

# Papers in Evolutionary Economic Geography

# 05.07

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## **Abstract**

This article aims to contribute to an understanding of the industrial dynamics/evolution of mature export production complexes in the first generation Asian NICs, employing an evolutionary economic perspective. Over the past decade and longer the first generation Asian NICs, Singapore included, have been confronted with imperatives necessitating deep restructuring. We observe that industrial decline, associated with failed restructuring caused by lock-in, does not fit these countries, its industrial regions and early industries. Yet research has hardly begun to look at adjustment and address deeper evolution from tenets in the framework of evolutionary economics although such an approach is made not less but rather more relevant by *continued resilience*. We analyse the pathway(s) of one early industry, i.c. the apparel industry, in Singapore, through the 1980s and 1990s. The withering away in the Singapore context of an industry such as apparel is not inevitable. From a juxtaposition of the line of thinking in evolutionary economics emphasizing hindrance and decline due to path dependency and lock-ins with an alternative line emphasizing the possibility to adjust through renewal and the limited operation of lock-ins, we argue *why* the latter rather than the former has been the case.

## **Introduction**

Export industrialisation in East and Southeast Asia from the 1960s onwards has given rise to a complex array of territorial production complexes, in the four Tigers, in the next generation late industrializing countries Malaysia, Thailand, Philippines, Indonesia, and more recently China and Vietnam. Our concern in this article is with the most mature complexes, that arose in the first generation Newly Industrialised Countries (NICs) in the early wave of economic globalisation and industrial build-up during the 1960s and 1970s. Reflecting the competitive advantages of the period, they were initially mainly 'inhabited' by labour-intensive production activities in technologically not so advanced industries.

Hassink and Shin (this special issue) argue that until now such complexes have not been considered in research focusing on an evolutionary economic interpretation of 'old industrial areas'. This should change as "due to global shifts of industrial activities...the problem of restructuring of old industrial areas have shifted as well through time.... Serious problems of industrial restructuring have been starting to emerge in the first generation newly industrialised countries since the mid-1990s" (Hassink & Shin Dong Ho, this issue). Several factors indeed justify confrontation of the development experience of mature export production complexes in the NICs with tenets from evolutionary

economic thinking, specifically the idea of lack of adjustment because of the operation of *lock-ins* put centre-stage in one line of thinking (and focused on by Hassink and Shin). First, changes in the conditions impinging on their competitiveness and dynamics indeed have raised the issue of adjustment (and the capability to do so). Drivers of change have concerned both internal and external ones, the precise number/nature, mix, and impact depending on the origin and characteristics of the area; in addition changing over time. Labour market constraints have impinged on availability and costs of labour, requirements of flexible production capability raised the issue of industrial organisation etc. Actually, the imperatives for adjustment already presented themselves at the end of the 1970s and the complexes have experienced several waves of industrial 'restructuring' since.

Second, the complexes differ as to how this process has evolved and the outcomes. There is no lack of documentation of industrial restructuring in each of the four Asian NICs (see e.g., Clark & Kim 1995; Masujama et al. 1997, 2000; Deyo et al. 2000), and of conceptualisations of industrial change, providing ingredients for the stipulation of by now rather 'stereotype' industrial upgrading paths. Early industrial complexes show different pathways. There are the cases of hindered or failed restructuring leading to decline (e.g. Pusan, Korea; Lim 1994). More common however is the pathway of successful adjustment, maintaining dynamics through deep adaptations. This is expressed in new functional and industrial variety gradually augmenting and/or replacing old variety in the industrial/economic structure, engendering a process of diversification and renewal. Complementing the territorial perspective with an industry one, even the demise of early industries - implied in conceptualisations of Asian industrial change - in the process does not seem to totally hold ground, as local firms have devised strategies and new organisation structures keeping them in business and anchored to their home location. The study of adjustment has focused very much on industrial transition through capital and technology deepening. Research has hardly begun to look at adjustment and address deeper evolution from tenets in the framework of evolutionary economics. Such an approach is rendered more, rather than less, relevant as *continued resilience* has been a more common pathway than decline.

This article aims to enhance understanding of the industrial evolution of mature export production complexes in the first generation Asian NICs. It employs an evolutionary economic perspective by addressing the pathways of such complexes. Doing so first needs resolution of the analytical distinction between region, industry and firm level. This is not so much an issue in mono-industrial regions, where the three levels overlap to a large extent, as it is in industrially diversified regions. However, here the issue can be resolved by complementing an analysis at the regional level with an additional focus on one or more early industry/industries and constituent firms.

Our analytical focus in this article is on Singapore, that demonstrates par excellence the point made earlier about success in achieving adjustments. This has been demonstrated in a large number of studies on the development of industrial policy (von Alten, 1995; Rodan, 1989; Grunsvén & Westen, 2000; Wong Poh Kam, 1997; Perry & Yeoh, 1997), restructuring and upgrading processes in general

(e.g., Clark & Kim, 1995; Chiu, Ho & Lui, 1997), and in specific industries, as well as the development of 'high-tech' industries (Ho, 1991; Grunsvan, 1998; Mathews, 1999; Wong Poh Kam, 2000, 2001). Following the line of thought laid down above, the approach taken here is to analyse the pathway(s) of one of the early industries; in this context referring to those that made up the variety during the 1960s and 1970s (e.g. footwear, apparel, toys and the like). We focus on restructuring and evolution of the apparel industry through the 1980s and 1990s. Scrutiny of this industry in the context of the East Asian NICs presents a picture of resilience rather than decline amounting to demise, of a range of trajectories at firm and industry levels associated with divergent strategies to cope with a changing competitive environment (e.g., Appelbaum & Smith, 2001; Grunsvan & Smakman, 2001). As will be demonstrated, the Singapore apparel industry appears to follow this pattern, despite in the 1980s having been designated a sunset case by the government and not having been targeted by any of the restructuring policies.

