

Regional Development and the Competitive Dynamics of Global Production Networks: An East Asian Perspective

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YEUNG H. W.-C. Regional development and the competitive dynamics of global production networks: an East Asian perspective, *Regional Studies*. The debate on the nature and dynamics of regional development in both academic and policy circles has now moved on from the earlier focus on endogenous regional assets to analysing the complex relationship between globalization and regional change. This position paper attempts to engage with this debate through the experience of regional development in East Asia. The paper shows that regional development cannot be understood independently of the changing dynamics of global production networks. While the existing literature on East Asia tends to focus on the state as the key driver of economic development at the national and regional levels, it is argued that the developmental state is a necessary but not sufficient condition for regional development to take place. Instead, one needs to study the complex *strategic coupling* of those economic actors, particularly large business firms, operating in specific regions in Asia with their lead firm counterparts orchestrating production networks on a global basis. To illustrate these strategic coupling processes and their impact on divergent regional development trajectories, the author draws upon his own primary data and other papers to be published in this special issue of *Regional Studies*. The paper concludes with some major implications for theorizing regional development and strategic regional policy options.

Regional development Global production networks Strategic coupling Trans-regional processes Asia Business firms States

YEUNG H. W.-C. 区域发展以及全球生产网络的竞争活力：东亚远景，区域研究。在学术与政策领域，关于区域发展性质以及活力的讨论已从早先对于内生性区域资产的关注转向分析全球化与区域变化之间的复杂联系。本文试图以东亚区域发展的实践与上述讨论相衔接。本文认为，我们不能在独立于全球生产网络变化活力情况下来理解区域发展。目前关于东亚的文献多集中在将国家作为国家及区域层面经济发展的关键性引擎（来理解），而我认为，发展状态对于区域发展而言是必要而非充分条件。相反，我们需要研究不同经济行为者之间复杂的战略性耦合，尤其是位于亚洲特定区域的大型商业公司是如何与其领军产业合作伙伴在全球生产网络层面进行相互配合。笔者将通过自己搜集的原始数据及其他即将付梓于本次区域研究专刊的相关论文来阐明战略耦合过程及其对区域发展方向可能产生的各种影响。本文为区域发展及战略性区域政策抉择的理论抽象提供了一些较为重要的提示。

区域发展 全球生产网络 战略耦合 区域间过程 亚洲 商业公司 国家

YEUNG H. W.-C. L'aménagement du territoire et la dynamique compétitive des réseaux de production mondiaux: du point de vue de l'Asie de l'Est, *Regional Studies*. Le débat sur les caractéristiques et la dynamique de l'aménagement du territoire dans les milieux académique et politique ne met plus l'accent mis sur les atouts régionaux endogènes mais plutôt sur l'analyse du rapport complexe entre la mondialisation et l'évolution régionale. Cet article cherche à s'engager dans ce débat à partir de l'expérience de l'aménagement du territoire en Asie de l'Est. Cet article montre que l'aménagement du territoire ne peut pas s'expliquer indépendamment de la dynamique changeante des réseaux de production mondiaux. Alors que la documentation actuelle sur l'Asie de l'Est a tendance à porter sur l'état comme la principale force motrice sur les plans national et régional, on affirme que l'état du développement constitue une condition nécessaire mais insuffisante de l'aménagement du territoire. Plutôt, on étudie l'*accouplement stratégique* complexe de ces agents économiques, notamment les grandes entreprises qui opèrent dans des régions spécifiques en Asie pendant que leurs entreprises phares homologues organisent des réseaux de production mondiaux. Pour illustrer ces processus d'accouplement stratégique et leur impact sur diverses trajectoires d'aménagement du territoire, on puise dans les données de base de l'auteur et dans d'autres articles à paraître dans ce numéro spécial de *Regional Studies*. Pour conclure, l'article discute d'importantes implications quant à la théorisation de l'aménagement du territoire et aux options stratégiques pour la politique régionale.

Aménagement du territoire Réseaux de production mondiaux Accouplement stratégique Processus transfrontaliers
Asie Entreprises Etats

YEUNG H. W.-C. Regionalentwicklung und die Wettbewerbsdynamik globaler Produktionsnetze: eine ostasiatische Perspektive, *Regional Studies*. Die akademische und politische Debatte über die Art und Dynamik der Regionalentwicklung konzentriert sich heute weniger auf endogenes regionales Kapital; stattdessen wird zunehmend die komplexe Beziehung zwischen Globalisierung und regionaler Veränderung analysiert. In diesem Positionsaufsatz versuche ich, mit den Erfahrungen der Regionalentwicklung in Ostasien zu dieser Debatte beizutragen. Aus dem Aufsatz geht hervor, dass sich die Regionalentwicklung nicht unabhängig von der wandelnden Dynamik globaler Produktionsnetze verstehen lässt. Die vorhandene Literatur in Ostasien konzentriert sich in der Regel auf den Staat als wichtigsten Motor der Wirtschaftsentwicklung auf nationaler und regionaler Ebene; ich hingegen argumentiere, dass ein die Entwicklung fördernder Staat zwar eine notwendige, jedoch keine ausreichende Vorbedingung für Regionalentwicklung darstellt. Stattdessen ist es nötig, die komplexe *strategische Kopplung* dieser wirtschaftlichen Akteure zu untersuchen – insbesondere die von Großunternehmen, die in bestimmten Regionen Asiens tätig sind und deren Leitfirmen Produktionsnetze auf weltweiter Ebene steuern. Um diese strategischen Kopplungsprozesse und ihre Auswirkung auf divergente regionale Entwicklungsverläufe zu illustrieren, werte ich meine eigenen Primärdaten sowie weitere Aufsätze aus, die in dieser Sonderausgabe von *Regional Studies* veröffentlicht werden. Zum Abschluss des Beitrags werden verschiedene wichtige Auswirkungen auf die Theoretisierung der Optionen für die Regionalentwicklung und strategische Regionalpolitik dargestellt.

Regionalentwicklung Globale Produktionsnetze Strategische Kopplung Transregionale Prozesse Asien Unternehmen
Staaten

YEUNG H. W.-C. Desarrollo regional y las dinámicas competitivas de las redes de producción global: una perspectiva esteasiática, *Regional Studies*. El debate académico y político sobre la naturaleza y las dinámicas del desarrollo regional ya no se centra como antes en el capital regional de tipo endógeno sino que tiene como objetivo analizar la relación compleja entre la globalización y el cambio regional. En este informe pretendo contribuir a este debate a través de la experiencia del desarrollo regional en el este de Asia. En el artículo demuestro que el desarrollo regional no puede ser entendido independientemente de las dinámicas cambiantes de las redes de producción global. Si bien la literatura existente sobre el este de Asia tiende a centrarse en el estado como el principal motor del desarrollo económico a niveles nacionales y regionales, sostengo que el estado de desarrollo es una condición necesaria pero no suficiente para que ocurra el desarrollo regional. Más bien necesitamos estudiar la compleja *conexión estratégica* de estos protagonistas económicos, especialmente para grandes empresas comerciales que funcionan en regiones específicas en Asia y cuyos socios líderes organizan las redes de producción en todo el mundo. A fin de ilustrar estos procesos de conexión estratégica y sus repercusiones en trayectorias divergentes de desarrollo regional, me beneficio de mis propios datos primarios y otros documentos que se publicarán en este número especial de *Regional Studies*. Este ensayo concluye con algunas implicaciones principales para teorizar las opciones del desarrollo regional y de la política regional estratégica.

Desarrollo regional Redes de producción global Conexión estratégica Procesos trans-regionales Asia Empresas
comerciales Estados

JEL classifications: L22, O18

INTRODUCTION

For a long time, sources of regional development have been a thorny conceptual and empirical issue in regional studies and regional economics. As recognized by PIKE *et al.* (2006, 2007) and PIKE (2007a), the history of regional studies is full of incessant attempts to identify the right balance between internal/indigenous/endogenous factors and external/exogenous forces that shape the nature, forms, and trajectories of regional economic growth. With hindsight, the analytical pendulum often tends to swing in favour of forces internal to specific regions. This endogenous focus is not surprising because regions in advanced industrialized countries used to be internally homogenous with a unified regional interest and blessed with historically specific growth institutions. The rise of the global economy, however, has transformed the competitive relationships between regions and countries. More specifically, globalization has accentuated the importance of dynamic forces of growth beyond the territorial confines of individual regions. Indeed, this importance of extra-regional processes of growth was noted

as early as HIRSCHMAN's (1958) monumental work in which Hirschman underscored the flows of ideas, people, and resources across and between regions. Some two decades later, DICKEN (1976) and MASSEY (1979, 1984) explicitly pioneered the idea of understanding regional development in relation to extra-regional processes. To DICKEN (1976), these processes were significantly linked to the extent of corporate control exercised extra-regionally by a nascent form of transnational corporations – the multi-plant business enterprise (or now commonly understood as 'multi-domestic' operations). MASSEY (1979, 1984), on the other hand, was primarily concerned with the dynamic relationship between inter-regional social relations of production and successive waves of (foreign) investment – what Massey termed 'spatial divisions of labour'. To Massey:

'The economy' of any given local area will thus be a complex result of the combination of its succession of roles within the series of wider, national and international, spatial divisions of labour.

(MASSEY, 1979, p. 235)

Clearly, both major contributions to regional studies pointed to the role of extra-regional processes in shaping the trajectories and dynamics of regional development.

This important lesson, however, seems to have been downplayed in the 'new regionalism' literature that has dominated regional studies since the mid-1980s (SCOTT and STORPER, 2003; HOWELLS, 2005; LAGENDIJK, 2006; HARRISON, 2007). Drawing upon the paradigmatic examples of Silicon Valley in California, the Third Italy, and Baden-Württemberg in Germany, proponents of this new literature have placed a great deal of analytical and empirical emphasis on localized agglomerations and institutional structures as both necessary and sufficient conditions to account for regional growth and development. Because of this excessive attention to local endogenous conditions, the literature offers a short shrift to the processes and mechanisms connecting different regions in the global economy. Meanwhile, the rise of new endogenous growth theories in regional economics and geographical economics at around the same time has further legitimized an analytical focus on internal sources of regional growth, particularly those associated with human capital, technological change, and increasing returns to scale (ROMER, 1986, 1994; KRUGMAN, 1995; FUJITA *et al.*, 1999; FUJITA and KRUGMAN, 2004; COMBES *et al.*, 2008). Though this latter literature has received a fair degree of critique in economic geography and regional studies for its excessive focus on the endogeneity of regional dynamics (MARTIN and SUNLEY, 1996, 1998, 2006), it should be noted that it does not entirely write off the crucial role of extra-regional flows and exchanges of people, goods, and knowledge.

Grounded in the above changing intellectual contexts, this position paper attempts to revisit the role of *trans-regional processes* – a combination of intra-, inter-, and extra-regional mechanisms – in shaping regional development trajectories and it introduces the subsequent nine papers in this special issue of *Regional Studies*. This task is an important one as the debate on the nature and dynamics of regional development in both academic and policy circles has now moved on from the earlier focus on endogenous regional assets such as localized networks of association and trust to analysing the complex relationship between economic globalization and regional change (COE *et al.*, 2004, 2008a; YEUNG, 2005a; HARRISON, 2007; PIKE, 2007b). In doing so, the author hopes to make three interrelated contributions. Firstly, to avoid another unhelpful swing in the analytical approach to regional development, this paper seeks to focus on the key coupling mechanisms connecting both actors and forces internal to regions and extra-regional flows spearheaded by global production networks. Accommodating both sets of factors for territorial development, the concept of *strategic coupling* as a key trans-regional process is developed further to account for regional development

in an era of globalization. This approach can potentially bridge what MORGAN (2007, p. 1248) described as the 'debilitating binary division between territorial and relational geography' in regional studies (see also MACLEOD and JONES, 2007).

