading is one of the key concepts established within the GPN framework, and several different types of upgrading have been introduced to date. Three of these types have achieved general acceptance by researchers. These comprise: (i) process upgrading, especially representing cost-saving measures to enhance the efficiency of production; (ii) product upgrading, which is achieved by manufacturing more sophisticated products; and (iii) functional upgrading, a shift towards activities with high value-added such as developing own brands or abandoning existing lower value-added activities (Humphrey and Schmitz 2002). However, while process and product upgrading have been documented as 'frequent' by research (e.g. Pavlínek and Ženka 2011), there is less agreement in the literature on the prevalence of functional upgrading, as it might be constrained by buyers eager to protect their core competence as well as by resource requirements and associated risks (Humphrey and Schmitz 2004).

Several other types of upgrading have been identified in the literature, even though they were not unanimously accepted by researchers. In particular, intersectoral upgrading occurs when a firm uses its technology and know-how gained from its engagement within the GPN for the production of goods for an end-market where the company is able to enjoy a higher profit margin (Humphrey and Schmitz 2004). By contrast, (inter)chain upgrading represents a shift to another GPN, where a firm can reach a better and/or higher position, for example in cases when the GPN is more technologically advanced and/or is oriented towards production for higher-status buyers (Barrientos, Gereffi, and Rossi 2011). Chain upgrading as an evolutionary process from a low-end market to more sophisticated market segments (Humphrey and Schmitz 2004) was previously called organizational succession (Gereffi 1999). Significantly, organizational succession/chain upgrading can apply not only to individual firms, but even to the whole GPN if the network is able to move to a higher market segment or more sophisticated production. The car

manufacturer Škoda serves as a good example of such a case as, over the last 15 years under VW leadership, it moved from a lower to a medium market segment.

A special form of upgrading strategy comprises strategic decoupling and subsequent recoupling in case the detrimental effects of engagement in the GPN outweigh the contribution to value creation (Horner 2014; MacKinnon 2012). In that case, strategic decoupling can be considered as “a temporary and sequential strategy to improve value creation, enhancement and capture for development objectives, and may be followed by recoupling with the same or, usually, other GPNs” (Horner 2014, p. 1121-2). Finally, an example of a radical type of repositioning within a GPN was provided by Patel-Campillo (2010), who analysed the intriguing evolutionary trajectory of the Dutch cut flower agro-industry from a buyer-driven to a producer-driven chain, achieved by coordinated endeavours by flower growers and the Dutch government.

However, while upgrading usually implies some sort of technological or organizational improvement, it can also be accompanied by unfavourable impacts such as labour shedding or higher intensity of work (Pickles and Smith 2011). Therefore, multi-faceted impacts of various sorts of upgrading represent a fundamental, yet under-explored issue (Pickles and Smith 2011). Barrientos, Gereffi, and Rossi (2011) argued that case studies across a variety of sectors provide a mixed picture while their own analysis revealed that social upgrading tends to be limited to regular workers engaged to guarantee the quality of production, whereas irregular workers hired in order to cope with fluctuating orders benefit less (Barrientos, Gereffi, and Rossi 2011).

Importantly, Yeung and Coe (2015) have recently conceptualized three causal drivers of GPN evolution (optimising cost-capability ratios, sustaining market development and financial discipline), which are also relevant for repositioning strategies of companies engaged in GPNs. Moreover, closer scrutiny of these drivers reveals that their relevance is likely to vary systematically according to the position of firms within the GPN hierarchy. In particular, market development is likely to be the primary driver that impacts on the behaviour of lead firms. The second causal driver, financial discipline, is likely to drive the evolution not only of lead firms, but also of large higher-tier suppliers (by contrast, smaller lower-tier suppliers are usually financed outside the stock market, thus avoiding the “value for shareholders” annual imperative). Finally, the cost-capability ratio is bound to be the most important driver not only for the repositioning strategies of the most frequent type of suppliers – the lower-tier suppliers – but also for steering the activities of companies across the whole GPN hierarchy.