These observations lead to the perspective adopted in this analysis and the task that is being undertaken here. From a juxtaposition of the line of thinking in evolutionary economics emphasizing hindrance and decline due to path dependency and lock-ins with an alternative line emphasizing the possibility to adjust through renewal and the limited operation of lock-ins, we attempt to argue *why* the latter rather than the former has been the case.

The discussion starts with a brief theoretical perspective on industry evolution in mature industrial areas; here we will also attempt to situate East Asia in alternative views and postulate factors why East Asia might not conform to the perspective that emphasizes decline because of lock-in. Subsequently, a brief outline will be given of the local evolution of the apparel industry in quantitative terms, a number of characteristics of producer firms, and firm level adjustment strategies to changes in the business environment. This is followed by an outline of trajectories at firm level during overall industrial restructuring. Next, the analysis goes into - an evaluation of - the relevance of concepts like path-dependence and lock-in for the interpretation of the observed development path. In the conclusion we will take up the main issue under investigation again, summarize the state and fate of the Singapore apparel industry and offer some thoughts on the application of evolutionary thinking in the context of East Asia.

### **Perspectives on industrial evolution and situating East Asia**

Several theoretical approaches provide an explanatory framework for the evolution of industries in mature industrial regions. Boschma (2003) first distinguishes two rather pessimistic views, one referring to industrial decline as a natural and inevitable process, the other emphasising the problems of adjustment such regions are often faced with. The first emphasises the decline of the regional mono-structure, triggering a cumulative decline in output that further damages the local economy

through negative feedback mechanisms. The second uses notions like ‘path dependency’ and ‘lock-in’ to explain problems of adjustment industries and agglomerations are confronted with.

In contrast, a third approach distinguished by Boschma centres on renewal recognising that industries and firms within regions have the capability to adapt to internal and external adverse changes, leading to positive regional industrial evolution. Below we briefly elaborate the second and third perspective and related tenets from evolutionary economics, following Boschma (2003). Subsequently we will attempt to ‘situate’ East Asia in these perspectives.

### ***Path dependency, lock-in and problems of adjustment***

Notions like ‘path dependency’ and ‘lock-in’ can clarify adjustment problems mature industries and agglomerations are confronted with, emphasising interaction patterns between economic, political and institutional actors that affect the ability to react to changed circumstances. In disentangling this, three aspects are relevant. First, the network or organisational aspect (Saxenian, 1994); second, the institutional aspect (Olson, 1982; Grabher, 1993); third, evolutionary ideas that are here related to notions of path dependence and collective learning (Camagni, 1991; Boschma & Lambooy, 1999).

As to the first aspect, Herrigel (1990) and Saxenian (1994) in interpreting industrial decline of mature agglomerations refer to a particular network constellation that affects the ability of regions to adjust. Herrigel has proposed the notion of a ‘autarkic-firm-based industrial order’ (as opposed to a ‘decentralised-region-based industrial order’) to describe the negative impacts of a small number of hierarchically organised large corporations on the economic performance of a region. Saxenian (1994) has referred to the dominance of a ‘independent firm-based industrial system’ to clarify poor recovery of industries and regions. These ideas are associated with the predominance of large integrated companies, which affects the regional labour market and local institutions. However, they provide additional insights when explaining the adverse impacts of networks or milieus on performance from a lack of inter-organisational learning (including a risk-averse culture).

As to the political-institutional aspect, Amin & Thrift (1994) stress the importance of ‘institutional thickness’. Olson (1982) and Grabher (1993) refer to notions like ‘political lock-in’ or ‘institutional sclerosis’ to explain lack of adaptability. In this view, this is associated with vested interests due to a self-sustaining coalition of large firms, labour unions and local policy makers, which oppose changes when their positions are threatened. Grabher (1993) distinguishes three forms of lock-in: ‘functional lock-in’ arises from long-standing (personal) ties that prevent the development of boundary-spanning functions; this is reinforced by ‘cognitive lock-in’, which means that common orientations and interpretative mechanisms become rigid; finally, ‘political lock-in’ refers to a conservative culture of cooperative relations between leading industry, public authorities, labour unions, etc.

Boschma observes that it is not quite clear how exactly ‘institutional thickness’ and ‘lock-ins’ are associated with industrial success or failure. He refers to Hassink (1998) who has pointed out that

institutional thickness cannot only be associated with successful regional development, but with structurally weak regions as well, while localized institutional thinness may hold emancipatory and radical transformatory potential.

As to the third aspect, 'path dependency' and 'collective learning' may elucidate a poor ability of mature industries and regions to learn and innovate. There is the possibility of 'technological lock-in', in which the historical accumulation of knowledge, skills and information in a region may become its weakness after some period. In this view, established industries are too deeply entrenched in leading regions, due to commitments of capital goods, management, R&D, labour, supplier linkages and infrastructure to the traditional technologies. In this view, established industrial regions are regarded as homogeneous entities marked by a particular techno-industrial structure and institutional environment strongly geared towards their industrial past. 'Path dependency' causes problems of adjustment to generate or adapt new basic technologies whose demands are hard to match by the specialised structure of the region, thus creating situations where the local structure becomes so narrowly focused on a particular economic activity that it is unable to shift into a new development track if, for example, there is an overall change in the demand structure (Malmberg & Maskell, 1997). In this view, the innovative and adaptive capacity is regarded as a local phenomenon: successful flexibility is more likely to be guaranteed when it requires only minor adjustments along the established techno-industrial trajectory.

