The Limits to Locking-Out through Restructuring:
the Textile Industry in Daegu, South Korea

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Abstract

The restructuring of old industrial areas is a relatively new phenomenon in the Newly Industrialising Countries of East Asia, such as South Korea. Of the few theoretical concepts which try to explain the decline of such old industrial areas, evolutionary economic geography, in general, and the lock-in concept, in particular, are promising ones. This paper shows that the impact of locally induced lock-ins can be regarded as relatively strong in the textile industry region Daegu, South Korea, and that due to this strong lock-in renewal has been relatively unsuccessful.
1. Introduction

Since the Industrial Revolution, the cyclical processes of the rise and fall of regional economies have been accelerating. This has been most clear in regional economies with strong concentrations of firms from certain industries, such as mono-structural old industrial areas. In these areas “the local development of a sector is seen as equivalent to the development of the region” (SCHAMP, 2005:619). Different temporalities and spatialities of the three institutions, the firm, the industry and the region cause tensions. The fall and necessary restructuring of regional economies obviously has had a long tradition in Europe, but is a relatively new phenomenon in some countries of Asia, such as South Korea.

There is, hence, a vast range of literature both on the experiences of individual old industrial areas in Western Europe, Eastern Europe and North America, and on comparisons between regions in Europe and North America (for an overview see HASSINK and SHIN, 2005). Although there is much literature on late industrialising Asian countries and the role of both learning and the developmental state (AMSDEN 1989, 1991, 2001; CLARK and KIM, 1995; MASUYAMA et al, 2001), there are few studies
on experiences of restructuring processes in old industrial areas at the sub-national level in East Asia (exceptions are for example SHAPIRA, 1994; LIM, 1994; VAN GRUNSVEN and SMAKMAN, 2005). Due to the global shift of industrial activities from North America and Western Europe to Japan and later on to the first (South Korea, Taiwan, Singapore and Hong Kong) and to the second generation of Newly Industrialising Countries (such as China, India, Malaysia, the Philippines and Thailand in Asia) (DICKEN, 2003), the problem of restructuring of old industrial areas have shifted as well through the time. Whereas several regions in Northern America, Western Europe and Japan were hit by industrial restructuring in the 1970s and 1980s, serious problems of industrial restructuring have only been starting to emerge in the first generation of Newly Industrialising Countries since the mid-1990s. In the near future, the problem of restructuring in old industrial areas is likely to increase in these countries, as more and more industrial activities will be shifted to neighbouring low-cost countries. Critically applying and testing the "Western" theoretical concepts on old industrial areas in the Asian context will lead to their further development and refining. It will also contribute to a badly needed stronger involvement of Asian research in mainstream economic geography (YEUNG and LIN, 2003; YEUNG, 2007).
This paper will contribute to this emerging knowledge on restructuring of old industrial areas in East Asia by focusing on the restructuring of the textile industry cluster in the Daegu area in South Korea (see Figure 1 for its location). Textile, together with the shoe and other labour-intensive industries were the first industries with which South Korea and other Newly Industrialising Countries started industrialisation in the 1960s. These industries are also the first facing restructuring problems due to increasing competition from neighbouring low-cost countries. Theorising related to the topic of this paper was done in the past on unbalanced regional development that addressed both positive and negative aspects of regional evolution (Myrdal, 1957; Hirschman, 1958) and later on in the 1980s by British geographers on industrial restructuring and the spatial divisions of labour (Massey, 1984; Hudson, 1989). Since the most recent and promising theorising is on the role of path dependence and lock-ins in explaining negative sides of clustering, that is the decline of old industrial areas, it forms the theoretical core of this article (Grabher, 1993; Boschma and Lambooy, 1999; Boschma and Frenken, 2006; Martin and Sunley, 2006).

The paper aims at analysing whether lock-ins can be observed in the textile cluster of Daegu and to what extent they hinder the necessary renewal of the regional economic.
Taking SCHAMP’S (2005:618) approach of the firm, the industry and the region as an example, in this paper we “attempt to understand the trajectory of a specific region”, the textile district of Daegu, “by analysing the trajectories of specific firms” which are part of the textile-production sector in its broad sense. A case study was conducted through 18 in-depth interviews with managing directors of textile companies (in the text referred to as company interviews), academic experts and consultants (in the text referred to as expert interviews), national, regional, and local policymakers, and managers of industry associations and intermediaries (all these are in the text referred to as intermediary interviews). The in-depth interviews were semi-structured in character and focused, with respect to the company interviews, on issues such as the main products of the company, history, organisation, development of staff and turnover, research and development, product and process innovations, spin-offs, diversification strategies or projects, and the internal and external success factors and barriers to product development and diversification strategies or projects. The intermediary interviews were focused on organisation, industry-support measures, the impact of support and cooperation, and competition with other intermediary organisations. The interviews were carried out in the Spring of 2003.
This paper is organised as follows. In Section 2 a conceptual account on evolutionary economic geography and lock-ins in old industrial areas is presented. It is followed by an overview on path-dependent evolution of the textile industry in Daegu in Section 3. In Section 4, the Milano Project, which intends to support renewal of the textile cluster in Daegu, is introduced. In Section 5 the tension between locked in networks opposing renewal and networks which emerged due to the Milano Project is described and in Section 6 the conclusions are drawn.

Figure 1: Map of the location of the Daegu region in South Korea

2. Evolutionary economic geography and lock-ins in old industrial areas

Economic geographers have recently shown an increasing interest in evolutionary economics (NELSON and WINTER 1982). Authors such as STORPER (1997), BOSCHMA and LAMBOOY (1999), BOSCHMA and FRENKEN (2006), MARTIN and SUNLEY (2006) and ESSLETZBICHLER and WINTHER (1999) have tried to bring together economic geography with evolutionary economics, which, unlike neoclassical theory, "takes history and geography seriously by recognizing the importance of place-specific
elements and processes to explain broader spatial patterns of technology evolution”
(ESSLETZBICHLER and WINther 1999, 180). This school has strong links with the
embeddedness literature (GRANOVETTER 1985). It regards the mutual relations between
innovations, firms and the political and socio-institutional forces as conditions for
diffusion processes and thus for economic growth.

Path dependence and lock-in are important notions of evolutionary economics that have
been used by economic geographers to explain the negative sides of economic clusters,
particularly the decline in old industrial areas (HASSINK and SHIN 2005; BOSCHMA and
LAMBOOY 1999). Geographically concentrated clusters can become insular, inward-
looking systems, as many old industrial areas, both resource-based mono-structural
areas, dominated by for instance steel, coal-mining and shipbuilding industry, and areas
specialised in consumer goods (textile for instance) (SCHAMP 2000), have shown us
(HASSINK and SHIN 2005). "The initial strengths of the industrial districts of the past -
their industrial atmosphere, highly developed and specialized infrastructure, the close
interfirm linkages, and strong political support by regional institutions - turned into
stubborn obstacles to innovation" (the 'rigid specialisation' trap) (GRABHER 1993, 256).
GRABHER (1993) has defined these kinds of obstacles as functional lock-in (hierarchical
inter-firm relationships) and cognitive lock-in (a common world-view that might confuse secular trends with cyclical downturns). These forms of lock-in are interrelated to form a complex of underlying causes, but one particular form of lock-in might be more prevalent than others in a regional economy. The lock-in concept as such was presented earlier by economists such as ARTHUR (1989).