Towards a typology of functional upgrading

Functional upgrading is considered as one of the most desirable, yet – especially in quasi-hierarchical GPNs – one of the most challenging types of upgrading (Humphrey and Schmitz 2004; Isaksen and Kalsas 2009). Therefore, unsurprisingly, there is a controversy among experts about the extent to which the prospects for functional upgrading can be turned into practice (Humphrey and Schmitz 2004). Obviously, the scope for functional upgrading is conditioned by a multiplicity of factors, such as the type of governance, capabilities and ambition of the supplier concerned, the quality of the national and regional innovation systems in which a particular company is embedded, etc. (Humphrey and Schmitz 2002;

Glogar 2013). Nevertheless, one of the key arguments of this paper is that the discussion on functional upgrading can be further enhanced by a more nuanced approach towards this particular type of upgrading. Consequently, in addition to existing types of upgrading (Table 1), several types of functional upgrading should be distinguished (see Table 2). Importantly, each of these upgrading strategies differs according to its potential benefits, but also by risk-benefit ratios, which translate to their differing probability (Table 3).

Table 1 about here

From a supplier perspective (in contrast to a regional perspective, which will be elaborated below), four types of functional upgrading can be identified. The first type of functional upgrading can be defined as penetration by lower-tier suppliers amongst higher-tier suppliers. This type of upgrading might occur due to various contrasting factors such as a sudden increase in global demand, expansion of a lead firm into new markets, key buyers seeking to moderate the risk inherent in relying upon a single supplier by engaging two or more suppliers of the same product, or the inability of an existing higher-tier supplier to satisfy the requirements of its key customer(s) (Glogar 2013). However, while acknowledging the large variety of factors creating scope for such functional upgrading, the fundamental driver facilitating this sort of mobility within GPNs is likely to be the favourable cost-capability ratio of the repositioning supplier.

The second type of functional upgrading occurs when a firm abandons its low value-added activities and concentrates upon its core business competence. In practice, such a shift might be temporary in nature. For example, firms tend to subcontract the activities with lower value-added to other firms to meet a strong demand that exceeds the firm's production capacity. This sort of temporary functional upgrading illustrates dynamism and flexibility in relationships among suppliers in production networks, contingent upon a plethora of factors including the intensity of market demand, benefits and risks involved with subcontracting, the existence of capable firms ready to supply the required products, etc. Thus, in addition to the obvious cost-capability driver, which prompts firms with high cost-capability ratios to engage external suppliers to regain their cost advantage (Yeung and Coe 2015), the role of the causal driver of market development should also be acknowledged.

The third type of functional upgrading occurs in cases where a lead firm or higher-tier supplier voluntarily transfers some higher value-added functions to its lower-tier supplier (for example, development and production of some sophisticated technical (sub)system). Therefore, this type of functional upgrading seems to be an especially promising pathway for highly capable and efficient lower-tier suppliers. Thus, the main causal driver behind this type of functional upgrading is likely to be the cost-capability ratio. Four main motives for such a transfer could be contemplated. Firstly, the major impetus for such a voluntary transfer of higher-level functions could be a need to augment the technical capacities of lead-firm or higher-tier suppliers to cope with a shortened production cycle induced by fierce global competition (Duchêne et al. 2013). Such pressures may force a higher-tier supplier to focus its R&D capacities on the development of core technology and to transfer the development of linked technical (sub)systems to one of its most capable and cost-efficient suppliers.

The second reason for voluntary transfer of some higher-level functions can be the movement of higher-tier supplier to a still higher position within a GPN (e.g. to a Tier 0.5

supplier – see Pavlínek and Žižalová 2014) or even the establishment of its own brand (OBM) and the consequent move to high value-added downstream activities such as branding, marketing and customer services (Rabellotti 2014). This motive accords well with an observation by Yeung (2009), who identified a trend among lead firms “towards market control via product and market definitions, rather than leadership in manufacturing processes and technologies” (p. 330). The third motive for such a voluntary transfer might be cost considerations, as the new supplier could offer lower prices. Finally, the voluntary transfer of some higher-level functions can be induced by cultural differences between the country of origin of a lead firm and the network of its suppliers located, for example, on a different continent (see Gereffi 1999, for a case involving the transfer of responsibility for the management of an East Asian supply chain from US garment buyers to Taiwanese firms).

According to Glogar (2013), functional upgrading in the form of voluntary transfer of some higher-level functions occurs frequently in the automotive industry. Therefore, this type of functional upgrading seems to be a realistic option, provided that the lower-tier suppliers develop sufficient capabilities at reasonable cost, and, ideally, are embedded within a supportive innovation system (Cooke 2004; Asheim and Gertler 2005; Isaksen and Trippel 2014). This type of functional upgrading might be highly beneficial for the company concerned, as it could result in improving its production as well as its technological capabilities (see Pavlínek and Žižalová 2014).