Industrial regions may also become locked into rigid trajectories because their techno-industrial legacy of the past (in terms of resources, competences and socio-institutional structures) has eroded or weakened learning capability. Thus, the strength of the region in the past may bear the seeds of its demise. Maskell and Malmberg (1995) have emphasized this need to unlearn, which may be accomplished by removing institutions that hinder new variety. Regions differ in their ability to unlearn, although it remains unclear how.

#### ***An alternative view: successful adjustment***

The pessimistic and deterministic views of the possibility of successful adjustment in mature industries and regions underestimate the ability to come up with something new. For instance, it may be that new high-technology industries hardly need to establish linkages with their local environment to develop and expand. Therefore, new industries provide opportunities also for mature regions, as these often rely on their own ability to generate the conditions of growth because existing structures are unlikely to provide the required resources.

Boschma and Lambooy (1999) argue the possibility of revival, even maintenance of vitality, on the basis of - collective - learning capability and a regional policy based on such learning in order to restructure economies. Shifting away from the industrial complex as the unit of analysis, they also - however- acknowledge the possibility of decline at the *industry* level. Both a regional and a industry

perspective are thus desirable to grasp industrial dynamics in a specific complex. While factors emphasized by institutional and evolutionary economic thinking may not apply to complexes as a whole, they may operate in the context of specific industries or categories of companies, explaining differential dynamics.

Despite the problems of adjustment mature industrial regions face, with the risk of becoming locked into rigid trajectories as their techno-industrial legacy of the past has weakened their ability to develop new activities (Grabher 1993), decline constitutes only one of three developmental paths. Another may be overall successful transformation, whereby new variety is introduced, resulting in a changed industry and value chain components profile of the local economy. The successful avoidance of lock-in situations dominates transition. It may be based on *incremental change*, meaning new activities related to the competence base associated with the older activities. Restructuring occurs by exploiting new market niches within a traditional sector, requiring less dramatic changes in the local environment, and involving incumbent firms. Successful restructuring may be based also on *radical structural change* whereby old industrial sectors are complemented by new sectors, involving new firms and spin-offs. This possibility builds on the idea that new fast-growing industries have little specific location demands and thus may emerge in any region meeting some minimum generic location conditions, including mature industrial regions (Boschma, 1997). In the process of structural change at the same time earlier mature industries may undergo adjustments necessary for and leading to their survival, although in a transformed profile.

Besides a development path that accounts for the fact that a specialised competence base may lead to lock-in, alternative paths suggest the possibility that firms, industries and regions escape lock-in by either renewing competencies, or break with their regional history. Evolutionary theory outlines two possible successful strategies, one based on incremental change, continued specialisation and localization economies, and one based on radical change, diversification and urbanization economies.

This still leaves open the questions whether mature industrial regions that have successfully adjusted to changed circumstances have been less troubled than others by lock-in; if so why and how; whether other factors are involved as well, etc.. This is still subject to debate and research. Tentative answers may include institutional context; political-administrative system; policy making; positive externalities derived from an asset base generated by past development path embodied in infrastructure, labour market and local enterprise base; external influences translated/expressed in avoidance of extreme industry-specificities in favour of flexibility and the ability to switch labour and enterprise resources etc. to alternative uses.

### ***Situating East Asia***

Situating East Asia in the above perspectives, what has been observed in the introduction suggests that the positive perspective appears to fit mature industrial export complexes and 'early' industries

better than the negative perspective. A number of points can be brought to the fore that may warrant such a position *a priori*. First, the phenomenon of old industrial areas has a different meaning in the context of the Asian NICs, compared to their European counterparts. They are not so old, when referred to the complexes that arose in the early wave of economic globalisation and/or export-oriented industrial build-up during the 1960s and 1970s. It may be argued that a more limited *duree* significantly impacts the ‘depth’ of routines (in firms and organisations) and – negative – institutional ‘thickness’ in such contexts.

Second, there is the specific state-enterprise-civil society relationship that is different from core industrial regions and works against phenomena mentioned under the negative perspective, especially the nature/shape of cooperative relationships. Here we may refer to the idea of the relative autonomy of the state, characterising state-enterprise-civil society relationships even during processes of restructuring (Evans *et al*, 1987). Levels of trust between enterprise and state are also partly shaped by such relationships. These do/have not always remain(ed) static, as economic organisation and coordination have not remained unaltered. This may be reflected in changes in adjustment processes over time.

Third, local enterprise characteristics in East Asia economies do not compare to those in core industrial countries (Whitley 1992, Yeung 2002). Although variations exist between East Asian economies, the role and functioning of the Chinese Family Business (Yeung 2002) is relevant here. It may be argued that their ownership characteristics and management attitude or practices work against phenomena observed in the context of the negative perspective. A qualification is that enterprise characteristics appear to vary between industries, leading to the possibility of industry-specificity in the operation of this factor.