Secondly, while this paper is conceptually grounded in the recently articulated global production networks (GPN) perspective (HENDERSON *et al.*, 2002; COE *et al.*, 2004, 2008b; HESS and YEUNG, 2006), a focus is made on the perspective's more flexible analytical structure that allows for a wider range of regional development responses and outcomes in a global era. Developing the differentiated agency of actors and networks across different spatial scales, this perspective enables one to understand the diverse regional development possibilities along the dependency–autonomy continuum (see also HANSEN, 2008; JONES, 2008; and the papers by Kelly, Lee, Yang, and Yang *et al.* in this issue). It goes beyond the spatial tendency in the new regionalism literature to focus exclusively on self-contained regional assets, particularly in the Western European context.

Thirdly, this paper extends further the relational view of regional development (ALLEN *et al.*, 1997; ALLEN and COCHRANE, 2007; MASSEY, 2007) and connects with the wider movement towards a 'relational turn' in economic geography (AMIN, 1998, 2004; BATHOLT and GLÜCKLER, 2003; BOGGS and RANTISI, 2003; YEUNG, 2005a, 2008a, 2009a; BATHOLT, 2006; ETTLINGER, 2008; JESSOP *et al.*, 2008; cf. SUNLEY, 2008). In this paper, regions are defined as relatively enduring sub-national territorial ensembles with their own administrative jurisdiction embedded within certain shared historical and socio-cultural formations. Regions are not closed or bounded systems though, as these ensembles are increasingly permeable in a globalizing era and subject to different forms of political struggles 'to define them in essentialist terms' (HUDSON, 2006, p. 160). Actors in/out regions actively construct all kinds of discursive and material relations stretched well beyond their territorial boundaries. In this sense, the present authors concurs with HUDSON's (2005, p. 620) relational view that regions should be 'seen as constituted from spatialized social relations, stretched out over space and materialized in various forms, and representational narratives about them' (see also ALLEN and COCHRANE, 2007; and the papers by Aoyama, Lee, and Lepawsky in this issue).

To engage with the above debate on trans-regional processes in an era of globalization, this paper is empirically grounded in the experience of regional development in East Asia. The East Asian experience shows that regional development cannot be understood independently of the changing dynamics of GPNs.¹ While the existing literature on East Asia tends to focus on the developmental state as the key driver of economic development (AMSDEN, 1989, 2001; WADE, 1990; WEISS, 1998, 2003; WOO-CUMINGS,

1999; cf. STIGLITZ and YUSUF, 2001; BOYD and NGO, 2005; DONER *et al.*, 2005), it is argued here that this developmental role of the national state is only a necessary but not sufficient condition for regional development to take place. There is a need to study the complex strategic coupling of those economic actors, particularly business firms, operating in specific regions with their lead firm counterparts orchestrating trans-regional production networks on a global basis. The analytical emphasis on both firms and institutions and their embedded GPNs is intentional in order to avoid the excessive emphasis on endogenous regional assets in the new regionalism literature and state interventions in the East Asian development literature.² In many ways, the firm remains as an important and active strategic player in shaping the regional landscape of global capitalism (see also MARKUSEN, 1994, 2004; TAYLOR and ASHEIM, 2001; DICKEN and MALMBERG, 2001; YEUNG, 2005b; and ETTLINGER, 2008). As MCKENDRICK *et al.* (2000, p. 254) noted, 'firms play the lead role in the construction of clusters and regional production systems – in effect, constituting economic space'. This proposed revision of the Asian developmental state literature is necessary and timely (see also DONER *et al.*, 2005; and YEUNG, 2009b). The literature has consistently downplayed the active role of leading Asian firms in regional development. Reflecting on the 'market versus state debate' in understanding regional development in Asia, HOBDAY (2001) observed that:

because of the dominance of this debate, there are few studies which derive 'bottom-up' policy conclusions from firm-level studies. The activities and strategies of firms in engaging with international production networks cannot be properly accounted for within theories of the developmental state, as latecomer firm behaviour tends to be treated (usually implicitly) as an automatic response to policy and economic circumstances, rather than as a shaping influence in its own right.

(p. 25)

From the early 1990s onwards, particularly since the 1997/1998 Asian economic crisis, the role of the developmental state has been much less 'developmental' and much more 'regulatory' (see also STIGLITZ and YUSUF, 2001; and GLASSMAN, 2007). This is evident in the changing role of the state in three Asian newly industrialized economies of South Korea (restructuring and regulating the *chaebols*), Taiwan (regulating cross-Straits activities of Taiwanese firms), and Singapore (market liberalization, policy deregulation, and the privatization of government-linked companies).³

In making the above arguments, three important caveats need to be stated initially. Firstly, the point about the strategic coupling of local actors (firms and institutions) with lead firms in GPNs should not be construed as a functionalist argument (see also HENDERSON *et al.*, 2002; and COE *et al.*, 2004, n. 1). This coupling process is not automatic and always successful; it needs

to be unpacked and analysed because it changes over time and in different geographical contexts.⁴ Moreover, access to the enabling mechanisms and technologies for this coupling may be highly uneven geographically. For example, while airfreight services account for around 40% of world trade by value (BOWEN and LEINBACH, 2006, p. 148; see also LEINBACH and BOWEN, 2004), access to supply chain management and third-party logistics services vary dramatically between firms in different regions (HEAVER, 2004).

Secondly, as well illustrated in the papers by Aoyama and Lee in this issue, the East Asian experience in regional development should be understood in its historical and geographical contexts, primarily because of the simultaneous presence of three key ingredients – local firms (public or private), developmental state institutions (often at the national level), and lead firms and GPNs (YUSUF *et al.*, 2004). In comparison, these three ingredients occurred during different historical moments of regional development in North America and Western Europe. When American investment ventured into Western Europe, particularly the UK, after the Second World War, developmental state institutions were mostly absent and these American firms were established as multi-domestic clones rather than complex GPNs (DICKEN, 1976; WATTS, 1981). Since the mid-1980s, regional devolution in North America and European countries has intensified, though the developmental outcomes are rather mixed (RODRÍGUEZ-POSE and GILL, 2004; HUDSON, 2006; MACLEOD and JONES, 2007). In East Asia, regional development trajectories are much more variegated, ranging from Japan's active pursuit of regional equality policies during post-war development to the strong focus in South Korea and Taiwan on building up national institutional capacity between the 1970s and the 1990s and the more recent experimentation of China with regional devolution since the late 1980s (for example, ZHANG and WU, 2006). These variegated regional outcomes in East Asia call for a more robust analytical framework capable of accounting for different regional trajectories.

Thirdly, this paper is not concerned with the rescaling of governance debate in geography and regional studies that views regional devolution as an outcome of rescaling of political governance in nation-states and macro-regions (GOODWIN and PAINTER, 1996; SWYNGEDOUW, 2000; BRENNER *et al.*, 2003; JONES *et al.*, 2005; MACLEOD and JONES, 2007; cf. MANSFIELD, 2005; see also the papers by Lee, Lepawsky, and Lin in this issue). In this debate, the analytical focus is particularly concerned with the politics and policy instruments of such rescaling processes, less so with how regions become more articulated into the global economy through GPNs (cf. COE *et al.*, 2004).

The present paper is organized into four sections. The next section theorizes the strategic coupling processes between actors in regions and lead firms in GPNs. This conceptual development draws upon

recent theoretical advances in studies of GPNs in economic geography and regional studies (DICKEN *et al.*, 2001; HENDERSON *et al.*, 2002; COE *et al.*, 2004, 2008a; YEUNG, 2005a, 2008a; HESS and YEUNG, 2006). Having theorized and identified these strategic coupling processes, this paper proceeds to illustrate how these processes shed light on the different trajectories of regional development in East Asia in the third section. Based on some primary data from the author's recent study of firms in leading Asian newly industrialized economies,⁵ this analysis shows that the strategic coupling of these Asian firms with lead firms in GPNs matters significantly in accounting for diverse trajectories of regional development. The final section offers some concluding remarks and major implications for theory and policy.

STRATEGIC COUPLING: REGIONAL DEVELOPMENT IN THE CONTEXT OF GLOBALIZATION

The above contextualization of the different literature strands in regional studies shows that the focus on the importance of extra-regional processes in shaping regional development outcome is in itself nothing particularly new (cf. DICKEN, 1976; MASSEY, 1979; and, more recently, PHELPS and FULLER, 2000). The novelty of the GPN approach, however, rests with its emphasis on the strategic coupling process between local actors in particular regions and global lead firms in GPNs. This actor-specific approach differs significantly from the earlier work that focused on the external dependency of regions and, therefore, the passivity of local actors in responding to external control. In the new regionalism literature, on the other hand, there is excessive glorification of local networks of small and medium-sized enterprises and associational economies (for a critical evaluation, see LOVERING, 1999; MACLEOD, 2001; and COE *et al.*, 2004). A more recent incarnation of this literature tends to focus on learning regions and regional innovation systems (BRACZYK *et al.*, 1997; MORGAN, 1997, 2004; FORNAHL and BRENNER, 2003; COOKE *et al.*, 2007; RUTTEN and BOEKEMA, 2007; COOKE and LAZZERETTI, 2008; cf. CRISTOPHERSON and CLARK, 2007; AMIN and ROBERTS, 2008; PHELPS, 2008). In either strands of the literature, inadequate attention has been paid to the interconnections between these external global firms and their local counterparts – often mistaken as small and medium-sized enterprises, even though some of them have grown to become major global players in their own right.

This section first explains how regional development should be seen as a form of *trans-regional* dynamic. It then brings in global lead firms and shows how regions become incorporated into their GPNs through the process of strategic coupling. Some key

mechanisms facilitating this coupling process are described and explained. Taken together, this GPN approach to regional development goes beyond the new regionalism literature through a consideration of economic–geographical processes occurring at multiple scales – from local and regional to national and global (see also HUDSON, 1999, 2005; MACLEOD, 2001; HADJIMICHALIS, 2006; and the paper by Lee in this issue). This explicit attention to multi-scalar processes of regional development represents a helpful corrective to the recent rise of the new regionalism rhetoric in which intra-regional processes are championed as the universal panacea for regional development. As noted by HUDSON (2005, p. 620) in the European context, for example, 'there is a wealth of evidence of people seeking to construct regions as if they were closed, bounded and coherent, with shared and unified regional interests'. In the US case, JONAS and PINCETL (2006, p. 487) have described American regionalist rhetoric and concerns as 'prosaic' and 'atheoretical' that have historically been seeking to uncover the optimal size and function of the (regional) state.

Several recent studies of Italy's Veneto region (BIALASIEWICZ, 2006), North East England (HUDSON, 2005), California in the United States (JONAS and PINCETL, 2006), and Eastern China (WEI *et al.*, 2007) have clearly pointed to how regional devolution and the valorization of local networks of trust are manifested in regionalist politics and localist rhetoric. This excessive championing of intra-regional issues can be dangerous and inward-looking. As BIALASIEWICZ (2006) argued:

the fortunes [of Veneto] could not have been made without the global market and its hypermodern thirst for innovation, a thirst that Veneto entrepreneurs have been masterful in exploiting.

(p. 46)

Bialasiewicz validly questions regionalist assertions that:

all there was to the Veneto model was 'hard work and creativity': the region was a 'self-organising system', its success a result of 'spontaneous organisation'.

In a similar vein, HADJIMICHALIS (2006, p. 85) reflects critically on the Third Italy discourse and points to the discourse's 'failure to take into account the wider national, European and global system of capitalist price relations within which these small firms operate'. Hadjimichalis is particularly troubled by the explanation of Third Italy's success on the basis of:

'internal' factors only, by their 'embedded tacit knowledge', while the rest of Italy and the world are reduced to simple consumers of their fashion products'.