The fourth type of functional upgrading arises when a lower-tier supplier is able to develop a new product or technical solution and persuade a higher-tier supplier or the lead firm of its merit. Thus, a new market develops for an intermediate good. To succeed with this repositioning strategy, a mover should be able not only to develop a favourable cost-capability ratio, but also to exert a significant effort into market development. An example of this type of functional upgrading is the installation of print control chips into photocopiers. However, this type of functional upgrading is rather infrequent, as the number of lower-tier suppliers capable of making such a breakthrough is limited.

Finally, from a regional perspective, the fifth type of functional upgrading represents the attraction of a higher-tier supplier (or lead firm) and the subsequent follow-sourcing by other large suppliers into the region (Humphrey and Memedovic 2003), which might be motivated *inter alia* by an encouraging cost-capability ratio of local businesses or by a significant market potential in the region or country concerned. Moreover, localisation of a higher-tier supplier could have a multiplier effect upon local companies, especially via enhanced contracting opportunities as well as spillover effects such as production and technology learning (see Pavlínek and Žižalová 2014). According to these authors, production and technology learning can be particularly intensive when local companies become directly engaged in a GPN. In addition, if a higher-tier supplier opens an R&D facility in the region, this can augment regional R&D capacities and enhance the job opportunities for highly qualified personnel.

Table 2 about here

Obviously, any enhancement strategy, including varying sorts of functional upgrading, is conditioned by drivers identified by Yeung and Coe (2015) as well as by numerous other factors. The type of governance is an important factor that undoubtedly influences the

upgrading prospects of a given firm. Some forms of GPN governance provide better opportunities for particular types of upgrading than others, as argued extensively in the literature (see especially Humphrey and Schmitz 2004; Sturgeon, Van Biesebroeck, and Gereffi 2008). Importantly, varying modes of governance within different segments of particular GPNs (Yeung and Coe 2015) and, in addition, the changing nature of governance according to particular production phases (Isaksen and Kalsas 2009) must be acknowledged. Moreover, according to Glogar (2013), an important factor underpinning the scope for upgrading is the ability of firms' managers to establish relationships of trust with managers of first-tier suppliers or even of lead firms. This observation accords with the argument of Birch and Cumbers (2010), who underlined the critical role of trust in the functioning of global networks, especially those in knowledge-intensive industries. This thought should also be contemplated in conjunction with the argument of Humphrey and Schmitz (2002) or of Csank (2013) that the strategic intent of owners and/or plant managers to embark upon a repositioning strategy is of particular importance for functional upgrading. Consequently, the role of informal institutions such as trust underscore even further the variegated nature of governance in particular segments of GPNs.

According to Glogar (2013), the possibilities for upgrading are shaped, along with the development of a firm's cost-capability ratio, by a complex of external influences such as the overall robustness of national and regional innovation systems, including policy frameworks, political stability, the legal system, the quality of education etc. Obviously, various forms of upgrading involve diverse risks and challenges and also offer different potential benefits for the firms concerned. Fundamentally, the potential risk-benefit ratio and, henceforth, the probability of particular types of upgrading relate closely to the position of a firm within the GPN hierarchy, as its position is closely interlinked with firms' capabilities (see Table 3).

Table 3 about here

Downgrading – condemnation or blessing?

In contrast to upgrading, the concept of downgrading has received much less attention and remains underdeveloped (for exceptions, see: Barrientos, Gereffi, and Rossi 2011; Rabellotti 2014; Cattaneo, Gereffi, and Staritz 2010). This is doubly unfortunate. First, the number of cases of downgrading in practice can be surprisingly high and, second, in contrast to upgrading, which is broadly referred to in the literature with a positive connotation (though multi-dimensionality of the concept of upgrading has been recently underlined, see: Barrientos, Gereffi, and Rossi 2011; Pickles and Smith 2011), the impacts of various downgrading shifts can differ fundamentally. Moreover, some cases of downgrading enforced by a brutal use of market power against powerless lower-tier suppliers from developing countries have been documented (Kaplinsky, Terheggen, and Tijaja 2010), thus contributing to the rather negative connotation associated with downgrading. In the text below, it is argued that several different types of downgrading should be distinguished (Table 4). Nevertheless, while product and functional downgrading are the most obvious parallels to basic types of upgrading coming to mind (by contrast, process downgrading seems to be rather exceptional), a more suitable point of departure towards a typology of downgrading is to elaborate motives for particular downgrading moves. This would allow a better understanding of possible

evolutionary trajectories of suppliers within production networks. Therefore, in the following text, several types of downgrading based on the varying motivations for these types of repositioning are introduced, and the pros and cons for the supplier in question are outlined.