Fourth, reflecting the competitive advantages of the period, these complexes were mainly ‘inhabited’ by labour-intensive production activities in technologically not so advanced industries. In the early stage they differed in characteristics between the Asian NICs, associated with a range of factors such as the role of foreign versus local capital. Yet there has been and is in many cases a strong representation of foreign capital in industries. The behaviour of this capital is most of the time externally determined; thus less locally entrenched. Equally important, quite a few industry types dominated by local capital have become connected to export markets by incorporation in networks within Global Commodity Chains (GCC) orchestrated by western lead firms (Gereffi & Korzeniewicz, 1994). Such networks are typically *externally* oriented. It may be contended that, while firms may become ‘locked-in’ into specific roles, functioning within such chains and networks requires constant adjustment to strategies and demands of the lead firms, at the risk of losing connection in case of non- or underperformance. In such a situation it is possible that routines become less entrenched in firm behaviour.

Fifth, the context is generally not a mono-industrial one but one of a diversified industrial structure. Besides network specific stimuli to change, a diversified structure or variety of techno-



industrial structures – partly produced by policy – may be expected to create demonstration effects between industries, facilitating and giving direction to adjustment.

Having made these points, we will now consider the Singapore apparel industry.

### **Development and characteristics of the apparel industry in Singapore**

Having become incorporated in international production networks through contract manufacturing on a Cut-Make-Trim (CMT) or full-package (Original Equipment Manufacturing, OEM) basis, the apparel industry contributed significantly to Singapore's export oriented industrialisation in the 1960s and 1970s (Douglas et al., 1994). As table 1 shows, throughout the 1980s the industry continued to grow despite increasing competitive pressures, caused by labour shortage, wage increases not matched by productivity and output rises, and increased regulation in main markets. The table also suggests that, as these pressures continued to build up during the 1990s, the industry appeared to move to a turning point.

HERE TABLE 1

Thus, *official figures* suggest an industry going in decline from the early 1990s. However, from our own research, some findings of which are reported here (for a full account, see Smakman 2003), a different dynamics emerged.

It is useful first to offer a brief explanation of procedures, methods and data collection employed in the research. Early reconnaissance indicated three segments in the industry: producers, regional buying and sourcing offices, and a local fashion segment. The first step, carried out in the second half of 1998, involved making a inventory of producers, serving as a database for selection in a company survey. Compilation was done painstakingly by checking available published sources (business directories of all sorts; membership lists of manufacturer's associations, etc.). The inventory was validated through contacting each firm by phone, also serving to provide data of each firm on employment (size), set-up and production organisation. From the database of 'valid firms' a sample was drawn, representative as to the categories listed in table 2 and size, for the purpose of conducting a company questionnaire survey. This survey – carried out towards the end of 1998 and the first part of 1999 – included 57 producers (coverage of a targeted 15%); larger export producers were somewhat over-represented as the response among this group was higher. A similar procedure was followed with respect to buying and sourcing offices. A database of firms was compiled from various published sources, and validated by phone. A buyer/agent survey – carried out in the middle of 1999 – included 25 buyers (coverage of some 45%). Following this, in depth interviews were conducted with industry representatives and company directors to gather more qualitative data. Some of these took

place at a very late stage in the project (2002, 2003), after completion of fieldwork in neighbouring Malaysia. As to the local fashion segment, an inventory in the course of the project indicated that some 60-70 local designers were selling their brands/labels locally and in some cases regionally. At the last stage of the research, in 2002, some time was spend to gauge the development and significance of this segment through a number of qualitative interviews with local design firms. In the analysis below the regional buying and sourcing as well as local fashion segments will not be explicitly considered for two reasons, space constraints and the fact that it would not lead to a different line of argument, different observations or conclusions. We will make some remarks on these segments in the conclusion.

HERE TABLE 2

Firm closure had been apparent among producers (it seems mainly involving branches of foreign companies and local second tier subcontractors). But the inventory revealed more companies still in operation than suggested by the official figures. Also, the preliminary data obtained from companies – depicted in table 2 – suggest that the dynamics has included regional production networks, i.e. branch plants and/or subcontractors elsewhere in the region. A functional change and development of activities in the Singapore establishment, when accompanied by significant employment changes, remain hidden in official statistics.

Table 3 summarises some characteristics and trends of firms included in the producer survey. The variables size (in terms of employment), buyers, location of markets/clients, products and output, and brands were used to categorise company roles found in production, linked to (as we shall demonstrate) distinct firm development trajectories. Taking into account correlation of variables and on the basis of the main discerning variables, six different groups are identified (table 3).

HERE TABLE 3

When employment and turnover are taken into account in the size of the categories, it emerges that the first category (OEM I) is by far dominant, accounting for more than two-thirds of total turnover and almost two-thirds of total employment. The position of OEM supply is evident if one considers that other categories (i.e. OEM II, OEM/OBM – Original Brand Manufacturing – and Regional offices) are also essentially rooted in OEM roles. The quantitative changes over the period 1985-1998 on a number of variables, depicted in the table for three amalgamated categories (for analytical purposes, the first 5 categories depicted in table 3 were often clustered in 3 main categories based on the main discerning variables. On the other hand the 6<sup>th</sup> and 7<sup>th</sup> category were sometimes not included in the

analysis, due to their rather unique positions and functioning) are the outcome of adjustment strategies implemented by companies from the mid-1980s.

### **Competitive Adjustment Strategies: beyond lock-in?**

As the competitive pressures experienced by apparel producers and the adjustment strategies have already been dealt with elsewhere (Grunsven and Smakman, 2002), only the latter will be briefly reviewed here. Those implemented by companies from the mid 1980s are shown in table 4 and can be classified as either defensive/retentive (focusing on cost-competition) or offensive/pro-active (aiming to improve capabilities and competencies; compete on quality).