Hadjimichalis further relates the success of Third Italy in the textile and clothing industry to favourable state policies in lowering exchange rates and tax liabilities of small firms, macro-economic protectionist regulations and labour legislations, and the globalization of lead

Italian firms through vertical integration of their value-chain activities (see also DUNFORD, 2003, 2006). Instead, Hadjimichalis calls for:

the need to extend the analytical focus from a bounded territorial system of production to an unbounded, scalar spatial system in which both local and international relations are taken into account.

(HADJIMICHALIS, 2006, pp. 102–103)

(See also HUDSON, 2005, 2006, 2007; ALLEN and COCHRANE, 2007; MASSEY, 2007; and JONES, 2008.)

This recent call for a shift of analytical attention from focusing on successful intra-regional ingredients *à la* the new regionalism and regional innovation literature to the complex interrelationships between local/regional actors and global processes does not represent a straightforward return to the kind of work associated with external control (DICKEN, 1976) and social relations of production (MASSEY, 1979, 1984). Instead, it builds on this earlier strand of literature and focuses on a relational understanding of the evolution of local and regional actors and their dynamic articulation in GPNs – what is now broadly recognized as a ‘relational turn’ in regional studies and economic geography. This relational approach to ‘globalizing’ regional development typically starts its analysis of a region’s development trajectory in relation to complex dynamics in respective GPNs. It also encourages understandings that embed the economic action of these actors in their institutional contexts. While the next subsection examines empirically how local actors in selected East Asian regions have risen and played an important role in GPNs, the remaining sub-sections tackle two major theoretical issues: (1) why do global lead firms in GPNs become interested in what STORPER (1997, p. 26) has termed the ‘holy trinity’ of regional economies – technology, organizations, and territories?; and (2) how do key actors in specific regions become strategically coupled with the imperatives of these lead firms in GPNs?

Lead firms in global production networks

By global lead firms is meant powerful firms that orchestrate and coordinate complex GPNs in their respective industries that span different territories and regions. These lead firms are often large transnational corporations that in turn are movers and shapers of the global economy (HARRISON, 1997; PECK and YEUNG, 2003; GEREFFI, 2005; DICKEN, 2007). They are market leaders in terms of their brand names, technology, products/services, and marketing capabilities. Good examples are Hewlett-Packard and Motorola in information and communication technology (ICT) industries, Sony and Philips in consumer electronics, Toyota and General Motors in automobiles, The Gap and Nike in clothing and footwear, Citicorp and HSBC in banking, Hilton and Marriott in hospitality,

British Airways and Singapore Airlines in passenger air travel, Wal-Mart and Carrefour in retailing, and UPS and Exel/DHL in logistics. In the manufacturing sector, global lead firms often specialize in the upstream activities of research and development and the downstream activities of branding, marketing, and post-sale services. While they continue to engage in high-value manufacturing activities, these global lead firms are increasingly compelled to outsource a large portion of their product categories to strategic partners and independent manufacturers (for example, information technology, clothing and garment, toys and footwear, and machinery industries). There is thus a movement of global lead firms towards market control via product and market definitions, rather than leadership in manufacturing processes and technologies.

While most of these global lead firms are original equipment manufacturers (OEMs), their manufacturing partners are often described in different ways – OEM subcontractors, original design manufacturers (ODMs), electronic manufacturing service (EMS) providers, and contract manufacturers (CMs). OEM subcontractor relationships tend to be most prevalent in labour-intensive industries, whereby the OEM customers supply design and product specifications to their subcontractors, which in turn take care of the manufacturing process. In EMS, CM, and ODM arrangements, global lead firms rely on the design, manufacturing, and logistic services of their strategic partners. As noted by STURGEON and LESTER (2004):

Today, suppliers must provide a capability for independent process development and an ability to perform a wide range of value adding functions associated with the manufacturing process, including help with product and component design, component sourcing, inventory management, testing, packaging, and outbound logistics.

(p. 43)

Lead firms are also demanding that suppliers have the ability to support the lead firm’s operations and market-serving activities around the world.

These EMS, CM, and ODM partners may also engage separate subcontractors for the manufacture of different parts and components of products that they assemble for global lead firms. The finished products, however, continue to bear the trademarks and brand names of global lead firms. This lack of product/market control explains why EMS, CM, and ODM providers cannot be seen as lead firms in their own right, even though many of them are very large transnational corporations in their own right (see the next section; and also the paper by Yang *et al.* in this issue). At the very most, they are strategic partners of global lead firms that are brand name companies with or without OEM capability.

In the service sector, global lead firms are particularly dominant in industries that are global in scope and operations (for example, transport, finance, producer services, retailing, logistics, and hospitality). In these

service industries, there is a great deal of global integration coordinated by these service lead firms. They, therefore, generate substantial demand for globally integrated services from their suppliers and providers, for example, logistics, maintenance, materials, and so on. This demand for global integration in both operations and suppliers is explained by the necessity of ensuring quality consistency on a global scale. This in turn provides opportunities for globally integrated service suppliers that can 'follow' their customers. On the other hand, local responsiveness may be called for in many of these service industries whereby global lead firms have to tailor their services to specific geographical markets. This local orientation allows for substantial sourcing on the basis of local and regional markets.

As their markets and competitors are becoming increasingly global, these lead firms in manufacturing and service GPNs are driven by three competitive dynamics that can have profound and, yet, differentiated consequences for regional development: cost, flexibility, and speed (for empirical evidence, see the next section). The perennial drive towards lowering cost is now an established idiom in neoclassical economic and Marxian analysis of industrial competition. To HARVEY (1982), MASSEY (1984), and SMITH (1984), this competitive pressure results in capital's ruthless adoption of a *spatial fix* that sees divestment and investment in different regions in relation to the ebbs and flows of capital.⁶ Regions suffering from high cost reluctantly witness the unfolding of processes of deindustrialization, whereas lower cost regions gain new investment through the emergence of a new international division of labour (FRÖBEL *et al.*, 1980). This process of spatial fix is best observed in the international relocation of much of European and American manufacturing activity to East Asia during the past four decades (for example, HENDERSON, 1989; MCKENDRICK *et al.*, 2000; ERNST, 2005; FEENSTRA and HAMILTON, 2006; and SCOTT, 2006).

While this spatial fix can alleviate, at least temporarily, the cost problem of global lead firms, it is clearly not a long-term solution to their competitive plight. As the saying goes, there will always be someone who can do it cheaper. As shown by perceptive scholars of business competition (SCHOENBERGER, 1997; KENNY and FLORIDA, 2004; MATHEWS, 2005, 2006a), two other firm-specific dynamics – flexibility and speed – may play a much more important role than previously understood in the regional studies literature. In order to compete more effectively in today's global economy, lead firms begin to opt for what can be broadly termed an *organizational fix*. Lead firms now realize that competitive advantage can be obtained through a more flexible and efficient form of organizing production on a global scale. This idea of an organizational fix must be distinguished from the earlier notion of a spatial fix. Reorganization of production networks does not necessarily entail spatial

relocation of production, particularly one's own production facility. Instead, an organizational fix results primarily from a choice of different business strategies; it is about strategizing the organizational principle that affords the most competitive advantage. The strategy of outsourcing, for example, represents an organizational fix through which global lead firms are able to increase their production flexibility without incurring substantial liability in owning manufacturing or service facilities. The rise of OEM, ODM, CM, and EMS arrangements can be interpreted as important organizational fixes for global lead firms. Through these different organizational arrangements, production networks become more globally oriented and integrated, leading to the emergence of sophisticated GPNs orchestrated by global lead firms. Organizational fixes, therefore, produce highly differentiated geographies of production and service provisions that in turn impact on different regional fortunes.

The search for low-cost production locations and the creation of organizational economies do not capture fully the problem of competitive dynamics in an era of globalization. As noted by HARVEY (1989), the dynamics of capitalist accumulation processes have compelled firms to search for new competitive advantages based on improvements in transport and communication technologies, a phenomenon Harvey describes as time-space compression. To SCHOENBERGER (1997, 2000) and SHEPPARD (2002), this competitive pressure has substantially increased the demand for time-to-market as a critical tool of winning market shares. Apart from organizational flexibility, the adoption of technological solutions can significantly improve a lead firm's time-to-market capability. This approach can be termed a *technological fix* that entails the critical role of technology in the competitive dynamics of lead firms in GPNs. In the electronics industry, for example, information technology solutions and global electronic platforms have undoubtedly contributed to the successful organization of production networks on a global scale by lead firms. Such a technological fix can be seen in the widespread deployment of such information technology solutions as electronic data interchange (EDI) with customers and suppliers in both manufacturing and service sectors, internet-based integration of manufacturing processes and enterprise resource planning (ERP) systems, and global tracking systems with third-party logistics (3PL) providers (LÜTHJE, 2002; MACHER *et al.*, 2002).

This technological fix results in the vertical disintegration and the subsequent *vertical specialization* of production in different manufacturing and service industries. Since the early 1990s, global lead firms in different GPNs and sectors have moved towards a business model of increasing specialization in value chain activities (Fig. 1). This trend has been accelerated greatly since the late 1990s, particularly in the electronics, automobile, clothing, retailing, and logistics sectors (GEREFFI *et al.*, 2005; DICKEN, 2007; YEUNG,

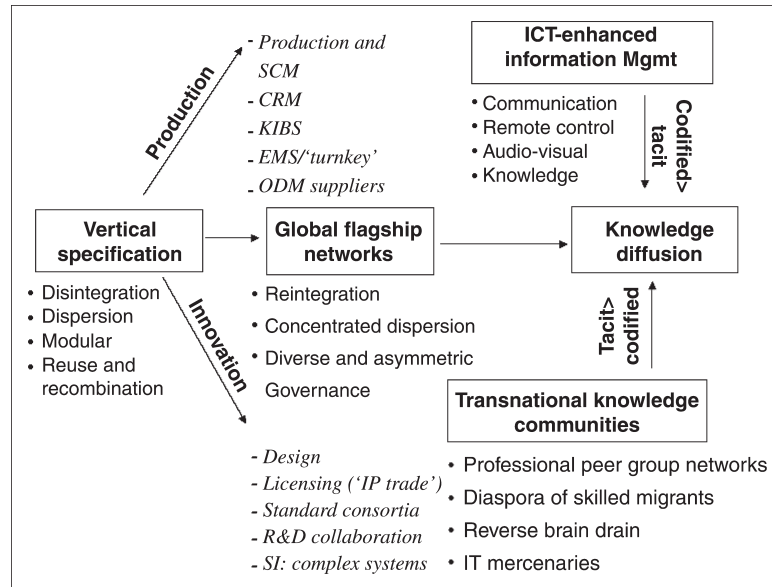


Fig. 1. Changing industrial organization and global production networks and their impact on knowledge diffusion
 Source: ERNST (2005), fig. 1, p. 11

2007a). What this value chain specialization entails is a more strategically focused role played by global lead firms in the upstream (research and development) and downstream (marketing, distribution, and post-sale services) segments of the value chain, leaving much of the manufacturing portion of the value chain to its international strategic partners and dedicated supply chain managers. This vertical specialization thus refers to the multiple specializations of a lead firm in different stages of the same value chain. It is vertical because both upstream and downstream specializations can be possible within the same lead firm. It is also different from vertical disintegration, a process not necessarily associated with multiple specializations. The implication of vertical specialization for regional development is highly contingent on the strategies of lead firms and their changing organization of GPNs. LÜTHJE (2002) thus argues that:

there may emerge *different trajectories of technological learning* depending on the position of particular districts or regions within the international division of labor in the production networks of the respective industries. (p. 228)

Taken together, the impact of the above three fixes on regional development is critically dependent on the ways in which local and regional firms in these regions are articulated into GPNs – a process termed ‘strategic coupling’ in this paper.⁷

Strategic coupling in global production networks

Now that the nature and competitive dynamics of lead firms in coordinating GPNs have been clarified, the section begins to situate regions in these GPNs

through a relational perspective (YEUNG, 2005a, 2008a, 2009a). In this perspective, both regions and GPNs are relational constructions and social formations that are constituted through ongoing actor-specific practices and processes; they are not some kind of autonomous actors capable of effecting spatial change. Instead, the need is to focus on *business firms* – both global lead firms and their strategic partners – and *institutions* in the political, economic, and social arenas as key actors that bring together regions and GPNs through their mutually constitutive relational processes. This is where the concept *strategic coupling* becomes important.⁸ Strategic coupling is defined as a mutually dependent and constitutive process involving shared interests and cooperation between two or more groups of actors who otherwise might not act in tandem for a common strategic objective. In the context of regional development, strategic coupling refers to the dynamic processes through which actors in regions coordinate, mediate, and arbitrage strategic interests between local actors and their counterparts in the global economy. These trans-regional processes involve both material flows in transactional terms and non-material flows (for example, information, intelligence, and practices).