The first type of downgrading – passive downgrading – represents an involuntary move by a company towards the production of simpler goods as a result of a decision (i.e. change of demand) by a higher-tier buyer. In such a case, the most obvious motive for passive downgrading seems to be an unfavourable development of the cost-capability ratio (Yeung and Coe 2015) of an existing supplier leading to dissatisfaction of the key buyer. However, this shift might be also induced by a change of strategy by a buyer (i.e. higher-tier supplier), such as the development of its own capacities for manufacturing a given product, in order to tighten control over production or due to various cost considerations. In these cases, the higher-tier supplier would not require the production of intermediate goods from its supplier anymore, but just the supply of raw materials (this type of downgrading has been documented by Kaplinsky, Terheggen, and Tijaja 2010, for the example of the Chinese import of logs instead of processed timber from Gabon). Needless to say, this type of downgrading is bound to be unwelcome by an affected supplier, as passive downgrading is likely to undermine its technology capacities and to squeeze the profit margin even more, and consequently to expose the firm and its employees to severe consequences.

Another case of passive downgrading occurs in situations when the existing supplier is excluded from the production network either partially or even completely due to a drop in demand for one or more of its products by a higher-tier supplier. As in the previous example of passive downgrading, the main motive seems to be the cost-capability driver. If such a case of passive downgrading occurs, the supplier is forced to refocus swiftly upon the production of alternative goods and one of the easiest options is to manufacture less sophisticated and perhaps also less specialised products for a broader market. This type of downgrading is arguably rather frequent, as it is – *inter alia* – the result of a well-documented recent tendency of lead firms in the automotive industry and beyond to consolidate the supply base by narrowing the extent of the production network, including a reduction in the number of first-tier suppliers (Sturgeon, Van Biesebroeck, and Gereffi 2008; Cattaneo, Gereffi, and Staritz 2010; Pavlínek and Žižalová 2014). This type of passive downgrading is bound to be the most challenging, especially for lower-tier suppliers, as their eviction from the GPN might easily endanger their very existence, unless they rapidly find alternative business models. By contrast, excluded first-tier suppliers, which often possess relatively high capabilities, are more likely to succeed in speedy attempts to penetrate other markets. The indicative magnitude of losses or benefits and differing probabilities of particular types of downgrading according to the position of companies within a GPN hierarchy are presented in Table 5.

Finally, from a regional perspective, the special case of passive downgrading represents a decision by a higher-tier supplier to move out of the region. Such a decision is likely to have an opposite effect of the type of functional upgrading described above, consisting of the attraction of a higher-tier supplier into the region. Therefore, the retreat of a higher-tier supplier or even of a lead firm from the region might result in a decline in R&D capabilities and in negative multiplier effects upon the regional lower-tier suppliers. Examples of such retreats by leading producers from regions are numerous and well documented (for a classical work on this topic, see Fothergill and Guy 1990).

The second type of downgrading – adaptive downgrading – is not induced by the decision of a key customer, but follows from the decision of a firm's managers recognizing that the company is unable to sustain the competitive pressure within its current market. If such a situation occurs, managers are likely to refocus either on lower or smaller market segments or on the production of components instead of the product for the end-market. Adaptive downgrading was common in Central and Eastern Europe after the reintroduction of the market economy in these countries, as many of the former state-owned companies found themselves suddenly uncompetitive, and one of the options readily available was to specialise in the production of components for which the firm possessed know-how and technology and, fundamentally, was quickly able to secure demand. For example, Czech producer of cosmetic products decided to specialise in the production of low-volume chemical substances for cosmetics products, but the production of which is of no interest to large producers whose technology is designed for large volumes of production. As a result, instead of producing a final product, this Czech firm now supplies selected chemical substances to large global players.

Consequently, adaptive downgrading represents a mixed blessing for the firms concerned. On the one hand, a firm is forced to retreat from the end-market; on the other hand, increased specialisation on a specific market segment or component creates scope for the concentration of the firm's human and financial resources upon corresponding products and thus secures a better position within this new – even though more confined and perhaps even more fragile – market. Accordingly, it is also the case in adaptive downgrading that the unfavourable development of the cost-capability ratio in the company concerned is the most likely causal driver at work. However, as the above example from the Czech cosmetic industry shows, the causal driver of market development is also likely to play an important role.