As to defensive strategies, in the past common measures were the employment of foreign workers and having employees work overtime. Labour intensification allowed the bringing down of unit labour cost. Because of their larger size, the OEM I group had been more inclined to hire foreign workers, as they could apply for a sizeable batch at once. Smaller firms in the other categories had problems paying the government-imposed levies for foreign workers (as a result of these levies foreign workers were on average not that much cheaper to employ than local workers, although the use of foreign labour has kept wages artificially low); these were more inclined towards labour flexibilisation through the use of part-time or temporary workers.

HERE TABLE 4

Qualitative information supplementing table 4 revealed that gradually over time defensive/cost measures gave way to offensive strategies, involving substantial internationalisation of production. Labour measures were no longer seen as sufficient to cope with competitiveness issues. More than two thirds of firms indicated that cost had increased in the past ten years, despite labour and other cost saving measures.

Although most firms worked with subcontractors (91 percent), less than half (42 percent) had increased outsourcing over the past ten years. Firms in the OEM I group were less inclined to increase outsourcing, being limited by requirements and more direct control of buyers, responding to increasing consumer awareness and quality demands; their preference was for overseas investments. Local/regional OBM producers were more inclined to opt for outsourcing as they had almost all engaged in overseas subcontracting. Lacking the capital to invest overseas, this was the best option for these firms to internationalise. Moreover, as they were probably never (substantially) involved in production to start with, they were less inclined to set up own *production* facilities overseas.

Firms in the OEM I and OBM/OEM category were most inclined to invest overseas, as larger size required larger numbers of workers. Reasons to invest overseas were availability and lower cost of

land/property and of labour. In quite a number of cases did overseas investments entail a downsizing of production capacity in Singapore along with the development of an international production network; the Singapore establishment focused increasingly on head-quarter functions and other non-production activities such as design, merchandising and sample-making. Thus, the adoption of relocation/ internationalisation involved also a shift towards becoming an important intermediary and co-ordinator of regional production networks for western buyers.

Few firms had introduced new technologies as a means to increase competitiveness, in view of limited possibilities for automation and the fact that the substantial investments are feasible only in case of large-scale production. Some firms had expanded ICT facilities in order to be able to offer added services (e.g. logistics) to their clients.

The change of clients, market segment or market, as a means to expand business or increase value added, usually implies product and process upgrading, as "the higher price points of fashionable retailers reflect more complicated products and differentiated styles" (Gereffi, 1999, p.40). Moving into different markets is often related to changes in buyers/clients, although it may also be a strategy implemented autonomously by producers, to secure new buyers or as part of the development of own brands and marketing. Of the firms that had changed their buyer/client base, almost 40 percent indicated this implied a move from lower-middle end to higher-end buyers; the rest had merely changed the number of buyers they worked for. It appears the shift towards higher-end buyers has taken place in the late 1980s as most large OEM suppliers had been with the same buyers for a substantial number of years and market strategies were often implemented while continuing to work with the same buyers. In most cases buyers had induced production for different or new markets.

As markets dictate shorter lead-times and faster turnover, producers have been faced with demands for shorter production runs and increased flexibility. Many have put in effort to meet these by adjusting production organisation accordingly and engaging in the learning to make more flexible operation possible. Rather than changing the type/nature of products (with the notable exception of the OBM category), producers indicated to have increased product quality. This weighed much heavier for OEM I firms, as their buyers will have been much stricter as to quality standards than for instance non-branded Asian buyers. Also the consequences of non-compliance are more serious for firms working with higher-end western buyers. OEM suppliers to western buyers are oriented towards keeping up and possibly pre-empting buyer demands by specialising in production process and organisation and services to buyer.

Before we consider firm development trajectories we offer here a brief account of factors that appear to be relevant in interpreting the research findings on adjustment. From the start of the industrialisation process the Singapore state focused on foreign capital as the engine, although never to the effect of becoming an instrument of foreign MNCs, mainly heeding their interests (as strategies of leveraging testify). This engendered a strong state heavily involved with keeping civil society weak after it had orchestrated corporatist structures, with e.g. labour unionism brought under control of the

state (Rodan, 1989). Until today authoritarian capitalism and corporatism define economic governance in the city-state (Yeung, 2002). Such 'conditions and structures' gave *inter alia* lots of room for firms to implement restructuring measures of the sort discussed above in the context of apparel production (particularly relocation), not being hindered by labour or civil society interests, etc.

Until recently the Singapore state showed little interest in a role of local capital in industrialisation as it did not see the potential for local entrepreneurs to constitute the foundation in whatever industry. The perception was that local capital was 'rooted' too much trading (rather than production); because of their ethnic background and political orientation they were seen to be less suitable partners in development (Rodan, 1989). Local business classes were distrusted, incidentally probably one of the reasons why the state itself took on an entrepreneurial role (Yeung, 2002). In addition, local manufacturing firms in whatever industry remained rather small-scale and operated in a somewhat fragmented structure. They have also come to distrust the state, fuelled by the state adopting viewpoints about industry development that were perceived to go against their interests. These circumstances help to interpret why the state in the 1980s could so easily designate the apparel industry a sunset industry. The complaint by apparel producers of lack of government interest and neglect becomes easier to understand, as well as the lack of tendency for entrepreneurs in the industry to turn to the state as international competition increased, in an effort to enforce assistance in a favouritist manner.

