



## **Compressed Development in East Asia**

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*This paper is dedicated to the memory of Seishi Kimura*

**Abstract:**

In this paper we argue that the path of economic development for would-be developers has changed fundamentally since the 1980s. Focusing on East Asia, we contend that the path followed by ‘late developers’ has shifted to one that can best be described as ‘compressed development.’ We introduce the notion of compressed development to highlight the new policy dilemmas and choices that developing countries face today, which we characterize as ‘policy stretch.’ In doing do, we hope to move debates beyond late development defensiveness on the one hand, and glib globalization on the other, through the use of a broad, interdisciplinary and exploratory framework. As in the late development model, compressed development is an ideal type informed by empirical trends. There are special circumstances in the path of any would-be developer; the test of the model’s usefulness nonetheless will be tested in its application to countries like China, Vietnam and India.

**Keywords:** compressed development, late development, global value chains, human and social development, policy stretch

**JEL codes:** H50, L22, O14, O15, O53, P51

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### **Introduction**

In the countries that are emblematic of compressed development, it is not unusual to see donkeys pulling carts in front of gleaming skyscrapers, themselves shading crumbling apartment buildings only twenty years old. In their factories, primitive machine tools are at work in one room and advanced computer controlled machining centres in another. In their clinics doctors treat patients for communicative diseases or malnutrition one minute, and obesity the next. These juxtapositions and paradoxes can be symbols of yawning wealth differentials as much as compressed development, of course, but in the latter case they are constantly shifting and transitory. Indeed the simultaneity of development indicators in today's successful developers signals something unprecedented in human history, something that stretches policy instruments into new shapes and combinations. The new features of development, we contend, require new theoretical explanation and empirical exploration, and the notion of compression provides us with a useful conceptual starting point for this task.

Time compression is a key feature of compressed development. Development which unfolded over the span of a century and a half in the UK, and fifty years in Japan, has been compressed into ever shorter time frames in more recent developers. For a visitor from Japan, the primitive factory equipment being used in some Chinese factories today may spark nostalgia for the early years of Japan's high growth era, while a visitor from the UK will have only seen them in a museum, if at all. Both, however, will have seen the advanced machining centres before, since they are identical to those used in their own countries.

Juxtaposed images and technological shortcuts are only the more visible parts of broader changes. Less visibly, the social relations and values commonly associated with agricultural or early industrial societies – a high value placed on male children, for instance – can overlap with late or post-industrial emphases on equality and higher education opportunities for women, exacerbating gender tensions and accelerating the trends towards later marriage, declining childbirth rates and societal ageing that typically come with economic development.

While these tensions are common, and powerful, little academic attention has been directed to the phenomenon of compression. To be sure, studies of late development have noted the accelerated pace of change in East Asian industrializers, but the concepts

of staged, sequential, orderly development processes have remained largely unchallenged. It is not only that in the scramble for development some attitudes and institutions inevitably change faster than others, creating disjunctures and paradoxes, however. If the sequencing of development stages is shortened sufficiently, the practices and institutions of earlier stages may begin to interact directly with those of later stages instead of being superseded or gradually transformed. Institutions normally associated with later stages of development might even be established before those of earlier stages. Seen from this perspective – and conceived as an ideal type – compression leads us toward a new model of development.

Our task in this paper is to provide a framework for understanding how the prospects of post-1980s economic development have been, and will continue to be, different from the processes of late development. There is nothing mysterious about the drivers of compression. They include the accelerated development of new technology, especially but not solely information and communications technology (ICT); new business models featuring specialization and modularity, reversing the twentieth century trend towards vertical integration; functional integration of cross-border business activities through global value chains, financial liberalization and global capital flows; mobility of people across borders, both short term and long term; and the hegemonic influence – and propagation – of liberal market economy concepts.

These have, of course, been widely discussed in the framework of ‘globalization,’ which has no shortage of critics in the area of development.<sup>1</sup> One criticism has been the assumption that now-developed countries (NDCs) represent the future of less-developed countries (LDCs). Our perspective puts the spotlight on the distinctive dilemmas faced by the latter, even if they try to engage with or imitate the former. We believe that a focus on compression, and the novel features of development it creates, can provide new insights into the developmental challenges and experiences of the 21<sup>st</sup> Century.

The paper is structured as follows. In the first section we review the late development perspective, and its application to the high growth economies of East Asia, including the challenges – practical and ideological – posed by the Asian financial crisis of 1997. We then proceed with a discussion of compression of stages of development, as well as ‘simultaneous’ industrialization and de-industrialization. In section three we consider new paths of development through participation in global value chains (GVCs), presenting Taiwan as a transitional case from late to compressed development, and more recently mainland China as a case of ‘pure’ compressed development. Participation in GVCs intensifies compression, and offers distinctive challenges as well as opportunities. In the fourth section we broaden our focus to include the implications of compressed

development for human and social development, looking at health, education and gender relations. We then consider how policy is ‘stretched’ with compressed development, and how this necessitates a changed role for the state in compressed developers. The overall result is likely to be greater unevenness, disjointedness and inequality compared with early and late developers, which experienced full industrialization. Our concluding comments suggest areas of further research using this framework.

## 1) Late development and late-late development

It has long been argued that late developers can, and should, develop differently from the first industrializers. List’s (1873 [1983]) claim that Germany should develop differently from Britain, and should promote its nascent industries, drew on similar, earlier arguments by Hamilton and others in the US (cf. Chang, 2002). Such views were systematized by Gerschenkron who, in his famous essay *Economic Backwardness in Historical Perspective*, wrote:

‘(I)n a number of important historical instances industrialization processes, when launched at length in a backward country, showed considerable differences, as compared with more advanced countries, not only with regard to the speed of the development (the rate of industrial growth) but also with regard to the productive and organizational structures of industry which emerged from those processes. Furthermore, these differences in the speed and character of industrial development were to a considerable extent the result of application of institutional instruments for which there was little or no counterpart in an established industrial country’ (Gerschenkron, 1962: 7).