Third, strategic downgrading might arise as a result of change of business strategy by a highly capable supplier or even by a lead firm dissatisfied with its current profit margin. As a consequence, such a company might – along with a number of other options such as inter-sectoral upgrading and some types of functional upgrading – opt for strategic downgrading by refocusing on a component or a market segment where the firm could make the best use of its core competence and thus increase its profitability. This strategy also has its fundamental pros and cons. First, if a highly capable firm decides to concentrate upon the provision of lower value-added services or the production of some key components of a hitherto manufactured product, it can take advantage of its supremacy in the market or technological capabilities and achieve a better position at the market. Second, however, the major danger associated with this type of downgrading comprises the difficulty or even impossibility of finding a way back if the strategy fails. An example of this type of downgrading is presented by a Czech firm that previously supplied complete swimming pools. The narrowing profit market induced by sharpening competition among these producers led the firm to abandon the production of pools and, instead, to focus solely upon the production of technically advanced roofs for these pools. Consequently, the profitability of the firm has improved considerably. Thus, in the case of strategic downgrading, the causal driver of cost-capability is likely to come second after the driver of market development, which is likely to be the main causal driver in this instance.

The downgrading typology outlined above showed why the impacts of these particular forms of downgrading upon the company concerned would to a large extent depend upon the rationale for such a shift. The type of motivation seems to be of crucial relevance, while the form (e.g. product or functional downgrading) is likely to be of a secondary nature.

Finally, it should be underlined that in practice the evolutionary trajectory of particular firms might consist of zigzag moves encompassing both downgrading and upgrading shifts. For example, the aircraft producer Aero was forced by market pressure in late 1990s to retreat from its former lead position to become a second-tier producer (i.e. adaptive downgrading), but later succeeded in penetrating among first-tier suppliers of GPNs governed by Airbus and Boeing. This example illustrates considerable repositioning dynamics within contemporary GPNs and thus underscores the protean nature of economic relations occurring within these networks.

Tables 4 and 5 about here

Conclusion

The aim of this paper was to examine various repositioning firm strategies in order to underline the variegated and protean nature of GPNs. It builds upon recent evidence that the mode of governance could vary profoundly among firms engaged in the same GPN, and that it is prone to change over time depending on a variety of factors ranging from intensity of market demand to the phase of the production cycle. Consequently, there is a need to reconsider the relevance of particular types of upgrading that were originally derived from the ideal types of GPN introduced by Gereffi (Gereffi 1999; Gereffi, Humphrey, and Sturgeon 2005) or Humphrey and Schmitz (2002), as the variability and heterogeneity of the real configurations of power relationships go far beyond these ideal types. Therefore, existing typologies of ideal modes of governance should not necessarily be applied at the level of the whole GPN, but might be used as a useful point of departure for understanding the nature of relationships of a particular company. Moreover, analysis of repositioning options allowed new light to be shed on the controversy regarding the scope for suppliers to embark upon a highly desirable, yet challenging, type of upgrading – *functional upgrading*. In particular, the existing dissonance in the literature over the possibilities for functional upgrading (see Humphrey and Schmitz 2004) can be attributed firstly to variegated and versatile modes of governance existing even within a single GPN, and secondly, to the fact that functional upgrading represents a rather diverse category in reality.

Consequently, the following types of functional upgrading were identified: (i) penetration among existing higher-tier suppliers; (ii) abandoning some lower value-added activities; (iii) voluntary transfer of some higher-level functions from a higher-tier supplier, e.g. motivated by a need to augment its R&D capacities and (iv) developing a new product or technical solution giving rise to a new market. Importantly, each of these types of functional upgrading requires different capabilities, but also involves a particular risk-benefit ratio, which finally translates into sharply differing probabilities for particular firms to embark upon a particular type of upgrading.

The second major argument of this paper rests in the assertion that the concept of downgrading has been considered inadequately so far. This is unfortunate, as it can reasonably be expected that the number of cases of downgrading are rather high in practice. To enhance the understanding of downgrading, the most useful starting point is to analyze the intentions behind such moves. The analysis revealed that some types of downgrading

represent well-considered strategies. By contrast, cases of involuntary (passive) downgrading performed by a company as a result of a decision taken by its higher-tier buyer might have major negative impacts on the company. Therefore, several types of downgrading based on the varying motivations for such repositioning moves within GPNs were introduced (i.e. passive, adaptive and strategic downgrading), and their negative and/or positive effects upon the company in question were outlined.