The concept of relative autonomy very well characterises the Singapore state. This (also expressed in a strong technocratic economic polity and bureaucracy), corporatism, and orientation towards foreign capital also meant that the relationship between state and local capital never could develop in such a way as to engender *political lock-in*, capture and lobby. In this context, the development of the industry also could obtain its logic from the desire of entrepreneurs to be recognised for their entrepreneurship and their industry to be taken seriously.

It has to be noted here that Singapore apparel firms were and are characterised by local ownership, by a dominance of SMEs (with few companies being vertically integrated), and of the owner-managed Chinese family business (CFB). The first feature means they are less 'footloose'. Several distinct characteristics as to business organisation and strategies have been assigned to (Chinese) family businesses (see e.g. Gomez & Hsiao, 2001; Yeung 2002). These include familialism, the importance of social networks and specific strategic preferences, which for the cases of Taiwan and Hong Kong Whitley describes as "(focusing) on the intensive use of resources, short payback periods for new investments, reliance on price and cost competition and a reluctance to share control or responsibility. .... Risks are managed largely by restricting commitments and maximising resource flexibility" (Whitley, 1992, p.55). Our observations from the research are that such preferences are found more among the smaller OEM II apparel firms, which would explain their generally more conservative strategies and, as we shall illustrate below, steady trajectories. Some of the typical characteristics of

CFBs can be found in most apparel firms, among even the larger firms. The use of social and business networks, even across borders, and especially ‘self reliance’ and survivalist attitude, contributes to interpreting firm adjustment strategies – and trajectories – in the face of official institutional neglect of indigenous enterprise and negative attitude towards labour intensive industries. It has to be noted also that in many larger firms recently generation change and professionalisation of management at the top has taken place, as well as introduction of shareholders outside the family. These often display more openness and co-operate amongst one another and with government, e.g. through a strong voice in the industry association. Crucial strategic decisions may still be made by the head of the family, in the position of formal owner-manager. Yet, we contend – instigated by observations during the research – that with management change features of *cognitive lock-in* have been broken.

Incorporation into Global Commodity Chains and the governance characteristics of the Global Apparel Commodity Chain (GACC) imply a significant involvement of buyers in the strategies and development trajectories of producers. This differs per type of buyer, market segment, origin and size of the buyer. The increased emphasis on branding, marketing and image creation have caused buyers in higher-end and middle segments to transfer more pre-assembly and design activities to producers, while simultaneously increasing quality, social responsibility and timeliness requirements. These segments are quality driven (Schmitz and Knorringa, 1999) as opposed to price driven segments, that are less interested in capability development and the transfer of knowledge and responsibilities towards producers. Working for high-end lead firms is tougher, yet more rewarding as price-points are higher and the learning potential through increased responsibilities is greater. Dependency then becomes less one-sided and ‘buyer-drivenness’ diluted by longer-term partnerships between buyers and a selected number of core suppliers. However, this concerns a relatively small share of suppliers and buyer drivenness has actually increased for non-key suppliers, as certification systems and compliance rules have become more stringent.

Given the customers of OEM suppliers in Singapore, buyer requirements are indeed high and their involvement in terms of demands and compliance substantial. These also provide most opportunities and indeed some OEM firms have started moving on an OEM+ trajectory, due to increased responsibilities transferred by buyers and the ‘teaching’ they engage in with selected producers to upgrade and meet standards. This transfer of responsibilities is an interactive process, producers must themselves show initiative and build strong relationships with buyers by offering extra services, through capability development to achieve reliability and consistent high quality.

The Singapore OEM producers that survived the shake out of the 1990s have consolidated their position in the GACC by keeping up with requirements and maintaining reliability. Buyers have little interest in teaching producers to make different or specialised products however. As they source regions for existing strengths and thus position them in their global sourcing networks, buyers seem more interested in enhancing existing capabilities than stimulating totally new ones, making upgrading through buyers rather circumscribed. As such they do not encourage a move towards ODM

and OBM supply, although as we will observe below, the absence of this cannot be entirely attributed to buyers. It was evident from discussions with firm managers that lead firms had significant involvement in firm strategies. In many cases assistance was given as to internationalisation of production. The dominant network relationships then appear to militate against characterising them as *functional lock-in*. This may be argued also in other ways. Before we can take this up it is useful to consider how the adjustment strategies have ‘translated’ into firm level development trajectories.

### **Firm Development Trajectories: path dependency and functional lock-in?**

The tendencies depicted in table 3 are accompanied by substantial changes in the production process and organisation. While many firms survive and remain anchored in the home country, production does so only to a very limited extent: it is going increasingly international. Simultaneously, companies have improved product quality, increased value added as well as productivity. In addition firms have moved into non-production activities, have changed their organisation structures accordingly and even diversified.

While internationalisation, in one third of the OEM I and OBM cases combined with a shift towards non-production activities, have become common routes to follow, the development of, and focus on, an own brand has been limited. The OEM II category is the most conservative as to fundamental changes to its business operations, as only a small number of companies had substantially altered their role/functions. Thirty-two firms (65 percent) either remained OEM I suppliers (20), OEM II suppliers (7), or regional offices of foreign producers supplying on an OEM basis (5).

The data enabled the identification of a number of generic development trajectories of companies over the period from the mid-1980s to the end of the 1990s. These are depicted in table 5 and in figure 1. The arrows in figure 1 imply changes in time, while the horizontal lines demark transitions from one role into the other, which, although they may be gradual, often imply a leap for individual firms. These are not easy to make, as explained below. The trajectory letters in table 5 correspond with those beside the arrows in figure 1. Trajectories D) and G) were not included in the figure as only a very small number of firms had followed these, hardly justifying designation as a common trajectory. A case of trajectory G) is, however, depicted in figure 4.