More specifically, this strategic coupling process exhibits several distinctive attributes. Firstly, it is strategic because the process does not happen without active intervention and intentional action on the part of the participants. As argued by MATHEWS (2006a), strategizing is most useful/profitable in a market condition of disequilibrium because such a condition allows for arbitraging of different opportunities. This view of strategizing concurs with the Schumpeterian concept of entrepreneurship that postulates the function of the entrepreneur as someone serving as a disruptive

and dynamic force in an economy that has reached a static equilibrium. Through carrying out 'new combinations' (SCHUMPETER, 1934, p. 66), the entrepreneur disturbs the existing static equilibrium of an economy and forces it into disequilibrium. This process, widely known as creative destruction, is central to the Schumpeterian entrepreneur who brings about economic change and regional development.⁹ Secondly, it is time-space contingent as the coupling process is not permanent and is subject to change. Indeed, a typical strategic coupling resembles a form of temporary coalition of different actors and institutions. Thirdly, the convergence process transcends territorial boundaries and geographical scales, as actors from different spatial sites (states, regions, and localities) converge and their practices radiate out to diverse geographical scales – some global and some highly local (see also YEUNG, 2009a). Overall, the concept explains how key actors in specific regions become articulated into the imperatives of lead firms in GPNs; it is about dynamic relational processes and mechanisms.

What then are these relational processes and mechanisms that facilitate the strategic coupling of local and regional actors with lead firms in GPNs? In the East Asian context, three such processes will be elaborated: (1) the emergence of transnational communities; (2) changes in industrial organization; and (3) initiatives by states and institutions. These processes are chosen for their theoretical relevance and policy significance; they are also well illustrated in the following papers in this issue. The critical role of communities and social capital in regional development is now well recognized in regional studies (PHELPS and WOOD, 2006; RODRÍGUEZ-POSE and STORPER, 2006). One such community refers to the transnational elite professionals and business persons in East Asia who shuttle constantly around the globe – though often along the East Asia–Vancouver/San Francisco corridor (OLDS, 2001; COE *et al.*, 2003; SAXENIAN and SABEL, 2008; see also the paper by Yang *et al.* in this issue). To SAXENIAN (2002, 2006), this transnational elite community has rewritten the concept of international knowledge formation from one of brain drain to a two-way process of brain circulation. Through their constant movements between different regions of the world, these Asian or Asian-origin technologists and entrepreneurs have formed a transnational community of informal brain networks characterized by certain common social identity and, sometimes, nationalistic sentiments. Yet, their transnational business practices have contributed to the formal coupling of firms and institutions in Asian regions with lead firms in GPNs through a variety of organizational arrangements.¹⁰ SAXENIAN (2002, pp. 183 and 186; see also SAXENIAN, 2006) thus argues that:

these communities have the potential to play an increasingly important role in the evolution of global production networks. Transnational entrepreneurs and their communities

provide a significant mechanism for the international diffusion of knowledge and the creation and upgrading of local capabilities. . . . [They] provide a direct mechanism for transferring the skill and tacit knowledge that can dramatically accelerate industrial upgrading in their developing countries. In addition they frequently coordinate relationships between the network flagships and suppliers, particularly when they are based in regions with differing languages and business cultures. This role ranges from helping to identify appropriate original equipment manufacturer (OEM) suppliers to facilitating the ongoing (and often face-to-face) inter-firm communications required by the rapid pace of change in the industry.

To elaborate further Saxenian's important observation, one needs to unpack better another critical coupling mechanism – changing industrial organization. As explained above, lead firms in GPNs are compelled to adopt organizational and technological innovations in order to fix their competitive problems. These fixes in turn create a new form of industrial organization that provides a window of opportunity for local and regional actors in Asia to plug themselves into GPNs. SAXENIAN (2002, pp. 184–185) observes that 'The deepening social division of labor in the industry creates opportunities for innovation in formerly peripheral regions – opportunities that did not exist in an era of highly integrated producers'. In particular, the rise of vertical specialization by brand name firms and/or OEMs in many industries is linked to the vertical disintegration of value-chain activity within individual lead firms and the subsequent vertical reintegration of this activity in geographically dispersed locations. In the global electronics and information and communication technology (ICT) industry (Fig. 1), this process of vertical disintegration/reintegration provides a strategic coupling platform for local and regional firms in Asia to connect with lead firms in GPNs. The papers by Yang and Yang *et al.* in this issue have detailed how changing industrial organization shapes regional development in China and Taiwan.

This process of changing industrial organization is also greatly facilitated by technological changes. LEE and LIM (2001) and LEE *et al.* (2005b), for example, showed how rapidly emerging new technological paradigms in digital television and mobile phones have created windows of opportunity for latecomer Asian firms to engage in leapfrogging. Primarily because of the capability, flexibility, response time, and cost competitiveness of domestic firms in particular East Asian industrial districts and high-growth regions, this strategic coupling process operates to the benefits of both lead firms in GPNs and their Asian partners such as EMS and ODM providers and dedicated service providers (for more detailed examples, see the next section; see also YEUNG, 2007a). LÜTHJE (2002) notes that:

Through their continuing acquisitions CM [EMS] companies act as transnational network builders, assembling

a variety of plants with different manufacturing practices in specific national and global markets. Contract manufacturing, therefore, can be characterized as a mode of integrating, coordinating, and regulating diverging economic, social, and cultural conditions in global production systems.

(p. 228)

These changing organizational–technological capabilities of East Asian actors thus facilitate their coupling with the strategic imperatives of lead firms in GPNs.

Finally, the availability of the above transnational communities and organizational–technological capabilities of local actors can also be partially explained by the relentless efforts of state institutions in paving the way for this strategic coupling to take place. The developmental state literature has already explained exactly what the East Asian states did in terms of industrial policies and fiscal incentives that helped groom the first-generation Asian firms up to the late 1980s. There is no doubt that the rise of Taiwan, Singapore, and South Korea as the world's major exporters of information technology-related producers is an intended outcome of strategic industrial policy actively pursued by the respective governments (AMSDEN, 1989, 2001; MATHEWS and CHO, 1998; AMSDEN and CHU, 2003; FEENSTRA and HAMILTON, 2006; see also the papers by Lee, Lepawsky, Wei *et al.*, and Yang *et al.* in this issue). Since the 1970s, the three governments have been actively promoting electronics as the key growth sector, though they have taken different pathways to achieve such an aggressive objective. Whereas Taiwan and South Korea rely mostly on domestic firms in collaboration with foreign high-technology companies (the United States and, lately, Japan), Singapore is much more open to global lead firms in GPNs. Since the mid-1970s, the Taiwanese government has been aggressively investing in infrastructures (for example, Hsinchu Science-based Industry Park; HSU, 2004; see also the paper by Yang *et al.* in this issue), research institutes (for example, Industrial Technology Research Institute and Electronics Research Service Organization), and, sometimes, high-technology capital-intensive start-ups (for example, TSMC and UMC). It has also provided general incentives to attract returning Taiwanese engineers who have developed successful careers in Silicon Valley (HSU and SAXENIAN, 2000; SAXENIAN, 2006), a strategic move adopted in more recent years by the central government in Mainland China (ZHOU and TONG, 2003; ZHANG, 2008; ZHOU, 2008).

Similarly, the South Korean government has invested heavily in promoting selected business conglomerates known as *chaebols* (CHANG, 2003). Some of the leading *chaebols* include Hyundai, Samsung, and LG. By establishing the Korea Institute of Science and Technology (KIST) in 1966 and the Korea Institute of Electronics Technology (KIET) in 1976, the South

Korean government has also played a critical role in technological development (SHIN, 1996; CHOUNG *et al.*, 2000; CYHN, 2002; see also the paper by Lee in this issue). Unlike Taiwan, however, the South Korean government was directly involved in picking industrial winners and subsidizing their research and development expenditure. Lacking indigenous capability in the manufacturing industry, Singapore's Economic Development Board (EDB), on the other hand, has been attracting world class electronics companies such as Hewlett-Packard, Philips, General Electric, Seagate, Toshiba, and Matsushita to locate their high-value activities in Singapore (LOW *et al.*, 1993; CHAN, 2002). The rise of leading Singaporean firms is thus directly related to the kind of global lead firms brought into Singapore. The Singapore government is also actively promoting bilateral free trade agreements (FTAs) in order to maintain its locational attractiveness in the regional production networks aiming at the US market (YEUNG, 2001).

The role of these state institutions during the past fifteen years has been particularly important in enhancing human resources and physical infrastructure in respective industrial districts and growth regions.¹¹ In 2002, for example, the total cost of an integrated circuit chip engineer in Asia is only 10–20% of that in Silicon Valley (ERNST, 2005, table 3). This is no doubt a positive outcome of state involvement in developing human resources and physical infrastructure. The outcome for regional development is staggering, as it stimulates both the relocation of chip design work from Silicon Valley and elsewhere in developed economies to leading clusters in Asia, and the growing cost competitiveness of leading Asian firms in chip design and engineering capabilities (see the empirical examples below). Another role of state institutions in the strategic coupling between local firms and lead firms in GPNs has to do with the rapid growth of public–private research and development consortiums, particularly in Singapore, South Korea, and Taiwan. In the latter two economies, these consortiums are strategically located in high-growth regions and they serve as a direct conduit to couple the strategic interests of both local high-technology firms and global lead firms. They also represent a form of state-sponsored collective action to reduce excessive competition among participating firms and to develop path-breaking technologies (NOBLE, 1998; see also the paper by Yang *et al.* in this issue).

To sum up this section briefly, it has examined how regional development should be viewed as a trans-regional dynamic process of growth and change, where multiple actors operate at a variety of geographical scales. The strategic coupling processes of these actors in different regions and locales constitute the central dynamic of regional development, as they bring together regional assets and GPN dynamics in a recursive and cumulative process of growth and development. The particularity of these coupling forms is

shaped by the complex interaction of different fixes in GPN dynamics and region-specific coupling mechanisms. The regional outcomes of this interaction are likely to be diverse and variable. What remains to be seen in the next section is how these dynamic processes unfold in different regional development trajectories in East Asia.

DIVERGENT REGIONAL DEVELOPMENT TRAJECTORIES IN EAST ASIA

Regional development is a major policy issue in East Asia. From China's Yangtze River Delta and Pearl River Delta, South Korea's Seoul Metropolitan Area, and Taiwan's Taipei-Hsinchu, region to Malaysia's Penang and Selangor states and Thailand's Greater Bangkok region (Fig. 2), rapid industrialization and economic development are taking place at historically unprecedented rates on the back of high export propensities and, more recently, massive growth in domestic markets. As shown in the comparative data presented in Table 1, these growth regions have clearly stood out in relation to their growth rates and contributions to national economies. If one applies the standard analytical toolkit from the new regionalism literature and its regional innovation system variant, one will probably find it insufficient to explain these divergent regional development trajectories (cf. LUNDBALL *et al.*, 2006). Many of these East Asian regions do not develop similar kinds of institutional thickness (AMIN and THRIFT, 1994a), associational economies (COOKE and MORGAN, 1998), and regional innovation systems present in high-growth regions in Western Europe. There is also a relative absence of substantial relational assets extensively discussed by STORPER (1997) and SCOTT and STORPER (2003); few East Asian regions evolve into learning regions capable of generating indigenous technologies and innovation (ASHEIM, 1996; MORGAN, 1997; SIMMIE, 1997; BOEKEMA *et al.*, 2000; RUTTEN and BOEKEMA, 2007; cf. HUDSON, 1999; BUNNELL and COE, 2001; HASSINK, 2005).