Functional lock-ins are economic in nature. Their key feature concerns a particular network constellation that negatively affects necessary economic renewal. Local networks of dominant industrial production become so narrowly focused on a particular type of retrogressive economic activities that is unable to shift into a new restructuring track. When being locked into rigid trajectories, the existing networks face increasing costs, due to reluctance and resistance, to replace old with new networks.

Cognitive lock-ins refer to personal and socio-cultural obstacles to hamper good and positive changes in the local economy. Personal cognitive lock-in is rendered by locally prevailing common view and interpretive mechanisms that become unfavourable to the newcomers to the local economy. This is ascertained by local entrepreneurs’ avoidance of technological innovation or new venture that may require cost in the short run, but
could bear benefit in the long run. If this kind of entrepreneurial ethos persists, they are more inclined to pursue rent seeking than profit seeking in their business. This entails the weakening of the collective learning that could foster the local adaptability to technological cycle and market fluctuation. In this circumstance, local entrepreneurs stick to protecting their interests embedded in the existing techno-industrial structures, giving rise to the prevalence of conservative culture over the local business realm.

Closely related to cognitive lock-ins is the notion of political lock-ins that might come up in a production cluster (GRABHER 1993). Political lock-ins are thick institutional tissues aiming at preserving existing traditional industrial structures and therefore unnecessarily slowing down industrial restructuring and indirectly hampering the development of indigenous potential and creativity. Institutional tissues consist both of organisations, such as political administrations at all spatial levels, trade unions, large enterprises and business support agencies, and things that pattern behaviour, such as norms, rules and laws. With regard to the latter part, there seems to be, therefore, a strong relationship between cognitive lock-ins and political lock-ins. Such a particular and thick institutional tissue can, together with the firms and workers, form a so-called self-sustaining coalition (GRABHER 1993; HUDSON 1994). In such a situation, large
companies might not want to give up sites for the attraction of inward investment, as they are afraid to lose qualified employees to competitors. Local authorities might not see the point to attract inward investment or to promote restructuring in another way, as large tax incomes are paid by traditional industries. In some regional production clusters, the spirit of the Schumpeterian entrepreneur might dwindle due to an increasing industrial concentration and the domination of large companies. The self-sustaining coalition also lobbies for sectoral interventions often at a national or supra-national level, which hamper the restructuring process more than they support it, as they remove the incentives to take initiatives for entrepreneurs and thus paralyse competition and tranquillise large industries (Hamm and Wienert 1989). Morgan and Nauwelaers (1999) stress that in these kinds of networks status is privileged over knowledge, power over learning and the past over the present.

In a way the lock-in concept explains why we can find in some mature industry clusters adjustment, “which refers to an extension of established trends, resulting in stagnation or gradual decline” or a lack of renewal, which would involve “a significant change of the existing trajectory of development, enabling the cluster to sustain its prosperity” (Chapman et al. 2004, 383). In the case of adjustment, firms tend to focus on cost...
reduction and copying, whereas in the case of renewal, the focus will be on innovation and diversification.

In The Rise of the Rustbelt, one of the few internationally comparative books on the restructuring of old industrial areas (see also Hamm and Wienert 1989), Cooke (1995) referred to old industrial areas moving from the low to the high road of development. If institutional resistance to restructuring is strong in old industrial areas suffering from de-industrialisation (strong cognitive and political lock-ins), there is a strong tendency for conserving existing structures or for modernising existing production facilities (adjustment). If institutional resistance to restructuring is weak, there is room for locking out by setting up new industries, partly emerging out of the existing industries (renewal). This locking out or un-locking (see Figure 2) is regarded as a process in which negative regional lock-ins are overcome paving the way for successful renewal.

The line, however, between adjustment through lock-in and renewal through lock-out can be very thin (Grabher 1993; Boschma and Lambooij 1999; Tödtling and Trippl 2004). This is illustrated by Essletzbichler and Winther (1999) when they speak about positive and negative lock-ins and by Callon (1998) when he refers to
enabling and constraining networks. As milieus tend to change more slowly than industries, a sclerotic milieu can remain in a region even after the industrial structure to which it belonged already has disappeared. The potentially fast and sudden development of lock-ins and the thinness of the line between 'good' and 'bad' industrial agglomerations (HASSINK 1997) show the importance of studying and understanding this under-researched phenomenon in economic geography.

Related to lock-outs, several papers have recently been written on the role of path creation either through related or unrelated variety in restructuring regional economies (FRENKEN ET AL. 2007, MARTIN and SUNLEY 2006). On the one hand, variety is seen as a source of regional knowledge spillovers, measured by related variety within sectors. On the other hand, in the case of unrelated variety, variety is seen as a portfolio protecting a region from external shocks. According to MARTIN and SUNLEY (2006: 421) “there is a trade-off between specialization and a short-lived burst of fast regional growth on the one hand, and diversity and continual regional adaptability on the other”. In most regional economies, however, the situation is rather complex, as “… various networks and structures of interrelatedness can emerge between different sectors and activities within a region, thus suggesting the possibility of what we might call ‘path-
interdependence’, that is situations where the path-dependent trajectories of particular local industries are to some degree mutually reinforcing. The extent and significance of this interlinking path effect is a key issue for further research.”

Thus, the evolutionary economics school and the related concepts of path dependence, path creation, lock-in and lock-out (or un-locking) (see Figure 2), seem to be useful concepts to understand the negative consequences of path-dependent development and the importance of regions' capabilities to adjust their institutional endowments ('un-learning') (SCHAMP 2000). GRABHER’S lock-in concept has been often cited (see for instance in Cooke and Morgan 1998, 111; Schamp 2000, 139), showing its importance as an explanatory concept for the decline of industrial areas, but empirical research testing the concept has been rare. The following empirical part will therefore analyse whether lock-ins hinder the renewal of the textile industry region Daegu in South Korea.

Figure 2: Breaking and creating organisational paths: alternative routes in face of path dependence.
3. Locking-in Embeddedness of the Textile Industry in Daegu

Daegu is with 2.5 million inhabitants the third largest metropolitan city in Korea and known as the textile city of Korea. Textile production in Daegu dates back to the Japanese colonial period (1910-45) but gained its full momentum in the early 1960s related to Korea's start of export-oriented industrialisation (for a detailed account on the history of the Korean textile industry see McNAMARA 2002; PARK 1997). As a result of its path-dependent export-oriented growth, Daegu's textile industry has been instituted as a distinctive local production system that is specialised in producing and weaving chemical fibre through local dense subcontracting networks in the middle-stream of the textile production process\(^1\) (LEE ET AL., 2000).