The dotted lines in figure 1 represent the 'base trajectory' suggested in the literature. A distinction has been made between local and regional OBM and international OBM. The latter has often been implied in discussions of OBM supply, but has been achieved by only a handful of firms in the East Asian NICs. It has been suggested that local/regional OBM supply precedes entry into global chains as OEM supplier. As we explain below, hardly any firms in this category plan to abandon their own brand in favour of OEM supply. Most rather attempt a route towards international OBM supplier.

HERE TABLE 5

HERE FIGURE 1

The generic trajectories may take forms for individual firms as visualised in figures 2 through 5. Figure 2 illustrates a firm that unsuccessfully moved into ODM (Own Design Manufacturing), and returned to its OEM+ role. As the research revealed, moving from OEM to ODM/OBM is fraught with difficulties. The percentages behind the arrows indicate the share of output each of the 'roles' takes up. Thus the firm in figure 3 supplies 75 percent on an OEM basis to western buyers, while 25 percent involves own brand, which is marketed and retailed through its own shops locally and regionally. All figures demonstrate that shifts may initially be abrupt, but do not imply that the previous trajectory is abandoned, or at least not immediately. The emphasis may shift gradually though. Figure 4 illustrates a firm that started as local retailer, moved into OEM for lower end buyers and eventually set up its own brand, now sold in local and regional markets. It still supplies OEM, but only a small share of output. In addition (although not visible) the firm has engaged in brand stretching by diversifying into related products.

The findings give rise to the following observations. First, as observed already the remaining OEM II suppliers have been little inclined to make fundamental changes to business operations. Second, although most OEM suppliers started as domestic producers, all shifted towards OEM supply at an early stage of their 'life'. Third, subsequent development of these firms has remained within an OEM trajectory and the majority of firms remains firmly rooted in their OEM roles. Fourth, within the OEM steady trajectory a small number of firms have moved to an OEM+ role (see figure 2), specialising and increasing services to buyers to include product development and design, sourcing, logistics, etc. This has proven to be successful in not just retaining buyers under increased competitive pressures but moreover, in increasing dependency of buyers on them by advancing within the chain. Fifth, the OEM steady and OEM to OEM+ trajectories both inevitably put firms on an internationalisation track, as price and cost, even with higher quality and services, remain important sourcing considerations for buyers. Internationalisation is not just a relocation strategy, but a prerequisite for expansion. Sixth, OEM firms have been quite successful in achieving expansion despite, or perhaps in part thanks to, the limitations of the local business environment. In fact firms in the OEM steady trajectory have achieved the highest turnover and growth, and this segment has made the apparel industry one of the most internationalised industries in the country. This is a feat that has drawn (government) attention back to what had become "the forgotten industry" (*Interview manager Singapore garment firm, 2003*). Seventh, the 'base trajectories' were not found in Singapore. As noted already, a range of difficulties make the move from OEM into OBM less logical and feasible, also for large OEM suppliers.



Although many had introduced own brands, these were rather labels in most cases, intended for local and regional department stores or non-branded buyers and often not making up a substantial amount of business. Eight, while three firms have been successful in combining OEM and local/regional OBM supply, this trajectory was established by starting with OBM supply and then moving into OEM! The two roles were maintained somewhat separate from one another (see figure 3). Although this fits into the idea of using local supply and brand development as a learning ground to move into OEM, it does not appear that this move was seen as a shift into a different direction, merely as an addition to business that enabled scale production. Ninth, successful alternative routes have been followed by firms that did not start out as contract manufacturers. This is the case for most 'true' OBM producers (category 3). These either started as OBM producers or moved into this role soon after establishment, coming from a position as a small-scale domestic producer or retailer. The contribution of this OBM group to the industry is very modest though and growing beyond the limits of the local and regional markets has proven to be difficult. Finally, not incorporated in the analysis are firms that have exited by closure. It is virtually impossible to make an *ex post* analysis of these firms. As mentioned earlier, informed by the industry association (the Singapore Textile and Fashion Federation, TaFF), in the late 1980s and early 1990s a large number of small local subcontracting firms went bust; others shifted all operations to other countries. Investors from other East Asian NICs, which had set up branch plants in Singapore sold their operations to Singapore owned companies, or just closed them, although some did retain a presence through a marketing and distribution office. What took place was a rationalisation of the production segment of the industry, resulting in a smaller, stable, number of larger manufacturers.

Earlier we observed that there are other ways to argue that the characteristics of dominant network relationships - and governance - militate against *functional lock-in*. While giving rise to the above reflections, the research findings on production roles do suggest *path dependency*, most evidently as to the OEM II steady trajectory. From the starting point of the local producer/trading company, basically three trajectories can be identified: the shift into OEM supply, into local/regional label supply and into OBM (local and regional) supply. In addition there are the steady trajectories. It appears that once a choice has been made for either of these at an early stage in the firm's development, shifting towards another trajectory becomes increasingly hard, and less likely over time. Fundamental shifts of roles hardly occur. Some remarks will be made below on the complexities of this.