With the exception of perhaps the Taipei-Hsinchu region (see also the paper by Yang *et al.* in this issue) and the Seoul Metropolitan Area (see also the paper by Lee in this issue), none of the regions in East Asia fits the classic story in the new regionalism literature that emanates from regional experiences in Western Europe and therefore applies more readily to already relatively developed and autonomous regions. Some key concepts in this literature are also vaguely defined and fuzzy in conceptualization. HASSINK (2005), for example, found that the conceptualization and definitions of learning regions are (see also MARKUSEN, 1999; and MARTIN, 2001):

quite vague and diverse, since seldom concrete examples can be shown and since policy-makers, who have been eager to use the concept as a label for their development

plans, have not made efforts to define what they mean by learning regions.

(p. 524)

As noted in the Introduction, the development of East Asian regions takes place in diverse historical and geographical contexts – some of them are relatively recent creations and others are spatial outcomes of deliberate state policies. Malaysia's Multimedia Super Corridor (see also the paper by Lepawsky in this issue) and China's Suzhou Industrial Park (see also the paper by Wei *et al.* in this issue) are just two very recent examples conceived since only the early to mid-1990s. Even in the cases of Taiwan and South Korea, they have taken different pathways to couple with trans-regional processes. For example, while the role of state institutions matter significantly in these high-growth regions, their role and relevance differ not only from those in Western Europe, but also from each other (for contrasting examples, see the papers by Lee and Yang *et al.* in this issue). The extensive use of strategic industrial policies to promote growth in specific regions in both Taiwan and South Korea, for example, compares very differently with the state's efforts in building cooperative economies and trust mechanisms in Western Europe. Moreover, the central government plays a much greater role in regional trajectories in East Asia. Still, the role of the state in courting transnational communities of professionals and elites differs between Taiwan and South Korea. Taiwan has a much greater success in seeking its ethnic Chinese diaspora to build bridges for trans-regional collaboration between local firms and lead firms in GPNs. Apart from these cases, most other East Asian high-growth regions are not really 'learning' regions imbued with strong indigenous knowledge and technological capabilities.¹² Instead, most of them remain quite dependent on lead firms in GPNs and cost-based competition.

To account more realistically for these divergent regional development trajectories in East Asia, one needs to look beyond growth dynamism generated endogenously from these regions and bear in mind the relational openness of regional formations. In this sense, the earlier discussion of GPNs and strategic coupling between regional and extra-regional actors becomes relevant and useful. While the author is not concerned with the nitty-gritty of regional policies per se or the social and environment impact of sometimes imbalanced regional growth,¹³ the intention is to illustrate how regional development occurs in East Asia in relation to the strategic coupling of local actors with lead firms in GPNs. As summarized in Table 2, three types of regional development trajectories are shown and their key dynamics are analysed: (1) strategic coupling through international partnership, (2) strategic coupling through indigenous innovation, and (3) strategic coupling through the provision of production platforms. In these instances, the focus is on how local

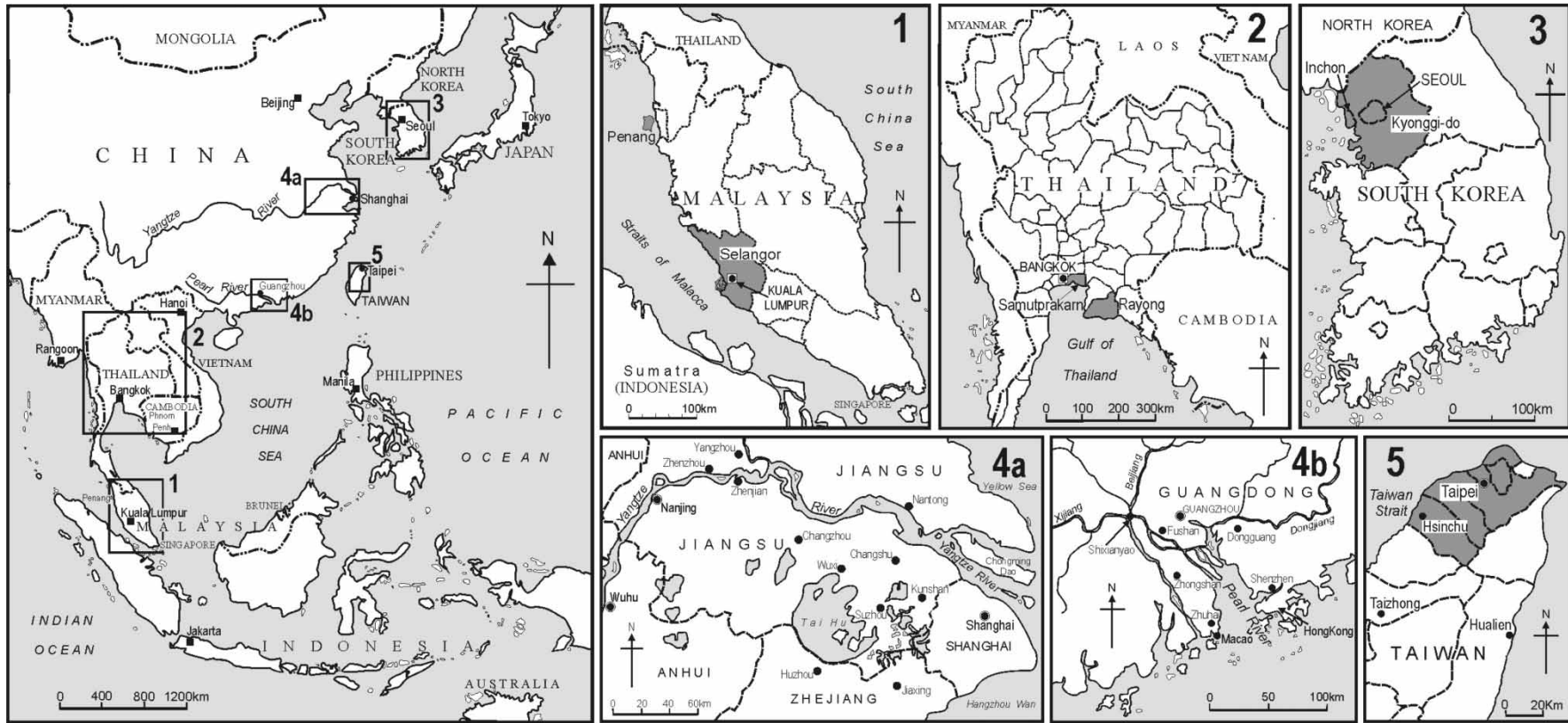


Fig. 2. High-growth regions in East Asian economies

Table 1. Economic statistics on growth regions in East and South East Asia

China (RMB) ^a	Population, 2004	Percentage of total	Gross regional product, 2004	Percentage of total	Value added of enterprises, 2004	Percentage of total	Gross industrial output, 2004	Percentage of total	Gross capital formation, 2004	Percentage of total	Growth rate (%) between 2004 and 2000			
											Gross regional product	Value added of enterprises		
Total	129 988	—	13 688	—	5481	—	6282	—	6235	—	53	115.8		
Shanghai	1742	1.3	745	5.4	343	6.3	349	5.6	361	5.8	63.7	103		
Jiangsu	7433	5.7	1540	11.3	645	11.8	771	12.3	803	12.9	79.5	148.1		
Zhejiang	4720	3.6	1124	8.2	417	7.6	538	8.6	575	9.2	86.1	167.3		
Guangdong	8304	6.4	1604	11.7	709	12.9	801	12.8	637	10.2	66	107.3		
South Korea (won)	Population, 2000		Number of manufacturing establishments, 2004		Number of workers, 2004		Value of establishments, 2004				Growth rate (%) between 2004 and 2000			
											Number of manufacturing establishments	Number of workers	Value of establishments	
Total	4614	—	113 310	—	2798	—	788 633	—			15.5	5.5	41	
Seoul	990	21.5	19 264	17	267	9.5	38 412	4.9			4.7	-4.3	18	
Gyeonggi-do	898	19.5	34 766	30.7	823	29.4	189 642	24			20.1	10	30.5	
Taiwan (NT)	Population, 2004		Number of manufacturing establishments, 2001		Number in employment, 2001		Wages, 2001		Gross output, 2001		Growth rate (%) between 2001 and 1995			
											Number of establishments (all sectors)	Number in employment	Gross output	
Total	2269	—	147 340	—	6655	—	3020	—	17 011	—	8.66	1.16	25.1	
Taipei city	262	11.5	8605	5.8	1635	24.6	876	29	4881	28.7	3.13	8	48.74	
Hsinchu city	38.7	1.7	2636	1.8	165	2.5	84	2.8	545	3.2	8.44	26.94	71.43	
North region ^b	n.a.	n.a.	62 588	42.5	3677	55.3	1773	58.7	10 049	59.1	6.14	3.07	30.57	
Malaysia (RM)	Population, 2005		Number of manufacturing establishments, 2002		Manufacturing employment, 2002		Wages, 2002		Manufacturing gross output, 2002		Growth rate (%) between 2002 and 2000			
											Number of manufacturing establishments	Manufacturing employment	Wages	Manufacturing gross output
Total	2613	—	19 705	—	1489	—	27.2	—	456.5	—	-3.7	-5.5	4.2	3.8
Penang	147	5.6	1645	8.3	297	19.9	5	18.4	77.8	17	-7.9	24.8	8.7	-5.7
Johor	135	5.2	3660	18.6	196	13.2	4.3	15.8	78.3	17.2	2.3	-36.2	-10.4	-0.4
Selangor	474	18.1	3469	17.6	393	26.4	8.8	32.4	132.2	29	1	3.1	12.8	9.3
Thailand (baht)	Population, 2004		Gross regional product, 2004		Manufacturing gross output, 2004						Growth rate (%) between 2004 and 2000			
											Gross regional product	Manufacturing gross output		
Total	6420	—	6577	—	2312	—					33.6	39.8		
Bangkok and vicinities	1114	17.4	2899	44.1	1104	47.8					24.3	23.1		
Eastern region	434	6.8	998	15.2	528	22.8					59.9	79.6		

Notes: ^aPopulation is given as 10 000 persons; employment is given as thousands; and values are in billions of the local currency.

^bIncluding prefectures of Taipei, Taoyuan, Hsinchu, and Yilan.

Sources: CHINA STATISTICS PRESS (2005), tables 3-1 on p. 51, 3-11 on p. 59, 4-3 on p. 94, and 14-2 on p. 489; NATIONAL STATISTICAL OFFICE, SOUTH KOREA (2002), table III-3 on p. 130; NATIONAL STATISTICAL OFFICE, SOUTH KOREA (2006), tables II-11 on p. 146, and V-1 on p. 319; EXECUTIVE YUAN, ROC (2003), tables 3 on p. 3, 23 on p. 43, and 51 on p. 428; EXECUTIVE YUAN, ROC (2005), table 13 on p. 22; DEPARTMENT OF STATISTICS, MALAYSIA (2003/2006), tables 2.1 and 5.1; and NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT BOARD (2006).