Daegu has the largest concentration of textile industry in Korea. In 2002, it accounted for 11.0% of total textile establishments in Korea's textile industry, 12.3% of total textile employment, 14.5% of total textile production, and 8.3% of total textile exports of Korea. As a corollary, textile business is the largest segment of manufacturing industry in Daegu: 31.3% of total manufacturing establishments, 34.7% of total exports.

\(^1\) The textile industry production process is divided into three major stages: the up-stream process of the production of raw fibre, the middle-stream process of fabrication and dyeing and the down-stream process of apparel, fashion and trade.
manufacturing employment, 34.6% of total manufacturing production, 54.2% of total export and 30.9% of total value added in 2002 (Table 1) (KTDI and DAEGU-KYUNGBUK TEXTILE INDUSTRIAL ASSOCIATION, 2002). Within the subdivisions of the textile industry, it is particularly spinning and weaving of textile that comprises the lion’s share of the total textile industry (KIM ET AL. 2003). This subdivision has with 26.95 by far the highest location quotient of all industries in Daegu (KIM ET AL. 2003: 19). Based on calculations with an input-output model, KIM ET AL. (2003) observe an increasing unrelated variety due to the growing importance of the following promising unrelated manufacturing industries to the textile industry: general machinery and equipment (18,000 employees) and transportation equipment (14,000). Although we acknowledge that related and unrelated variety play a role in the overall restructuring of a regional economy, our main focus in the following will be on the role of lock-ins and locking out in the restructuring of the textile industry in Daegu.

Table 1: Shares of Textile in Daegu’s Manufacturing (2002)
The 1950s and 1960s: the launching of the textile industrialisation

During the Korean War (1950-53), Daegu was out of the battle field and local textile firms enjoyed a war-related procurement boom that continued until the early 1960s. This brought about the specialisation of Daegu in cotton and silk textiles. With many large spinning factories operating around Daegu, local textile production expanded rapidly. So did the local distribution sector, due to the traditional market called West Gate Market (Seodaemun) in Daegu, which functioned as a national centre for textile whole-sale trade. The simultaneous expansion of both production and distribution led to a locally integrated textile industrial system (KTDI, 2003).

In response to a soaring market demand, the textile industry became one of the most bustling and lucrative businesses in the post-war economy of Korea. Daegu benefited from a boom in new textile technology for mass production of nylon fabric, which was invented in the U.S. 30 years before and which led to a dramatic shift from natural to artificial fabrics. With this first-generation textile technology brought in, Daegu rose to a site of mass production of 'raw tread or fabric', which was used for the manufacturing of a variety of textile products (BU, 2001; HUR, 2002).
At the time when all textile products were instantly sold on markets, in particular the West Gate Market, on which almost 70% of national textile products were traded, a huge potential demand for new chemical textile was generated. Taking advantage of this opportunity, a large number of local textile whole-sale traders at the West Gate Market established weaving factories, which operated in a closed supply network with large 'nylon tread' firms. This stimulated a full-fledged textile industrialisation which was equivalent to England’s one, two hundreds years ago.

This early pattern of textile industrialisation has left an inerasable legacy on the structure of the textile industry in Daegu in two ways: the specialisation in chemical textile on the one hand, and the establishment of dense inter-firm networks between large and small producers, that is large 'raw fabric' firms and small and medium-sized weaving firms, on the other hand (CHO, 1994). Low technological requirements of chemical fabric products generated neither sustained technological innovation nor the supply of highly skilled manpower. This low-profile industrialisation could be maintained by a steady supply of low-cost female labour from adjacent agricultural areas (KAMIYA, 2007). The highly spirited mercantilist way in which early textile
industrialisation was driven has left a local culture behind which does not favour progressive entrepreneurship.

By the late 1960s, internal market demand was generated, since Daegu's West Gate Market played an important role as an outlet for distributing textile goods to all over Korea. As production-distribution linkages were locally established, Daegu's textile industrialisation was put into the highest gear in the 1960s, taking a lead in the national industrialisation that President Park Jung-Hee initiated. The first five-year economic development plan was implemented from 1963 onwards, during which the Korean economy was faced with rapidly increasing demand from abroad for low-priced labour intensive commodities, such as textiles. This created a long lasting export boom of Daegu's textile products which grew by 70 times between 1961 and 1971 in price terms (from 1.2 million $ in 1961 to 87.6 million $ in 1971) (Bu, 2001; Hur, 2002).

The startling rate of export growth brought such an immense amount of production to local textile producers that a large part of the orders had to be handed over to local petty producers. This led to an explosive growth of the establishment of many small and informally producing and trading companies and subcontracting relations between large
and small firms. Towards the end of the 1960s, Daegu's textile industry suffered from the fatigues generated by the mushrooming of petty producers who competed against each other for subcontracted work and, in doing so, downgraded product quality and disturbed market order. It became an excuse for the central government to intervene into the textile industry.

In short, the 1960s was a period for Korea's textile industry to gain its full momentum for modernisation and laid the foundation of Daegu's local textile production system. The formation was forged through the interplay between local and extra-local factors associated with Korea's state-initiated export-oriented industrialisation (CHO, 1997).

**The 1970s: The deepening of the export-oriented textile industry**

In the beginning of the 1970s, the engine of Korea's industrialisation shifted to heavy and chemical industries, while its driving force stemmed from the accelerated export of cheap consumer goods, such as textiles. Between 1972 and 1981 the third and fourth five-year economic development plans were carried out.
In this period, Daegu's textile industry was Korea's leading export industry, thanks to its capability to produce and export polyester fibre textiles at large scale. Large polyester plants equipped with new technologies imported from Japan were set up in Daegu and adjacent Gumi and began to mass-produce polyester fibres from the early 1970s. Polyester rapidly replaced nylon as the major textile resource: the ratio between nylon and polyester in Daegu's textile products changed from 57:43 in 1971 to 16:84 in 1978 (METROPOLITAN GOVERNMENT OF DAEGU, 2000).

Daegu's textile export expanded 15.8 times between 1971 and 1979, which was partly caused by the opening of the Seoul-Busan (Gyeongbu) motorway in 1970. It improved access to Seoul and thus stimulated the country's textile trading stronghold to move from Daegu's West Gate Market to Seoul's East Gate (Dongdaemun) Market, currently one of the largest textile complexes in the world. This has led to the displacement of consumer market related activities and, later on, of down-stream processes of Daegu's textile industry. In other words, by relying upon the export market, Daegu's textile industry has narrowed down into the weaving and fabrication of chemical fibres, in particular, which forms the middle-stream of the textile production process (KTDI, 2003).
In the 1970s, Daegu's textile industry evolved in a way that reinforced the local textile production system devoted to weaving and its related activities. Priority was given to setting a mass production system into operation by encouraging the use of new textile machines. In fact, the number of innovative loom and spinning machines increased by 2.7 times and 2.1 times respectively between 1975 and 1979. Much of the enlarged production was carried out through inter-firm networks which spread rapidly during the 1970s (METROPOLITAN GOVERNMENT OF DAEGU, 2003). The networks as such became built around complex production arrangements. While existing networks were shaped along supply chains between large fibre and small fabric producers, new networks included the relation between trading companies and local small producers, between large weaving firms and small subcontracting firms, and between weaving factories and dyer houses (company interview).