One could argue that path-dependency can be associated with *functional lock-in* in global networks, arising from the governance of the network structure. Such an argument could - and indeed largely has to - rest on the *role or position* that OEM producers occupy in the Apparel Commodity Chain, its circumscribed nature, and how this limits competence development outside production. While not invalid, the argument and the association are not unproblematic. First, within roles and steady trajectories upgrading, improvement of production capabilities, and broadening of

competencies towards production related activities (e.g. production organisation, product flow and logistics) are possible, encouraged and achieved. This is true for the OEM steady/OEM+ trajectory. Second, the (small) OBM segment that was identified obviously can't leverage knowledge and experience of buyers in capability enhancement. The majority of the latter firms did not start out as OEM for export producers either. Often they are design driven, led by a - group of – designer(s) educated in fashion design and marketing (as opposed to OEM firms, led by business managers). Keeping up with fashion and quality requirements is their job and actual production is outsourced, so the issue of capability enhancement in production is not as relevant. Because products are often locally or regionally marketed, lead-time considerations as well as quality and other requirements are less pressing. These OBM firms often start on a small scale and are already endowed with design and marketing capabilities.

Third, a *local* determinant to consider is the somewhat intangible strategic intent of the company. This factor is seen to be both at the base of survival in the industry and how successful firms are in their development. It influences trajectories in two ways. The lack of a particular strategic vision or choice (i.e. no clear definition of core business, competencies and strategic directions) usually results in a steady trajectory at a fairly low level. Conversely, when there is a strategic focus and management has defined core competencies and strategic directions, this has implications for all strategies and for the way in which firms chose to learn. Often once management has made a certain choice, it will not easily (want to) change. From the research it appears that path-dependency also starts with the very choice for a certain trajectory. Thus firms engage in competitive adjustment within the same trajectory. Strategic intent determines initial route and role. Jumps from one role to another appear to have to take place very early in the development of a firm, as the investments, learning and large scale production that come with contract manufacturing for export make a shift towards small scale design oriented manufacturing increasingly hard. On the other hand, as to firms that have introduced their own brand, there seems to be a relation between the share in output of this brand and a) how long the company has had this brand, b) how long after its establishment the firm developed this brand. Firms that had introduced their own brand fairly quickly after establishment, generally had a larger share of the own brand in output, regardless of how 'old' the brand was.

There are other limitations to moving from OEM to OBM supply. It is hard for large-scale manufacturers to go back to small-scale production or small batch sizes and short runs. As they have invested substantially in production capacity and in facilities enabling additional responsibilities and meeting buyer requirements, sunk costs in a specific orientation are substantial. Such costs also pertain to organisation structures, compliance etc. Also, there is a 'capability gap' between design, marketing and retailing on the one hand and production on the other. Thus substantial switching costs are involved.

These arguments in our view should lead to avoidance of the concept of functional lock-in when considering *external* networks. One qualification is in order. In relation to *local* hierarchical networks

and local governance, the concept helps to interpret the demise of part of apparel production during the 1990s. Closure/exit of firms appears to have involved especially smaller firms that provided local subcontracting services to the main export producers. Hierarchical governance institutionalised by the main export producers, as well as the overall institutional environment, rigidly positioned these firms in the periphery of the local industry, their involvement solely based on lower costs. These firms were unable to compensate increasing labour costs by automation, productivity increases and the like, and were the first to face difficulties in competing on local labour markets. They also lacked the resources to recruit workers from abroad as the high levies were prohibitive. Finally, these firms in addition found it hard to invest in technological innovations or to internationalise due to lack of capital. In effect they were thus 'stuck' in Singapore's high cost business environment in which they could not survive for long in the face of the changing strategies of the main export producers.

## **Conclusion**

In this article we have dealt with an evolutionary economic perspective on industrial adjustment prospects and processes in the Asian NICs. We have looked at an early, now mature, industry, i.e. the apparel industry, in Singapore, through the 1980s and 1990s. Observations of successful industrial restructuring and resilience of mature industries led to a focus in the analysis emphasizing the more optimistic line of thinking on industry dynamics in 'old industrial regions', and what can warrant this. Put otherwise, *why* core tenets in a more pessimistic line of thinking appear to be less relevant in the case at hand. In the analysis and discussion we have focused on the production segment of this industry. Succinctly, what has emerged as the state and fate of this segment, most prominent is the increasing territorial disembedding of export production. This is not tantamount to decline of the segment as many firms do *not* leave or exit. In the process, firms in the locale have shifted activities with a larger emphasis on coordination etc. In the discussion we have not considered the two other local segments of the industry. On the basis of the research (see Smakman 2003) we offer here that, although for various reasons prospects aren't abundant, the industry at large will maintain position on the basis of coordination of overseas production chains and networks, additional tasks and responsibilities taken over from lead firms, and – to a more limited extent – organisation of production and retail of locally designed apparel.

The analysis has demonstrated that the withering away in the Singapore context of an industry such as apparel is not inevitable. An attempt has been made to argue why. In considering the determinants in the particular case, as far as production is concerned, we departed from postulations concerning path-dependency and several types of lock-in: political, functional and cognitive. While we observe path dependency in the development trajectory of most firms, we also conclude that both the actual adjustment processes observed and factors like local context, enterprise characteristics, embeddedness in international networks, the roles of lead firms etc., militated against political,

cognitive and functional lock-in. The distinct characteristics of the industry - and firms within it - have played an important role in its flexibility and the changing variety found within it.

Two limiting aspects should be mentioned, linked to the discussion in this article. In the way the motivating questions have been put and the way we have addressed them, there is nothing that can lead to any conclusion about Asia versus Europe as to types of industry evolution in mature industrial complexes and 'old' industries, as well as interpretation of evolutionary pathways. Next, having dealt with just one specific industry in one - small - Asian country, what is offered in the above analysis and discussion cannot be but tentative. More research is necessary and will undoubtedly follow in what constitutes an exciting new field of study.

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