Moreover, the repositioning options seem to be systematically related to the current position of firms within a GPN hierarchy, as their position in production networks is likely to be closely intertwined with their production and market capabilities. Therefore, it is argued that each of the recently conceptualized triad of GPN causal drivers – the cost-capability ratio, market development and financial discipline (Yeung and Coe 2015) – has different relevance for particular firms according to their position within the GPN hierarchy. Moreover, it is obvious that any firm's repositioning strategy also requires careful consideration of the risks and benefits that such a move entails, and that the varying risk-benefit ratios of particular repositioning movements translate into differing probabilities of employment of these strategies.

This brings us to tentative policy implications. Here, the useful point of departure is the argument that the power of lead firms and higher-tier suppliers over companies placed at the bottom of the hierarchy depends upon the powerlessness of these lower-tier suppliers (Humphrey and Schmitz 2002). Consequently, empowering third- and second-tier suppliers (e.g. via supplying several GPNs or, especially in cases of more capable suppliers, by various sorts of functional, inter-sectoral and chain upgrading) seems to be a promising strategy. Therefore, in cases of provision of public support to companies engaged in GPNs, these suppliers should be carefully distinguished according to what sort of results the submitted project is expected to deliver.

Moreover, desirable repositioning strategies of local firms can be enhanced by moderation at least of the major barriers within the existing institutional framework, such as imperfections in legislation and the educational system, and by designing a suitable incentive system for a proper functioning of the innovation system at both national and regional levels, even though this is a particularly demanding task in institutionally weak regions (Rodríguez-Pose 2013). Last, but not least, given the above-mentioned fundamental role of the strategic intent of companies' management to embark upon a challenging repositioning strategy, a mentoring initiative for "sleeping" local companies could also be considered.

In this context, it should be underlined that the GPN perspective provides yet another argument against the one-size-fits-all approach to innovation strategies, in which practices and instruments are copied from other regions or countries where firms are exposed to different challenges and opportunities (Tödtling and Trippel 2005). This leads us to underline a profound gap in the current understanding of challenges for regions dotted with lower-tier suppliers. Namely, there is only limited knowledge on the extent to which companies in particular regional economies are integrated into GPNs. Therefore, greater awareness of the scale and type of integration of suppliers of particular economies into GPNs would represent a significant advancement of existing knowledge, and it would have important policy implications. Without such knowledge, the strategies and policies are running a substantial risk of being misguided.

Consequently, whereas in developing countries the major challenge for regional and national authorities is to carefully assess the kind of GPNs within which local companies can have the best opportunities for strategic coupling (Yeung 2009), in developed, but non-core, economies, the major challenge is to comprehend the existing modes of integration of local companies into GPNs. With a properly designed policy, authorities can try to assist a variety of feasible repositioning strategies of firms in non-core regions, while acknowledging their multi-faceted impacts such as labour shedding (Barrientos, Gereffi, and Rossi 2011; Pickles and Smith 2011).

Finally, the arguments and examples provided in the paper also point to an interesting and fundamental dilemma concerning the evolutionary dynamics of GPNs – the dilemma between their stability and flux. On the one hand, GPNs must accomplish a significant level of stability in order to guarantee that final products achieve a high and constant level of quality and, therefore, all suppliers as well as the mutual interfaces among them have to be proven and thus ensure that all components or products meet the required standards and fit neatly altogether. On the other hand, real life brings constant disruptions concerning market developments, technologies, organizational and coordination models (Andersen and Christensen 2005), regulatory frameworks, financial paradigms (Milberg 2008) and, obviously, also an unequal pace of development of the cost-capability ratio and the market development competence of particular firms (Yeung and Coe 2015), resulting in various temporal coalitions (Coe and Hess 2011). Moreover, the increasing ability of companies to disintegrate production vertically as well as internationally has to be acknowledged (Milberg 2008). As a result of these underlying dynamics, GPNs are prone to be in permanent flux.

Consequently, borders of GPNs are necessarily permeable to allow the entrance of new suppliers with a superb cost-capability ratio, while discharging suppliers that fail to improve in sufficient time or those suppliers that do not fit the new organizational and management model (see Sturgeon, Van Biesebroeck, and Gereffi 2008; Cattaneo, Gereffi, and Staritz 2010). Moreover, vigorous internal dynamics within firms as well as inter-firm relationships must be acknowledged, as firms engaged in GPNs permanently struggle to find a more comfortable place via various repositioning strategies. Some of these repositioning options and underlying motives have been outlined above. Nevertheless, much more effort is needed to unravel modalities of how the stability-flux dilemma is being addressed in practice, how firms are struggling to reposition themselves in a more favourable haven, and what these trends imply for the reconfiguration of the economic geography of the world as well as for particular regions.

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