For the sake of the effectiveness of subcontracting relations, the central government intervened by encouraging specialisation and co-operation among textile firms along the technical lineage. To support this, the government introduced the 'Act on Systematization and Cooperation of Enterprises' and built industrial estates called
'Cooperative Business Park' (Bu, 2001). Meanwhile, the major type of labour consisted of young female workers who migrated from rural villages. From the late 1970s, however, labour shortage, especially skilled labour, began to arise and was attempted to combat by opening vocational colleges and training centres in the region (Cho, 1997).

With this government policy support, Daegu's textile industry was rapidly modernised and made a significant contribution to the country's export growth during the 1970s. However, due to the second oil shock in 1978 Daegu's textile export decreased, which led to overcapacity and overproduction. This showed the high vulnerability of Daegu's textile industry to international fluctuations.

**The 1980s: Rationalisation of the maturing textile industry**

The effect of the 1978 oil shock could be mitigated by a new export boom which started in the early 1980s. New technology for the production of high-quality polyester was introduced and production capacity was extended. A special industrial estate for dye houses was built which contributed to the improvement of dye technology and the enhancement of value added in local textile products. Yet, as the mid 1980s approached
labour shortage and rising wages due to nation-wide labour disputes became so acute that they seriously threatened the competitiveness of Daegu's textile production system.

Local textile producers responded to this challenge by undertaking a variety of rationalisation measures, such as automation, laying off redundant labour, putting part of production out to subcontractors, selling or letting production lines (or machine) out to former foremen, closing down production lines and relocating factories to remote areas or overseas, such as China (CHO, 1994, 1997).

Among all these, the externalisation of production was most widely undertaken and cast a deep impact on the reorganisation of local inter-firm networks. In order to avoid rising labour costs and militancy, textile manufacturers reduced labour-intensive production processes or let (or sold) some factory facility (especially machine) out to the foreman or supervisor in charge of the very facility. Let-out facility, mostly weaving machines or looms, ran under the private ownership of foreman, relying on family labour, especially housewives. Called little ownership system, this local production arrangement resulted in the fragmentation and downsizing of the textile industry and in the increasing dependence of local small producers on large corporations (CHO, 1994). This is reflected by the mushrooming of subcontracting relations: the share of subcontracting
firms in Daegu’s textile enterprises rocketed from 31.2% in 1987 to 82.8% in 1991. In addition to the changes in inter-firm relations, the textile industry in Daegu became even more specialised in weaving: the share of weaving firms of all textile firms increased from 30% in the 1960s to 70% in the 1970s and 80% in the 1980s. These two changes resulted in over-competition, over-production, decreasing profit rates, conflicts between large and small firms and labour shortages and disputes (JUNG, 2000).

In response to this situation, the central government once again intervened by launching the ‘Industrial Development Act’ in 1986. Under the new act, a complete ban was imposed on start-ups and extensions of production facilities in the textile industry for three years, while large financial subsidies and fiscal measures were allocated to the replacement of old hand-operated looms with updated automatic looms. This led to a rapid spread of weaving automation; the use of automatic weaving machines soared from 25.5% in 1986 to 60.7% in 1991 (METROPOLITAN GOVERNMENT OF DAEGU, 2003).

**The 1990s: Specialisation of the aging textile industry**

The policy drive for ‘rationalisation of weaving production’ continued until 1996, when
the rate of automation in Daegu reached 76.6%. The production capacity of automatic weaving machines called water loom jets was almost five times larger than that of traditional looms and Daegu had 41.9% of all looms in Korea and 37.7% of all dyeing machines (Bu, 2001; Hur, 2002). The high rate of automation led to problems of overcapacity, overproduction, dumping exports and financial difficulties in textile businesses. In 1996, 28.6% of the total weaving machines contributed to overcapacity (Metropolitan Government of Daegu, 2003).

To overcome the worsening of profit-making, Daegu’s textile firms sought more desperately ways of cost cutting and hence relied even more on rationalisation and externalisation strategies, such as down-sizing, putting out, subcontracting and the letting out on hire (Lee, et al., 1999 and 2000) (company interview). This restructuring process resulted in an accelerated bi-polarisation of large and small firms in the textile industry (Kim, 1999). The number of large textile enterprises with over 500 employees decreased from 32 in 1988 to 22 in 1993 to 20 in 1995, whereas the number of small and medium-sized textile enterprises in Daegu increased from 1,920 in 1988 to 2,077 in 1993 to 2,273 in 1995. The local production system became even more specialised in weaving and dyeing and operated in the mode of ‘mass production of a limited number
of products’.

Subcontracting spread more widely across all the branches of textile production (company interview). This includes dying, design, apparel, wrapping and distribution. Specialisation subcontracting became the dominant form of subcontracting in the 1990s, along with the technical deepening of production processes (CHO, 1997; LEE, ET AL., 2000). In 1996, 86.6% of the textile firms were reported to be involved in subcontracting relations, with 50.0% of firms carrying out only subcontracted production. These figures remained almost the same until 2004.

Due to the persisting technical production features that were relying on cheap labour, labour shortage was a recurring problem. It was partly solved, however, by the incoming of cheap (illegal) foreign workers in the 1990s (KAMIYA, 2007). Facing rising labour costs and global market competition, small enterprises began to relocate their plants to the outskirts of the city and overseas, such as to China (CHO, 1997; KIM, 1999; LEE, ET AL., 1999; KAMIYA, 2007).

Despite all these reactionary measures, as the 1990s progressed, textile firms at large
found themselves sunk into more competitive and less favourable circumstances. After forty years of path dependent evolution, what appeared was a structurally weak textile production system which specialised in the narrow low value added and low tech middle stream of the textile production process (expert interview). In other words, Daegu’s textile industry suffered with increasing pain from the absence of high value added and high-tech downstream activities. This has once again posed a structural and fundamental challenge to the restructuring of the textile industry in years to come. This challenge seemed more serious when the financial meltdown called ‘IMF Crisis’ started in 1997 in Korea (Cho, 2000a). The crisis hit also other regions in Korea, but its detrimental effects proved more far-reaching in the Daegu region because of its high concentration of the traditional labour intensive textile industry. This was reflected in a higher rate of bankrupt companies in the textile industry: in early 1997, the rate was 0.72, while the national average was 0.19 (Cho, 2000a).