Table 2. Strategic coupling, global production networks, and regional development trajectories

	Types of strategic coupling		
	International partnership	Indigenous innovation	Production platforms
<i>GPN dynamics</i>			
Spatial fix	Cost efficiency	Public subsidies	Lower production costs
Organizational fix	Vertical specialization	New competition and the rise of new lead firms	International outsourcing and subcontracting
Technological fix	Faster time to market	New product and process technologies	Enabling transport technologies
<i>Coupling mechanisms</i>			
Transnational communities	Transactional links, business intelligence and market knowledge	Reverse 'brain drain' and technological returnees	Managerial competence and intermediaries
Industrial organization	Rise of strategic partners and global localization of transnational corporations (TNCs)	Rise of national champions and new lead firms	Small and medium-sized enterprises (SMEs) and new industrial spaces
States and institutions	Upgrading of labour, technology, and infrastructure	Strategic industrial policies	Fiscal and financial incentives
<i>Regional trajectories</i>	Some regional autonomy	Increased regional assets and autonomy	External dependency
<i>East Asian regional examples</i>	Singapore and Taipei–Hsinchu (Taiwan)	Seoul Metropolitan Area (South Korea), Taipei–Hsinchu (Taiwan), Singapore, and Yangtze and Pearl River Deltas (China)	Penang and Selangor (Malaysia), Greater Bangkok (Thailand), and Yangtze and Pearl River Deltas (China)
<i>Relevant sectors</i>	Electronics, petrochemicals, finance, transport and logistics	Electronics, automobiles, transport and communications	Electronics, automobiles, apparel and toys

firms are articulated into the strategic imperatives of GPNs in respective high-growth industries. Different regions may experience more than one type of strategic coupling, as their development trajectories may change over time. The key point here is that each of these three types of strategic coupling tends to emerge from different interactive combinations of GPN dynamics and coupling mechanisms. Given the nature of this position paper, however, the author is unable to provide comprehensive empirical evidence for all three types of strategic coupling and substantiate every cell in Table 2 (see also the nine papers that follow in this issue). Insofar as possible, some of these dynamics, mechanisms, and outcomes are illustrated in relation to selected empirical materials chosen from only a limited range of sectors (mostly electronics industry, as it is one of the most globalized industries and the East Asian regions are significantly plugged into leading GPNs in this industry).

Strategic coupling through international partnership

The Taipei–Hsinchu region and, to a certain extent, Singapore present two best examples on how regional development can occur through managing the strategic coupling of local firms with lead firms in GPNs.¹⁴ In both cases, development takes place through the direct articulation of the region into critical GPNs. In the Taipei–Hsinchu region, this articulation has taken the form of indigenous Taiwanese firms serving as strategic partners of lead firms in GPNs (see also the detailed case studies in the papers by Yang and Yang *et al.* in this issue). In Singapore, lead firms have made a direct presence through inward foreign direct investment (FDI). This international partnership with global lead firms,

through either transactional relationships or direct presence, brings tremendous growth dynamics and development potential to significant industries in both cases: the Taipei–Hsinchu region (for example, electronics and ICT) and Singapore (electronics, chemicals, finance, and transport and logistics). Since the late 1990s, major firms from both Taiwan and Singapore are also leveraging their direct presence in the United States for technological innovation and market development (POON and MACPHERSON, 2005; POON *et al.*, 2006; YEUNG, 2007a; HSU *et al.*, 2008).

In Taiwan, state promotion of high-technology ICT industries since the late 1970s and the early 1980s has led to a high degree of spatial concentration mostly in the northern region centred around Taipei (MATHEWS, 1997, 2006b, 2007; HSU, 2005; see also the papers by Yang *et al.* in this issue) (see also Table 1). Taipei now hosts the headquarters of some 70% of Taiwan's top fifty ICT companies. The author's interviews with top executives in some nineteen of these top fifty ICT firms conducted between June 2004 and July 2005 show that they are not only all located in the Taipei–Hsinchu region, but also they constitute the top fifty largest Taiwanese firms in all sectors, measured by their turnover, market capitalization, and assets (for details, see YEUNG, 2007a). Many of them are world's top three or top five players in their respective market niches, ranging from EMS providers and ODM system integrators (for example, Hon Hai, Quanta, and Compal) to specialized components and services (for example, TSMC, UMC, AU Optronics, and SPIL). These large Taiwanese ICT firms are highly innovative and perform an important role as strategic partners of global lead firms in the ICT GPN.

Between 1980 and 2000, more than 60% of Taiwan's industrial patents were created in the Taipei–Hsinchu region (HSU, 2005, p. 660). In 2001, Taiwan was ranked fourth on the back of 6545 patents granted by the US Patent and Trademark Office, just after three industrial giants of the United States, Japan, and Germany, and ahead of France and Britain (CHU, 2006, table 4.12).

Through these large Taiwanese ICT firms, the Taipei–Hsinchu region is effectively coupled into the strategic shift of global lead firms in Silicon Valley towards high-technology research and development activity and leaving much, if not all, of the manufacturing activity to these strategic partners in the Taipei–Hsinchu region. The story of regional success, however, does not end with state promotion efforts. In fact, a whole transnational elite community of professionals and entrepreneurs has emerged during the past two decades that contributes significantly to the successful strategic coupling of indigenous firms in the Taipei–Hsinchu region with their global lead firm customers (HSU and SAXENIAN, 2000; SAXENIAN and HSU, 2001; SAXENIAN, 2006; see also the paper by Yang *et al.* in this issue). The previous professional experience of these transnational elite entrepreneurs in global lead firms is highly important to this strategic coupling process (Table 2). Classic examples are Macronix's founder Miin Wu who worked in Siliconix and Intel and was a founding member of VLSI Technology, and TSMC's founder Morris Chang who worked for Texas Instruments¹⁵ (see also LIU *et al.*, 2005). In both cases, their personal experience is useful not only in helping them develop strong links with their former employers, but also more importantly in allowing them to learn best management and manufacturing practices. For example, Macronix's Miin Wu learnt from his Intel experience how to manage business focus:

Having a real product out is very time consuming and very demanding. So within these two years (2001–2002), we have nothing coming out. And nobody knows what's going on. Suddenly [our] technology was behind, and the product was losing money, because we don't have new product to begin with. ... Suddenly we became very hard. I think what I learned is the focus, how you execute it, give people a sense of urgency. So that's what we learned. That's what is happening gradually. But if you look at every company, I worked for Intel, and other companies; for first ten years, even Intel three times they almost got under. They run out of money, they are not making money ... but it's good for them because they know it's not easy. The first ten years, execute perfectly, and then start losing.¹⁶

This strategic coupling process does not end with the Taipei–Hsinchu region. During the past five to ten years, these transnational professionals and entrepreneurs from the region are extending their spatial reach into selected regions in China, for example, the Yangtze River Delta and the Pearl River Delta. The

Silicon Valley–Taipei/Hsinchu connection becomes enlarged into what might be termed a triangular connection that incorporates Shanghai, the 'dragon head' of the Yangtze River Delta, into its operating orbit. Yang's paper in this issue offers a detailed analysis of how both regions in China are articulated into these GPNs driven by Taiwanese investment. Echoing LENG's (2002) views, HSU (2005) observes that:

a triangle connection between Silicon Valley–Taipei (Hsinchu)–Shanghai is emerging and creating a pattern of capital and knowledge circulation in the nodes of transnational business networks. The power of the transnational technical community is evident, and has become a key force in shaping the global production networks. It originated in Silicon Valley and has been transferred first to Taiwan by overseas Chinese entrepreneurs (emigrated from Taiwan) and then from Taiwan (as well as directly from Silicon Valley) to China. The dense social and professional networks foster flows of technology, capital, know-how, and information within the triangle, supporting entrepreneurship in the three regions while also providing the foundation for formal inter-regional business relations such as consortia, joint-ventures, and partnerships.

(p. 661)

The spatial outreach of major Taiwanese ICT firms has been occurring since the late 1980s, although it has been accelerating very rapidly in China (CHEN, 2002; YANG, 2007; YANG and HSIA, 2007). In developing this triangular connection, the Taipei–Hsinchu region continues to maintain its competitive edge in serving global lead firms such as Hewlett-Packard and Motorola through innovative designs, product developments, and sophisticated supply chain management grounded in the Taipei–Hsinchu region. And yet these Taiwanese firms are able to achieve cost competitiveness through their manufacturing operations in the two delta regions in China (and elsewhere in South East Asia). In many ways, this transnational triangle resembles DUNFORD's (2006, p. 29) idea of a 'magic circle' in the Italian clothing industry centred around Milan where clothing 'districts are parts of an interdependent, interregional, and international division of labor in the sector and are profoundly shaped by their articulation with the distribution system'.

In Singapore, such a transnational community of elite professionals and entrepreneurs also exists. In one example, Venture Corp's Chairman and Chief Executive Officer (CEO) Wong Ngit Liong was formerly recruited by Hewlett-Packard in California and sent back to South East Asia to establish Hewlett-Packard factories in Malaysia and Singapore during the 1970s. After twelve years with Hewlett-Packard, he struck out on his own and subsequently built Venture Corp. into a top ten world-class EMS provider, with a turnover of US\$2 billion in 2005. Venture is now the strategic partner of both Hewlett-Packard and its spin-off Agilent Technology.¹⁷ Venture Corp, however, is an

exception rather than a rule in explaining Singapore's articulation into the electronics GPN. In contrast to the Taipei–Hsinchu region, Singapore prides itself in attracting global lead firms in the electronics industry to establish a direct presence in terms of research and development facilities and manufacturing operations (WONG, 1995; YEUNG, 2006, 2008b). As the largest manufacturing industry in Singapore accounting for 9.8% of gross domestic product and 36.5% of manufacturing output in 2005, the electronics industry boosts the substantial presence of the industry who's who in the global league of lead firms, for example, Hewlett-Packard, Matsushita, Motorola, Philips, Samsung, Seagate, ST Microelectronics, Toshiba, and so on. Apart from generous fiscal and non-fiscal incentives offered by the Singapore government, these world-class electronics firms also benefit from Singapore's well-developed technology and transport infrastructure and its important logistical position in the electronics GPN (Table 2). Singapore's Changi Airport is the world's eighth busiest freight-handling airport and Singapore Airlines is the world's fourth largest freight carrier in terms of freight tonne-kilometres (BOWEN and LEINBACH, 2006, p. 155). Virtually all leading third-party logistics (3PL) providers have established a strong presence in Singapore, for example, Exel (Germany), DHL (Germany), Fedex (United States), UPS (United States), and GeoLogistics (United States). Taken together, the experiences of both the Taipei–Hsinchu region and Singapore show that regional development can benefit substantially from the strategic coupling of local firms with global lead firms. More generally, a form of international partnership exists between these regions and lead firms in GPNs, facilitated by an indigenous community of transnational elites and entrepreneurial firms.

Strategic coupling through indigenous innovation

Similar to the success stories in Western Europe, endogenous regional development can occur if there are sufficient efforts in developing innovative capacity in specific regions. In East Asia, the role of the state in growing national champions can have a profound impact on regional performance. Table 2 notes the possibility of indigenous innovation through sustained national efforts in developing new products and process technologies embodied in such organizational forms as national champions. These are large lead firms emerging from decades of sustained industrial policies that work in tandem with the return of technological and business elites from advanced industrialized economies. Indeed, some of these national champions have become lead firms in their respective GPNs, underscoring the developmental possibility of increased autonomy and capabilities in East Asian regions. In each of these industries one finds major lead firms emanating from East Asia: electronics (Samsung and LG),

automobiles (Hyundai), marine engineering (Keppel Corp. and Sembcorp), air transport services (Singapore Airlines), shipping (OOCL, Evergreen, and Neptune Orient Lines), and communications (SingTel). How does the rise of these national firms relate to regional growth and dynamics in their respective home economies?