4. Locking out through Renewal? The Milano Project

In December 1996, the Metropolitan Government of Daegu, the Daegu Chamber of Commerce and Industry and textile business associations jointly declared that Daegu
was in the most severe crisis in its modern period of time (expert interview). This stimulated a crisis discourse, not only within Daegu but also later on, across the whole country. After three-decades-long industrialisation, textile had degraded from a once leading export industry to a typical decaying industry and hence Daegu’s local economy was in decline. The latter is illustrated by the fact that the employment in Daegu’s textile industry decreased from 91,000 in 1981 to 82,000 in 1986 to 47,000 in 2000. The City of Daegu, led by Mayor Moon Hee-Gap, made efforts to combat the crisis by focusing on two strategies, namely, first, renewal through related variety, by upgrading the local textile businesses to high-value activities and, secondly, renewal through unrelated variety, by developing new high-value added industries, such as car manufacturing and supplying industries (PARK, 2005; expert interview). The latter strategy faced two blows. After Samsung, which entered car manufacturing in the 1990s, established a commercial vehicle plant in Daegu, there were big expectations that it would also build its new consumer vehicle plant in Daegu, but the city lost a battle with Busan in which this plant was established. The second blow was related to the ambitious plans to build the large Wicheon Industrial Complex to facilitate the location of car supplying and electronics companies, which was strongly delayed due to political battles with Busan about environmental issues (PARK, 2005). Due to these drawbacks,
Mayor Moon Hee-Gap, who initially favoured the renewal strategy through unrelated variety, was forced to give more attention to the first strategy that is upgrading the textile industry (expert interview). This strategy was partly initiated by the Daegu-based Textile Industry Association which put forward a policy proposal for the overall restructuring of the textile industry to a technologically competitive industry (METROPOLITAN GOVERNMENT OF DAEGU, 2000). Although it was rejected by the National Ministry of Industry and Resource, it led to a new discourse on ‘restructuring’ (MINISTRY OF INDUSTRY AND RESOURCE AND KOREA INDUSTRIAL TECHNOLOGY ASSESSMENT INSTITUTE, 2002). In April 1998, President Kim Dae-Jung, who came to power with regionalist full support from his home province in the South West, visited Daegu to mollify the south-easterner’s regionalist antagonism against him and officially promised (kongyak) full policy support for the revitalisation of Daegu’s declining textile industry (JUNG, 2000).

In September 1998 the promise was materialised into an ambitious large-scale project called the Milano Project which aimed at comprehensively reorganising the textile industry in Daegu (MCNAMARA, 2001). Although it was again a top-down policy reaction to the problems of the textile industry in Daegu, the Milano Project for the first
time focused on the renewal of the textile industry. As shown in Table 2, the Project consisted of 19 projects in four sectors, which required a total of 944 billion won for five years between 1999 and 2003. As of April 30th 2003, the overall rate of project implementation was 75% (METROPOLITAN GOVERNMENT OF DAEGU, 2000; SOCIAL RESEARCH CENTRE FOR DAEGU, 2003).

Table 2: Plan of the Milano Project

As indicated through its name, the Milano Project aimed at upgrading Daegu’s textile industry to a level comparable to Milano, the globally leading fashion city. The project aimed at reorganising the low value added textile industrial system, narrowly specialised in weaving and dyeing, into a globally competitive system built on high value added fashion, design and apparel (MINISTRY OF INDUSTRY AND RESOURCE AND KOREA INDUSTRIAL TECHNOLOGY ASSESSMENT INSTITUTE, 2002; McNAMARA 2002, 139). It was to be done in two ways: by upgrading the middle-stream based textiles and by the promotion of down-stream centred textiles (intermediary interview). To realise the former, policy means included new product development, dyeing and design
development, textile information provision, development of new textile materials and
dyeing technologies, while to realise the latter, policy means aimed at the establishment
of a fashion-apparel valley, a fashion design development centre, a fashion information
centre, a dressmaking technology centre, a fashion design venture incubator and a
convention centre. In general, the Milano Project’s core measures focused on the
improvement of knowledge, information, design and technology in textiles. Hence, the
project’s generated opportunities and benefits were more skewed to research and
development activities than to direct production at the shop-floor (company interview).

In the course of its implementation, the Milano Project triggered off a dynamic process
of locking out of the existing networks of weaving and dyeing production, as well as the
establishment of new networks of apparel, fashion and design. At the same time parts of
the existing networks proved to be locked in as they opposed the proposed changes
(intermediary interview). Lock-in appears as problematic only after it hampers renewal
of the existing production system. The Milano Project turned into a battle field in which
lock-in conflicted with lock-out forces (JUNG, 2000). The focus of conflict was on the
locus of the industrial core.
The existing networks of Daegu’s middle-stream textile industry, on the one hand, consist of production and trading firms subcontracting to each other and local textile industry associations. The new networks of down-stream textiles, on the other hand, were not only supposed to consist of producers, but also of researchers, designers, government officials and traders. Their networks should extend into a broader spectrum of organisations, such as universities, research centres, specialist agents, banks, chambers of commerce and design centres. They were supposed to function as an innovative cluster in which participants learned from each other by exchanging information and knowledge (KTDI, 2002; SOCIAL RESEARCH CENTRE FOR DAEGU, 2003; LEE, ET AL., 1999, 2000; MINISTRY OF INDUSTRY AND RESOURCE AND KOREA INDUSTRIAL TECHNOLOGY ASSESSMENT, 2002). The old policy networks supporting the textile industry in Daegu were predominantly created and led by the central government, but the new networks were shaped and functioned through participation of various local public and private agents. Among the local agents, the Metropolitan Government of Daegu played the most important role by leading all levels of interest relations associated with the project. This is largely due to the local autonomy system which was brought back in from early 1990s.
Due to these differences, resistance to and conflict around the restructuring project were widely witnessed in the process of project implementation. At the beginning, conflicts occurred around the definition of the project (SOHN, 1999): main lines of conflict could be observed between the central government and the Metropolitan Government of Daegu, between the city mayor and the leaders of the local textile industry associations, between the leaders of production lines and representatives of research and development institutes and between fabric producers and designers. As the central government decided to transfer much power to the consortium in which all stakeholders participated, conflict shifted to two groups of business leaders, one representing the textile and dyer associations and the other representing research and development institutes. Later on, the former group decided to withdraw from the project by asserting ill-representation of their interests. The latter group became a major stakeholder in the project with support from the Metropolitan Government of Daegu, especially from Mayor Moon Hee-Gap. Excluded from the project were leaders of the industry associations representing large textile firms, petty subcontracting producers, labourers, mostly those involved in direct production lines in the up and middle streams of textile industry.

Cotton and silk fabric producers, textile manufacturers and their representative
organisations such as the textile industry associations had vested interests in the existing production system. They were therefore very much reluctant to the idea of the project that emphasised the shift towards the down-stream (expert interview). They argued that Daegu’s textile should sharpen its competitive edge on the basis of traditional middle-stream industries, such as weaving and dyeing, for which technology, know-how and marketing were believed to be the most advanced in the world. This view was not reflected in the project, which was formulated from above, and remained a standpoint against the mainstream approach of the project.

However, as it was implemented, the project encountered growing difficulties in acquiring local inputs, such as skilled manpower, sophisticated skills and knowledge, information, necessary for shaping the down-stream industrial networks. These inputs are strongly related to the local culture which could not be easily transformed through policy mechanisms. In Korea these inputs are available in the culturally dynamic regional economy of Seoul. During the last two decades, Daegu’s design and trade associated components in textiles were relocated to Seoul through the free market mechanism. Daegu consequently specialised in middle-stream textiles. The Milano Project was designed to overcome this circumstance, but proved to be incapable of
achieving this goal (expert interview). This was largely because the project focused on establishing hard-wares, such as research institutes, which could not be used by direct producers: in fact, the utilisation rate of equipment provided by the project remained below 30% by 2003. In other words, the new technology, know-how and equipment the project generated, were not very helpful in solving the difficulties that low-tech middle-stream textile producers faced (intermediary interview).

The problems around the shift of Daegu’s textile industry into innovative and competitive activities, such as fashion and design were also caused by the local political and ideological culture (SOCIAL RESEARCH CENTRE FOR DAEGU, 2003). In Korea’s local politics, Daegu is regarded as one of the most conservative cities (expert interview). The Daegu region is the home area of no fewer than three former presidents, Park Chung Hee, Chun Doo-hwan and Roh Tae-woo, who were consecutively in power during three decades (1960s, 1970s and 1980s) and used to be supported by a strong pro-government regional ethos. Since then local conservatism became a key feature of the Daegu local culture (Park, 2005). In addition, a large number of leading businessmen (especially owners of conglomerate business groups) in Korea made their business start-up in Daegu and then moved their bases to Seoul by maintaining a close link with their home
town (Jung, 2000). By taking advantage of their privileged connection to political leaders from the Daegu region, these businessmen could expand their business rapidly and establish their leadership firmly in Korea’s business community. Due to these privileged networks Daegu’s relatively conservative local entrepreneurial culture reflects elitist culture characteristics of the centre, Seoul. Related to this, a political dependency culture emerged, seeking direct help from the central government, rather than finding endogenous solutions (expert interview).

These cultural attributes specific to Daegu played a role during the Milano Project. The project itself was a paternalistic policy intervention of the central government in order to mitigate the negative effect of political regionalism. Central government intervention into Daegu’s textile industry was a persistent phenomenon since it became an important sector for Korea’s state-initiated industrialisation. However, top-down interventions were invariably geared to a formalistic and hardware-oriented reorganisation of the textile industry by setting quantitative targets such as the upgrading of automation rates and the establishment of organisations. This way of policy intervention did not help solving the problems that producers and technicians encountered in carrying out their daily business (company interview). Moreover, it encouraged local people to rely on
external solutions whenever problems emerged. This was repeated during the Milano Project. For instance, whenever they came across issues, such as the designation of the sectors to allocate budget resources to, major stakeholders in the project, such as local business associations, preferred to contact the central government directly, rather than to try to find solutions through consultation with local authorities and stakeholders (expert interview). This caused deep conflicts between the Mayor of Daegu and the leaders of business associations about the way of operating the project.

5. Lock-in vs. Lock-out Networks

The implementation of the Milano Project has thus been hampered by the emerged battle field between the networks which are locked in the existing production arrangement and the networks which are suppose to lock the regional economy out of the existing arrangement. Daegu’s textile industry revealed robust resistance to renewal as is proposed by the Milano Project, showing that it is too deeply entrapped in an adjustment kind of techno-industrial structure. This results from a path dependence that has locked Daegu’s textile industry functionally, politically and cognitively into a sticky specialisation in middle-stream textile.
As for the *functional lock-in*, its main causes or features are linked to the rigid or sticky structure of the textile industry. This structure consists of a large number of small-scale vertically as well as horizontally interrelated producers around a handful of large supplier firms of ‘raw fibres’ and a number of large textile companies with market outlets (METROPOLITAN GOVERNMENT OF DAEGU, 2003). Functionally, the networks are geared to producing, weaving and dyeing chemical fibres, typically constituting a middle-stream segment in the textile industry. This means that Daegu’s textile production system is based on hierarchical cost-cutting and subcontracting networks, which driving force is the sustained demand on foreign markets: 80% of total textile products in Daegu are exported, with 91.4% of them through OEM (METROPOLITAN GOVERNMENT OF DAEGU, 2003).

Much of the high-valued added part of the textile value chain, such as apparel, design, fashion and trade, however, has been displaced or integrated into extra-local networks in Seoul, with Daegu’s textile industry falling into a trap of low value added production (expert interview). This interregional division of labour in the textile industry has been reinforced by a spatially uneven logic of the market-led economy in Korea. In fact,
Daegu’s textiles have been subject to regular adjustment remedies, with an adverse effect on reinforcing an adjustment kind of specialisation of middle-stream production. With the Milano project on, the central government has embarked on getting rid of the legacy of the previous adjustments, by creating new down-stream networks, which are absent in Daegu’s industrial landscape (renewal) (MINISTRY OF INDUSTRY AND RESOURCE AND KOREA INDUSTRIAL TECHNOLOGY ASSESSMENT INSTITUTE, 2002). Yet, again it turns out that it could not overcome the market forces which prevent Daegu’s textile networks from extending into a high technological segment. Interestingly enough, even though it has lost technological edges, Daegu’s textile industry can remain relatively lucrative thanks to the inexhaustible market demand Korea’s ever-growing export creates (intermediary interview). The local networks of Daegu’s textile industry become further locked into specialisation of low-cost middle-stream production through interplay between local and extra-local techno-industrial conditions.

The political lock-in contributes to the emergence of institutional sclerosis or a local conservative culture of industrial relations in Daegu. Ironically, this negative path-dependence at a political-institutional level has been aggravated by exogenously supported rationalisation processes, which facilitated labour cost reduction and mass
production. The central government’s intervention into Daegu’s textile industry has been persistent since the early 1960s, aiming at securing its contribution to Korea’s export-oriented industrialisation. Also in the case of the Milano project most financial support comes from the central government or its associated agents. Even though the Metropolitan Government of Daegu has considerably improved its role in intervening into the restructuring of the textile industry (McNamara 2001), local stakeholders in the Milano Project still tend to lean to the central government for critical support. This results in a local clientelism that weakens local entrepreneurs’ vitality and creativity for the endogenous restructuring of the textile industry (McNamara 2002).