The Seoul Metropolitan Area is a good illustration here (Table 1), as it plays host to two of the world's largest producers of digital television and mobile phones – Samsung Electronics and LG Electronics. The rise and success of these global lead firms is both a condition for and the outcome of the dynamic growth of the Seoul Metropolitan Area. Unlike their Taiwanese and Singaporean counterparts, these South Korean *chaebols* have chosen a different developmental trajectory that is described by LEE *et al.* (2005b) as path-creating catch-up; they have grown from serving as subcontractors to OEMs to become original brand manufacturers (OBMs) in their own right (VAN HOESEL, 1999; CYHN, 2002). While state promotion efforts have laid important preconditions for these two *chaebols*, their strategic coupling through technology licensing and agreements with respective lead firms provides the initial knowledge base for their subsequent choice of leapfrogging as a successful pathway to global leadership.

This process of strategic coupling was particularly critical during the early phase of their entry in both product categories. Samsung, for example, achieved rapid catch-up through such technology agreements in the semiconductor industry between 1983 and 1997 (LIM, 1999, table 4.9). CYHN (2002, ch. 3) observes that by the early 1990s, the *chaebols* had become much less dependent on government-sponsored research institutes for their technological innovation. Instead, they turned to in-house research and development laboratories, friendly global lead firms, and international industrial associations. To LEE *et al.* (2005b), both Samsung and LG have successfully pursued a path-creating catch-up approach through an appropriate combination of:

technological regimes, the competitive advantages of the innovation outcomes in the market, the foreign and domestic knowledge base, the government policies and firm strategies.

(p. 42)

By the mid-2000s, they had become first movers in these two product categories.

The present author's research shows that both *chaebols* have actively pursued a strategy of original brand manufacturing (OBM) with their own distinctive technological strength and marketing capability. There is also a great deal of reluctance in internationalizing their research and development and manufacturing activity. Both companies prefer to keep a large portion of their manufacturing activity in South Korea, particularly

within the Seoul Metropolitan Area.¹⁸ The region benefits from the enormous innovative capability, employment generation, and industrial linkages of both *chaebols*. Lee's paper in this issue shows how South Korea's 'multi-scalar' regional policy continues to reinforce the dominant role of the Seoul Metropolitan Area. With respective sales of US\$80 billion and US\$44 billion in 2005, Samsung Electronics and LG Electronics have become the world's top three plasma display panel (PDP) and liquid crystal display (LCD) makers. Samsung Electronics is also the world's number two mobile handset manufacturer, trailing just behind Finland's Nokia, and the world's largest maker of memory chips and liquid crystal display driver integrated circuits. Taking into account Samsung's first foray into the memory chip business in September 1982 (LIM, 1999; SHIN and JANG, 2005), its global market dominance since its successful construction of the world's first 1-gigabyte dynamic random access memory (DRAM) prototype in November 1996 is indeed a remarkable achievement.

Strategic coupling through production platforms

The above two types of strategic coupling clearly require very substantial financial commitments by state institutions, technological development among national firms, and the presence of an effective transnational community – something that regions in other Asian developing countries cannot yet afford. High-growth regions in the above Asian newly industrialized economies have taken several decades to emerge from their former coupling type as production platforms during the 1960s and 1970s. Since the 1980s, developing regions such as China's Yangtze River Delta and Pearl River Delta, Malaysia's Penang, and Thailand's Greater Bangkok region have been strategically coupled with the huge demand for competitive production platforms by lead firms in GPNs (Table 2). As production platforms, these regions provide very competitive cost structures, an abundant labour supply, a stable policy environment, fiscal and other financial incentives, and so on. Their institutional set-up is geared not so much towards developing indigenous capability as in the case of industrial districts in the United States, Western Europe, and, more recently, South Korea and Taiwan. Rather, these developing country regions are actively plugging themselves into evolving global divisions of labour spearheaded by brand name lead firms (OEMs). Interestingly, this process of strategic coupling is sometimes mediated by the strategic partners of global lead firms in the Asian newly industrialized economies (EMS and ODMs). The resultant regional development trajectory is thus not a straightforward pattern of the 'new international division of labour' described by FRÖBEL *et al.* (1980) and, more recently, by both SCOTT (2006) and GLASSMAN (2007). It reflects much more complicated pattern of strategic coupling that

occurs during the past fifteen years when manufacturing firms in the Asian newly industrialized economies have emerged as strategic partners of global lead firms. The three empirical papers by Sajarattanochote and Poon, Wei *et al.*, and Yang in this issue have demonstrated how leading regions in Thailand and China are articulated into GPNs as production platforms coordinated through Asian partners of global lead firms. This is particularly the case in China's Yangtze River Delta and Pearl River Delta (Table 2). Export-oriented production platforms have been well established to serve global lead firms and their Asian strategic partners – mostly from Hong Kong, Singapore, and Taiwan – in such diverse industries as clothing, footwear, consumer products, electronics, and ICT (YANG, 2007; YANG and HSIA, 2007).

In the electronics GPNs, Malaysia's Penang has gained a strong foothold in the development of integrated manufacturing of computer and semiconductor products (Table 2). In 2000, electronics accounted for over 80% of Malaysia's total manufactured exports (RASIAH, 2006, p. 127; see also ERNST, 2004). After over three decades of active promotion of the industry at both the federal and state levels, Penang is now well articulated into the electronics GPNs, primarily through such lead firms as Intel, Dell, and Seagate (including the former Maxtor and Conner Peripherals), and their different tiers of foreign and domestic suppliers (for example, Read-Rite, Komag, MMI, and Eng Teknologi). Together with Singapore and Thailand, Penang is an integral part of the South East Asian 'golden triangle' that accounts for a massive majority of the global hard disk drive (HDD) production (see also YEUNG, 2008b). It now serves as a ramp-up centre for these global lead firms to prepare new products for mass production in other lower-cost locations in South East Asia or China (BOWEN and LEINBACH, 2006, p. 155). The Penang Development Corporation (PDC) plays a critical role in this coupling process by developing and maintaining the air hub at Penang with strong links to Singapore, Taipei, and Tokyo, and introducing information technology into the supply chains of local firms. In this issue, Lepawsky offers a further example of the Multimedia Super Corridor in Malaysia. As what Lepawsky terms an 'anti-politics machine', the MSC was promoted by the federal government and interestingly bypassed the state of Penang (even though it had a much more developed information technology industry and infrastructure).

In Thailand's Greater Bangkok region that includes Rayong and Samutprakarn provinces along the eastern seaboard (Fig. 2 and Table 1), global lead firms in two contrasting GPNs have found favourable production platforms for their regional and global markets: automobile and HDD industries (KRONKAEW and KRONKAEW, 2006; YEUNG, 2008b). In both industries, the Thai regions have successfully coupled with the demand by global lead firms for low-cost and

reliable production platforms (for detailed evidence on the role of foreign direct investment in regional spillover, see also the paper by Sajarattanochoe and Poon in this issue). In the automobile industry, the Rayong region has now become South East Asia's leading production centre, featuring some two dozen automobile assemblers (global lead firms) and their 700 plus first-tier suppliers (COE *et al.*, 2004, p. 479; see also DONER *et al.*, 2004; TAKAYASU and MORI, 2004; and HASSLER, 2006). In 2003, the automobile industry exported 230 000 units of its total production of 760 000 cars. It is now the second largest export after electronics and electrical products.

In the HDD industry, one can find major manufacturing facilities in the same Thai regions, operated by the world's leading HDD firms such as Seagate, Maxtor (part of Seagate after the acquisition in May 2006), Western Digital, Hitachi-IBM, and Fujitsu. Thailand is only second to Singapore in terms of global HDD outputs. In the HDD industry, MCKENDRICK *et al.* (2000, p. 8) note that '[t]he ongoing fit between the operational requirements of American HDD firms and the region's abilities underscores the dynamic character of competitive advantage'. The Thai regions are also intimately woven into the complex regional production networks of these global lead firms and their major suppliers based in Singapore (MCKENDRICK *et al.*, 2000; WONG, 2001; YEUNG, 2001). For example, MMI Holdings, a world-leading precision component supplier and a strategic partner of Seagate, enjoys proximity to Seagate's operational headquarters in Singapore and a long-standing partnership since its inception as an OEM supplier to Seagate in 1989. As a Singaporean company, MMI has developed very strong capability and competitiveness in manufacturing die-cast base plates for Seagate disk drives.¹⁹ MMI Holdings has one plant in Navanakorn in Thailand that is engaged in high-volume precision components and medium-volume mechanical assembly. This case shows how production platforms in South East Asian regions can be enrolled into the international partnership of another regional state (Singapore). As noted recently by PHELPS (2007), this extra-territorial dimension of regional development has important implications for both Singapore and the host South East Asian regions.

CONCLUSION

This introductory paper has attempted to situate regional development trajectories within the competitive dynamics of GPNs and provide an analytical framework for reading the following nine empirical papers in this special issue. Moving away from the new regionalism approach in which analytical privilege is placed on trust networks and growth institutions endogenous to specific regions, interest here rests with how these

regions are articulated into the global economy. It has been argued here that this question can be satisfactorily answered through an examination of the critical link between regions and the global economy – local actors such as firms and institutions and their strategic coupling with trans-scalar production networks. This strategic coupling is facilitated by three possible mechanisms and interacts with different global production network (GPN) dynamics. As summarized in Table 2, this relational approach to linking regional performance with GPN dynamics is fruitful because it helps one avoid the danger of a myopic reading of regional development on the basis of endogenous growth factors. More importantly, it helps one appreciate the relevance of what AMIN and THRIFT (1994b) some time ago called 'holding down the global'. Without unpacking the strategic coupling processes and mechanisms, one will not be able to explain convincingly why global lead firms have selectively incorporated some regions into their GPNs. The present analytical approach, therefore, echoes several recent attempts to understand the phenomenon of 'globalizing' regional development in economic geography and regional studies (COE *et al.*, 2004; see also AMIN, 1998; MACKINNON *et al.*, 2002; SMITH *et al.*, 2002; COX, 2004; and HUDSON, 2004, 2007). It reinforces HUDSON's (2007) recent conclusion that:

What is needed is a rather different model and understanding of politics and practice that recognizes that simply living in the same region does not confer identity of interest but also that in many regions the regional capacity to shift regional development trajectories onto a 'higher and better' path is strictly limited precisely because of their location within the structural relations of capitalist development.

(p. 1158)

To operationalize the arguments, three contrasting development trajectories among several major growth regions in East Asia have been illustrated (Table 2). The preliminary analysis will be followed up in much greater detail in the following nine empirical papers. Based on an analysis of firms, industries, and institutions in these growth regions, some evidence has been provided for the analytical relevance of understanding the strategic coupling between regions and GPNs (see also YUSUF *et al.*, 2004; and GEREFFI *et al.*, 2005). In the cases of the Taipei–Hsinchu region and Singapore, a distinct trajectory of strategic partnership with global lead firms is identified. In both instances, there exist deeply coupled relationships between the region and propulsive GPNs. Whereas local firms in the Taipei–Hsinchu region play a much more instrumental role in coupling transnationally with vertically specialized global lead firms, the developmental trajectory in Singapore is more driven by the state-sanctioned direct presence of these global lead firms and their local coupling process. In other growth regions of

East Asia, the coupling process works out differently. In South Korea, for example, the Seoul Metropolitan Area is articulated into the global economy through indigenous innovation activity spearheaded by large-scale *chaebols*. Global lead firms play a much less significant role here. In China, Malaysia, and Thailand, global lead firms have established major operations, mediated by their Asian strategic partners, to take advantage of the production platforms of these regions. All of these cases point to the analytical importance of understanding regional development as a form of trans-regional dynamics constituted by the complex strategic coupling process between local actors and lead firms in GPNs. They also show how the archetypical Asian developmental state can play a necessary but not sufficient role in engendering regional development. Effective state policies and initiatives can enhance the strategic coupling process. But this enhancement takes place within the broader context of global lead firms actively searching for the spatial, organizational, and technological fixes of their competitive problems (Table 2). Overall, then, regional development is a multi-scalar phenomenon that encapsulates the local firm, the region, the nation-state, transnational lead firms, and GPNs.