Daegu has a thick local institutional tissue related to the textile industry, which includes the Metropolitan Government of Daegu, the Chamber of Commerce and Industry, local banks, the Textile Development Institute, trade unions, universities, business associations and production-line-based interest groups (intermediary interview). These local agents build Daegu-specific extra-firm networks for information-sharing, subcontracting arrangements, policy lobby and joint ventures, all geared to deepening specialisation in weaving and dyeing industries. Among these, organisations such as the textile producers association, cotton fabric producer associations and dyer associations,
are not only the most important players, but also the holders of vested interests in sustaining the local networks of textile production. However, they were not included as a major stakeholder in the Milano Project, which was headed by representatives of major research institutes. This leadership came into being through an agreement between the Ministry of Trade and Resources, the Metropolitan Government of Daegu and local textile associations. In the consensus-building processes of the project, however, the representatives of the direct production lines, such as the textile producer associations, the cotton fabric producer associations and the dyer association, did not support the prioritising of the extension of the down-stream segment (design, fashion, apparel, trade etc.) of the textile industry. They therefore had strong disputes with the Metropolitan government of Daegu, particularly with Major Moon Hee-Gap, about the allocation of financial resources (expert interview). They even decided to withdraw from the Project. It was thus impossible for the representatives of the existing and the new networks to co-operate within the democratic framework of the Milano project. This case shows that Korea’s local autonomy system is not yet much favourable to local governance forms in which local players and actors, both public and private, pursue jointly devised local economic development projects (CHO 2000b).
Concerning the *cognitive lock-in*, local clientelism gives rise to passive and captive behaviour of local entrepreneurs to exogenously imposed conditions for textile production. Enjoying export demand and policy protection, local textile producers, largely small and medium-sized enterprises, stick to their vested interests to avoid risk-taking ventures (expert interview). This commonly shared vision has led to local mercantilistic entrepreneurship among second-generation local entrepreneurs. They tend to seek rents from subcontracting, land speculation and factory leasing rather than to generate profits from high-value added production (*Jung*, 2000). They are not interested in improving their learning capability and act merely as a self-sustaining coalition that resists a progressive reshuffling of the existing industrial structure, which might incur heavy cost on them. Due to this mercantilistic entrepreneurship, the existing industrial networks of middle-stream textiles are clearly cognitively locked in.

The lack of a progressive entrepreneurial ethos, however, cannot solely be ascribed to the individual textile producers. More importantly, it has something to do with the harsh business culture of the local production of middle stream textile. As textile businesses are specialised in the low-cost mass production of cheap textile export, excessive competition over mass-produced exportable textiles leads to highly uncertain
profitability. This situation worsened due to the rapid rise in labour costs since the late 1980s and the deepening territorial division of textile production, in which Daegu’s textile industry specialised into the production of low value added textiles, which are most sensitive to price competition in global markets. For the local producers, textile increasingly became a speculative business rather than a business worthy of technological innovation and active investment. Although the Milano Project could have created new breakthrough chances for them to return to a far-sighted productive business, it did not open such chances, partly due to the above-described lock-ins, of which the causes are summarised in Table 3.

Table 3: Causes of Lock-ins in Daegu’s Textile Industry

In Daegu, the features of the existing lock-ins only became clear after lock-out networks were established through renewal attempts (the Milano Project). The contrasting aims of the lock-in and the newly established lock-out networks appeared most clearly in conflicts around the Milano Project, in which the stakeholders locked in the existing production arrangement, resisted the upwards restructuring of the networks. So the lock-
in phenomenon only becomes problematic if the old networks of activities conflict with the new networks to be placed. Table 4 summarises the differences between the lock-in and lock-out networks of the textile industry. In our view, lock-ins and lock-outs are dynamically interrelated to each other and so policy should not discriminate the lock-in networks against the lock-out networks.

Table 4: Lock-in vs. Lock-out Networks in Daegu’s Textile Industry

6. Conclusions

By examining the case of the textile industry in Daegu, Korea, this paper has shown how the lock-in phenomenon comes into being through path-dependent industrial development. By using GRABHER’s (1993) lock-in concept, this paper has disclosed the evolutionary course in which Daegu’s textile industry has been embedded in the trap of rigid specialisation. In response to this problematic situation, an ambitious project called the Milano Project (1998-2003) was implemented, aiming at the restructuring of the
middle-stream textile industry (fabrication and dyeing) of Daegu into a high value added down-stream textile industry which comprises apparel, design and fashion as a new competitive edge. Milano, a global leading fashion and design city, is a symbolic target for the renewal attempts of the textile industry in Daegu. Yet, in the course of implementation, the Milano project encountered mounting difficulties mostly related to the industry-wise, producer-related, locality-associated attributes locked in the path-dependent evolution of the middle-stream textile industry in Daegu. In various aspects, the institutional features of production-reproduction networks of the middle-stream textile industry contrast or conflict with those of the new networks which the Milano Project intended to put into the industrial landscape of Daegu. The paper therefore illustrates the constant tension between processes of regional lock-in and locking out, an issue which has been neglected in older studies on old industrial areas and which can be related to the recent plea by MARTIN and SUNLEY (2006) for more work on path creation through related and unrelated variety, instead of just negative path dependence.

The paper revealed that locally induced lock-ins emerged as a reaction to the renewal initiatives imposed from outside, particularly from the central government. This is the reason why we need to put the understanding of lock-in in a broad context of
institutional embeddedness. In order to forecast where lock-ins could block regional renewal in the future, it is therefore of utmost importance to go beyond the narrow focus on the local and regional, from which many studies of old industrial areas have been suffering. The empirical part of this paper has shown that it is of key importance when analysing lock-ins in old industrial areas to take the institutional context at different spatial levels, i.e. local, regional, national and some cases supra-national into account.

Moreover, comparing the results of this paper with other similar papers (see HASSINK and SHIN, 2005; HASSINK, 2007; MARTIN and SUNLEY, 2006), it becomes clear that is difficult to generalise about the existence and effects of regional lock-ins. To understand why the intensity of lock-ins differs between regional settings, contingent path dependence and context specific factors need to be taken into account for each individual case. Moreover, in each individual case the role of structure and agency differ in their weight (POPP and WILSON, 2007), both as a potential source of lock-in, but also as a facilitator of lock-outs. In the case of Daegu, for instance, individual agents such as former President Kim Dae-Jung and Mayor Moon Hee-Gap, played a more important role than in the restructuring of the textile industry region of Westmünsterland in Germany (HASSINK, 2007). Structure-related factors, on the other
hand, seem to play a more important role in explaining lock-ins in areas with strong concentrations of heavy industries. In comparison with previous work our research results, therefore, support Martin and Sunley’s (2006, 414) observation that “we need to understand regional ‘lock-in’ as a multiscaled process, and one which also has a high degree of place-dependence, rather than as a universal principle that applies everywhere and anywhere and that is inexorable in its emergence and consequences”. Our paper makes clear that the role of agency and structure is place-dependent not only in relation to the emergence of lock-ins, but also as an enabler of lock-outs, an issue not addressed enough in the literature on the restructuring of old industrial areas.

Finally, to what extent is evolutionary economic geography useful in the Asian context? Given its strong emphasis on contingent path dependence and context specific factors, it does not run the risk of being too much grounded in experiences in Western countries, as is the case with older theoretical concepts. Yeung and Lin (2003), for instance, stated that “although these [older] theoretical perspectives on spatial divisions of labor generated much heated and exciting debates in subsequent studies of industrial restructuring and specific localities, most of these studies remained grounded in the industrial landscapes of the Anglo-American countries” (see also Yeung, 2007).
Moreover, evolutionary economic geography clearly is a good alternative to late industrialisation theories at the macro scale, as they do not have much to offer analysing and explaining sub-national regional restructuring issues. In this context, there is more international comparative research needed in the future to find out whether there are fundamental differences between regional restructuring processes in late industrialisation and early industrialisation countries. Speculatively, one might expect faster and more flexible restructuring strategies in late industrialisation countries, as their development is more based on learning than in early industrialisation countries. On the other hand, however, democratisation, devolution and other decentralisation tendencies in East Asian late industrialising countries might lead to stronger tensions between lock-in and locking out forces at the regional level in the future.

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Figure 1: Map of the location of the Daegu region in South Korea
Figure 2: Breaking and creating organisational paths: alternative routes in face of path
dependence.

Source: Sydow et al. 2005, p. 32

Table 1: Shares of Textile in Daegu's Manufacturing (2002)
<table>
<thead>
<tr>
<th></th>
<th>Establishment</th>
<th>employment</th>
<th>Production</th>
<th>Export(million US dollar)</th>
<th>value added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total manufacturing (a)</td>
<td>6,775</td>
<td>127,742</td>
<td>15,088</td>
<td>2,432</td>
<td>6,076</td>
</tr>
<tr>
<td>textile (b)</td>
<td>2,118</td>
<td>44,270</td>
<td>5,224</td>
<td>1,319</td>
<td>1,880</td>
</tr>
<tr>
<td>b/a (%)</td>
<td>31.3</td>
<td>34.7</td>
<td>34.6</td>
<td>54.2</td>
<td>30.9</td>
</tr>
</tbody>
</table>

Note: 1) Won is the unit of Korean currency (1 US dollar = 920 won).


Table 2: Plan of the Milano Project
<table>
<thead>
<tr>
<th>Projects</th>
<th>budget (billion won)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. for high quality and high value-added textile products</td>
<td>119.5</td>
<td>12.7</td>
</tr>
<tr>
<td>- setup of new product development centre</td>
<td>27.0</td>
<td></td>
</tr>
<tr>
<td>- setup of dyeing and design development centre</td>
<td>27.0</td>
<td></td>
</tr>
<tr>
<td>- setup of textile information centre</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>- setup of knit test-product laboratory</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>- projects for Textile Development Institute</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>- projects for Dyeing Technology Institute</td>
<td>21.5</td>
<td></td>
</tr>
<tr>
<td>2. for promotion of fashion industry</td>
<td>336.8</td>
<td>35.7</td>
</tr>
<tr>
<td>- fashion apparel valley programs</td>
<td>300.7</td>
<td></td>
</tr>
<tr>
<td>- setup of fashion design development centre</td>
<td>20.3</td>
<td></td>
</tr>
<tr>
<td>- setup of fashion information centre</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>- setup of dressmaking technology centre</td>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>- setup of fashion design venture incubator</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Amount</td>
<td>Percentage</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>3. for infrastructure of textile industry</td>
<td>210.7</td>
<td>22.3</td>
</tr>
<tr>
<td>- setup of Daegu display convention centre</td>
<td>174.0</td>
<td></td>
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<tr>
<td>- expansion of Fashion Design College</td>
<td>36.7</td>
<td></td>
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<tr>
<td>4. for management stabilisation and service systems</td>
<td>227.0</td>
<td>29.3</td>
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<tr>
<td>- textile material development</td>
<td>40.0</td>
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<tr>
<td>- dye-processing technology development</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td>- productivity promotion fund</td>
<td>79.0</td>
<td></td>
</tr>
<tr>
<td>- co-operation of weaving businesses</td>
<td>50.0</td>
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</tr>
<tr>
<td>Total</td>
<td>943.9</td>
<td>100.0</td>
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Table 3: Causes of Lock-ins in Daegu’s Textile Industry
<table>
<thead>
<tr>
<th>type</th>
<th>causes</th>
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</thead>
<tbody>
<tr>
<td>Functional</td>
<td>• sticky specialisation in weaving and chemical textiles</td>
</tr>
<tr>
<td></td>
<td>• cost-reducing, hierarchical inter-firm networks</td>
</tr>
<tr>
<td></td>
<td>• small-scale but mass production system</td>
</tr>
<tr>
<td></td>
<td>• dependence on export demand and vulnerability to to global fluctuations</td>
</tr>
<tr>
<td></td>
<td>• displacement (or dependence) of apparel, design, trade into (or on) Seoul</td>
</tr>
<tr>
<td>Political</td>
<td>• persisting state intervention</td>
</tr>
<tr>
<td></td>
<td>• from-above/exogenous restructuring</td>
</tr>
<tr>
<td></td>
<td>• weak role of local government</td>
</tr>
<tr>
<td></td>
<td>• lack of local corporatism</td>
</tr>
<tr>
<td>Cognitive</td>
<td>• mercantilist entrepreneurship</td>
</tr>
<tr>
<td></td>
<td>• reluctance to innovation, poor learning capability</td>
</tr>
</tbody>
</table>
• depletion of the venturous 1st generation culture

• conservative culture

• Seoul-oriented elitism

Table 4: Lock-in vs. Lock-out Networks in Daegu’s Textile Industry
<table>
<thead>
<tr>
<th>type/areas</th>
<th>lock-in (old) networks</th>
<th>lock-out (new) networks</th>
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**<functional>**

<table>
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<tr>
<th>production process</th>
<th>middle-stream</th>
<th>down-stream</th>
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<tbody>
<tr>
<td>production focus</td>
<td>weaving, dyeing</td>
<td>apparel, fashion, design</td>
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<tr>
<td>relationship</td>
<td>large-small firm relations</td>
<td>researcher-producer-trader relations</td>
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<tr>
<td>value chain</td>
<td>manufacturing</td>
<td>technological innovation</td>
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<table>
<thead>
<tr>
<th>relational function</th>
<th>corporate linkage</th>
<th>innovation cluster</th>
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<tbody>
<tr>
<td>relational form</td>
<td>subcontracting</td>
<td>learning &amp; knowledge exchange</td>
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**<political>**

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<thead>
<tr>
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<th>central government</th>
<th>local government</th>
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</thead>
<tbody>
<tr>
<td>interest groups</td>
<td>business associations</td>
<td>institutions (f.e. universities)</td>
</tr>
<tr>
<td>policy network</td>
<td>public sector led</td>
<td>public-private partnership</td>
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**<cognitive>**

<table>
<thead>
<tr>
<th>entrepreneur</th>
<th>1st generation</th>
<th>2nd generation</th>
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67
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<th>ideology</th>
<th>conservative</th>
<th>reformist</th>
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<td>scope</td>
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<td>translocal</td>
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