Looking forward, this analysis provides several major implications for theory and policy. Firstly, it is clear that one needs to theorize the (re)positioning of regions within GPNs and their divergent developmental trajectories. This is an important task as the coupling mechanisms and articulation processes are not yet fully theorized and understood. This theoretical inadequacy is particularly unfortunate because the interest in the trans-regional dynamics of regional development was evident as early as the 1970s in the work of DICKEN (1976) and MASSEY (1979). Although the present paper has focused on the East Asian specificity of the coupling mechanisms and GPN dynamics, these concepts are very likely to be applicable to other developing and even mature regions throughout the world. This situatedness of the GPN approach in an East Asian context represents a useful form of 'theorizing back' (YEUNG and LIN, 2003; YEUNG, 2007b) through which one can add much value to the existing analytical approach in the dominant new regionalism literature (see also the papers by Kelly and Lin in this issue). While the recent 'relational turn' in regional studies and the GPN-inspired research programme have begun to focus on the issue of regional development, there is a great deal of theoretical work required for understanding how regions are articulated into GPNs over time and how different coupling mechanisms lead to divergent regional responses and outcomes. The theoretical work also needs to go beyond industrial organization, technological change, and knowledge accumulation. There is also a highly important but often neglected aspect of the financialization of regions in GPNs. PIKE (2006), for example, has

shown recently how firm closure in a region can be intricately linked to strategic considerations by financial communities located elsewhere, often in global financial centres. One needs to theorize urgently how technology, knowledge, and finance shape the strategic coupling of regions in GPNs.

Secondly, the multi-scalar analysis of regional development from a GPN perspective points to the importance of theorizing the intensification of inter-regional competition (see also MASSEY, 2007). As different regions are articulated into the global economy through diverse networks of local firms and their global lead firm partners, inter-regional competition is expected to be intensified significantly. In the East Asian context, regions are competing directly with each other through their efforts in developing indigenous firms, facilitating their coupling with global lead firms, and attracting the direct presence of these lead firms in GPNs. As the Taipei-Hsinchu region, the Yangtze River Delta, Penang, Rayong, and Singapore are competing fiercely in the global information and communication technology (ICT) industry, there is a misleading perception that these different regions are in head-on collision with each other within the context of a zero-sum game. Indeed, the reality is far more complex and interdependent than the above casual observation commonly found in the public domain. There are, for example, intricate and, often, complementary relationships between global lead firms, their strategic partners in Taiwan and Singapore, and production sites in the Yangtze River Delta, Penang, and Rayong. This 'inter-regional' competition should rather be theorized as intra- and inter-GPN competition (for an excellent analysis of two Chinese regions, see the paper by Yang in this issue). At the intra-GPN level, different electronic manufacturing service (EMS) and original design manufacturer (ODM) providers are competing against each other for the same lead firm. At the inter-GPN level, lead firms and strategic partners belonging to different GPNs are competing for market shares. This phenomenon is not unique to the global ICT industry and can be observed easily in other industries and regions (see also PHELPS and FULLER, 2000). Reflecting on the future of textile and clothing firms in Italy, for example, DUNFORD (2006) notes that:

many are insufficiently differentiated from producers in low-cost countries and are insufficiently oriented toward export markets with growth potential. As a result, many enterprises and regional economies are under threat.

(p. 56)

Dunford's conclusion underscores the critical importance of understanding the strategic coupling of firm activities in regional economies within GPNs. For this coupling process brings about far greater intra- and inter-GPN competition that might manifest in the form of alleged inter-regional competition. Clearly,

one needs to theorize these complex relationships that impinge on inter-regional competition.

Finally, one can learn a great deal about strategic regional policy options from a GPN perspective. Regional authorities and government agencies should not be paying excessive policy attention to building regional capability without carefully assessing and understanding the kind of GPNs with which the region can have a good chance of strategic coupling. This means an in-depth assessment of the position of a region within certain GPNs. There is, of course, no easy policy solution and universal panacea, as pointed out in the second implication above. Regions can become locked into the strategic interests of global lead firms and face a serious policy dilemma when the latter disembed from these regions (PHELPS *et al.*, 1998; PHELPS and WALEY, 2004; HASSINK, 2005; MARTIN and SUNLEY, 2006; see also the paper by Aoyama in this issue). While regions are not necessarily the scale at which competition takes place, regions do certainly experience the outcomes of this competition. This is where policy instruments might be deployed to mitigate the potential negative regional impact of intra- and inter-GPN competition. Again, such policy initiatives should be situated within a comprehensive understanding of the relationships and positions of a region in certain highly competitive GPNs. This greater sensitivity and sensibility in regional policy-making, in STIGLITZ's (2001, p. 523) words, requires decisions makers 'to resist accepting without question the current mantras of the global marketplace of ideas'. The currently endless debate on clusters in regional studies is just one such example (MARTIN and SUNLEY, 2003).

In the East Asian context, for example, it does not make much sense to implement policies that promote a region as a production platform for lead firms in GPNs, if the region already has a strong presence of local firms, technological competence, and institutional support. Regional policies will likely be more effective if they are designed to help these local firms to achieve enduring strategic coupling with lead firms in GPNs (for example, the Taipei-Hsinchu region) or to become global lead firms in their own right (for example, the Seoul Metropolitan Area). In other developing regions (for example, the Yangtze River Delta and Penang), the policy challenge is much more complicated as local firms remain relatively weak in their organizational and technological capabilities. And yet, these regions face tremendous pressure from cost-based competition. Whatever the chosen development trajectory and policy regime, one important lesson is that they are unlikely to be effective and sustainable without a fuller appreciation of the trans-regional dynamics in which the region is located. This is the key contribution of thinking of regional development as necessarily situated in the competitive dynamics of GPNs.

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NOTES

1. While this important point is likely to be applicable to the experiences of regional development in North America and Western Europe, it is clearly beyond the scope of the present paper to examine these experiences empirically (PIKE *et al.*, 2006; PIKE, 2007b).
2. Other major groups of actors are labour and civil society organizations (CSOs). But given the constraints of space in this paper, the author is unable to give sufficient analytical attention to them all (HENDERSON *et al.*, 2002; COE *et al.*, 2004). The papers by Kelly, Lee, and Lepawsky in this issue demonstrate clearly how households and CSOs in the Philippines, South Korea, and Malaysia participate actively in these expanding global networks of regional development.
3. This observation might appear to be quite strange when key developmental state theorists had published their work by the late 1980s and early 1990s (for example, AMSDEN, 1989; WADE, 1990). While not denying the significance of state policies in paving the initial conditions for industrialization and economic development (see also LEE *et al.*, 2005a), the present author believes

their work was based on research conducted in and referring to mostly the early phases of development during the 1970s and the 1980s. For an updated analysis of the role of the developmental state in South Korea and Taiwan, see also the papers by Lee and Yang *et al.* in this issue. Lepawsky's paper also illustrates the political role of the Malaysian state in regional development initiatives.

4. For two detail case studies of strategic coupling mechanisms in China and Taiwan, see the papers by Yang and Yang *et al.* in this issue.
5. The empirical evidence presented here originates from a major transnational research project in which personal interviews with top executives of leading Asian firms were conducted in the four newly industrialized economies. A total of 68 leading Asian firms were interviewed between June 2004 and December 2006: nineteen Hong Kong firms, thirteen South Korean firms, 24 Taiwanese firms, and twelve Singaporean firms. These firms were selected on the basis of their 2003/2004 operating revenues or turnover captured in the OSIRIS database published by Bureau van Dijk Electronic Publishing, a comprehensive database containing detail financial information on publicly listed companies worldwide. The top fifty firms from each of the four newly industrialized economies were selected, and they were approached for personal interviews with their top executives. Among the 68 leading Asian firms interviewed, fifteen were in the top ten and 29 were in the top twenty by operating revenues in their respective economies. Eleven of them were ranked in the UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT'S (UNCTAD) (2005) top fifty transnational corporations from developing economies. Some 33 of the interviewees were CEOs/ Presidents or Managing Directors, whereas another 32 were Executive Directors, General Managers, or (Senior/Executive) Vice-Presidents. In some cases (for example, Samsung Electronics), personal interviews with several top executives were conducted. In all interviews lasting between one and two hours, an open-ended approach was taken and only brief interview aides were used. Extensive background information from all available public sources was consulted to form the basis of customized qualitative questions during each interview. All interviews except one were taped and transcribed, and these transcripts and other relevant information form the empirical basis of this paper.
6. Admittedly, this is a narrow representation of HARVEY's (1982) idea of spatial fix that in its original formulation also includes opening up new spaces for capitalist production, new markets, or new sources of raw materials and re-creating or rejuvenating old production spaces. See also GLASSMAN (2007) for a case of Thailand and the paper by Lepawsky in this issue on how the Multimedia Super Corridor in Malaysia serves a spatial fix through state-led national decentralization initiatives.

7. Constraints of space preclude the possibility of dealing fully with other important issues about market structures, inter-firm/network rivalries, regulation, and so on that characterize different forms of GPN dynamics (HESS and YEUNG, 2006; COE *et al.*, 2008a).
8. Again, it is important to note that this concept, despite its potential misinterpretation as a structuralist or functionalist take, is a heuristic device for understanding the interconnections with regions and global production networks (COE *et al.*, 2004, n. 1).
9. On how entrepreneurial culture shapes regional trajectories in Japan and China, see the papers by Aoyama and Wei *et al.* in this issue.
10. Based empirically on the case of Cavite in the Philippines, the paper by Kelly in this issue specifically explores the role of transnational migration and remittances in constituting another critically important form of 'global reproduction networks'.
11. See a variety of empirical examples in this issue on South Korea (by Lee), Malaysia (by Lepawsky), China (by Lin and Wei *et al.*), and Taiwan (by Yang *et al.*).
12. For an exception of two regions in Japan – Hamamatsu and Kyoto – see the paper by Aoyama in this issue.
13. There is now a credible body of literature in English examining the political economy of regional development in China (FAN, 1995; LIN, 1997; MARTON, 2000; WEI, 2000; ZWEIG, 2002; WEI *et al.*, 2007; YANG, 2007; KIM and ZHANG, 2008; and the papers by Lin, Wei *et al.*, and Yang in this issue), Malaysia (JOMO and FELKER, 1999; MORSHIDI, 2000; SMAKMAN, 2003; and the paper by Lepawsky in this issue), South Korea (CHO, 1997; PARK, 2005; and the paper by Lee in this issue), Taiwan (HSU and CHENG, 2002; HSU, 2005; LEE and SAXENIAN, 2008; and the paper by Yang *et al.* in this issue), and Thailand (UNGER, 1998; DIXON, 1999; GLASSMAN, 2001, 2007; and the paper by Sajarattanochoe and Poon in this issue). An overwhelming majority of these authors are nationals originating from or living in the respective East Asia economies. Their work in English represents a balanced view of their understanding of different strands of literature published in English and their local languages.
14. Singapore is taken as a region in this section, even though it is an independent nation-state. As a city-state, Singapore is territorially and functionally not too different from any major global city-regions in the world (SCOTT, 2001; OLDS and YEUNG, 2004).
15. Interviews with Macronix and TSMC in Taipei, July 2004.
16. Interview in Taipei, 9 July 2004.
17. Interviewed in Singapore, 19 May 2006.
18. Interviews with Samsung Electronics and LG Electronics in Seoul, May 2004 and June 2005.
19. Interview with the co-founder and Group Managing Director in Singapore, 22 June 2006.

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