Essentially Gerschenkron argues that the later a country develops, the more it will have strong institutional involvement in economic development, and larger industrial firms in the process of industrialization, for two reasons. First, late developers have witnessed the development of the early industrializers, and know what to emulate and what to avoid, but taking shortcuts (meaning emulating good experience and avoiding mistakes) requires the organizing power of institutions. Furthermore, backward countries or late developers lack capital, so it is rational for them to concentrate limited capital in areas that have proved to be vital to early developers.

These tasks – catching up by taking shortcuts and concentration of capital – require

centralized institutional and productive capacity for coordination and enforcement. Gerschenkron showed that as a late developer, Germany in late 19<sup>th</sup> century developed by using banks and large industrial firms as coordinators and promoters for rapid industrial growth. When Russia began to develop later, the government took the role of direct involvement in economic development.

That this path will be taken, however, is far from certain. Hirschman (1971) found a different pattern of development in Latin America, which he called 'late late industrialization.' Instead of concentrating on producer goods, building large industrial plants, and suppressing consumption of the general population, Latin American late-late developers prioritized consumer goods, started with relatively small plants, and paid special attention to boosting consumption. Even the institutions designed to supply capital and entrepreneurial guidance became important only after the import-substituting industrialization process 'had already been underway as a result of private, decentralized initiative for a considerable time' (ibid, p.95).

The most important reason for these differences, according to Hirschman, is 'the fact that it has become possible for industrialization to penetrate into Latin America and elsewhere among the late latecomers without requiring the fundamental social and political changes which it wrought among the pioneer industrial countries and also among the earlier group of latecomers' (ibid, p.123). This made the late late industrialization route attractive, but at a long-term cost of developing a weak industrial base.

In turn, the rise of Northeast Asia – Japan, South Korea, Taiwan – from the 1970s rekindled interest in Gerschenkron's view.<sup>2</sup> Amsden (1989: 8), for instance, argued that the same set of factors explain the progress and delays in late industrialization in both Europe and Northeast Asia: 'The institutions of late industrialization that underscore its success, and whose absence is responsible for delay, are the following: an interventionist state, salaried managers, and an abundant supply of low-cost, well-educated labour.'

Many studies of Northeast Asian development have concentrated on the key institutions of capital supply – the developmental state and its dominant relationship with banks and business. The concept of the capitalist development state was most powerfully formulated by Johnson (1982), and further developed by Wade (1990), Evans (1995) and others, who argued that the Northeast Asian economic success in the cold war period was created by developmental states in Japan, South Korea and Taiwan, which all had strong and consistent commitments to industrialization, formed cooperative government-business relationships, and pushed forward economic development by using selective industrial policies.

The 1997 Asian financial crisis posed a strong challenge to the developmental state argument. The same type of state that had received credit for economic success was now held responsible for causing financial disaster (e.g. Moon and Rhyu, 2000). While some scholars like Weiss (2000; 2003) have continued to defend the role of the developmental state, others including Amsden (2003) have focused on firm-level innovations and technological progress. The latter perspective had been recognized by scholars like Dore (1973), but had been overshadowed by the developmental state thesis. In this view attention is now placed on large firms and business groups, and their twist to the Chandleran thesis of growth through diversification into *unrelated* industries (cf. Amsden and Hikino, 1994).

A different target of criticism in the wake of the Asian financial crisis was the NDCs and their multilateral trade and development institutions of the ‘Washington Consensus’ (including the World Trade Organization, International Monetary Fund and others), for their attempts to ‘kick away’ the ladder of development they themselves used, and insist that would-be developers create institutions they now deem economically, politically or socially desirable (Chang, 2002a). List identified this manoeuvre in 1885:

‘It is a very common and clever device that when anyone has attained the summit of greatness, he kicks away the ladder by which he has climbed up, in order to deprive others of the means of climbing up after him... Any nation which by means of protective duties and restrictions on navigation has raised her manufacturing power and her navigation to such a degree of development that no other nation can sustain free competition with her, can do nothing wiser than to throw away these ladders of her greatness, to preach to other nations the benefits of free trade, and to declare in penitent tones that she has hitherto wandered in the paths of error, and has now for the first time succeeded in discovering the truth’ (cited in Chang, 2002a: 4-5).

List was, of course, referring to Britain, the original industrializer. More nations have now climbed the ladder, and they now have a number of collective instruments through which to propagate their (often recently discovered) truths, including those of the so-called ‘Washington Consensus.’ It may be debated whether their admonitions derive from willful attempts to kick away the development ladder, an inability to remember the past, or genuine fervour of a proselytizer who has discovered the truth, but the result is that it has become increasingly difficult to follow Gerschenkron’s late development path to industrial and economic development.

It is another matter, however, whether would-be developers can or would themselves want to follow the same path. To be sure, one option remains the path of



late development, or elements of it, as described above. But – in a new twist to Hirschman’s view – it is debatable whether current governments of would-be developers would seriously seek to suppress domestic consumption in order to raise capital for industrialization when there are other, tempting alternatives from abroad, as well as pressures to follow them.

## **2) Compression of stages of development, and simultaneous industrialization and de-industrialization**

Development theory has, by and large, rested on the concept of developmental stages. Rostow’s (1960) formulation, posed as a counter to Marxist stage theory, was particularly influential (and contentious). Rostow saw economic growth as progressing through five stages: traditional, transitional, take-off, drive to maturity, and high mass consumption. Industrialization has been seen as a key driver and indicator of development, and industrialization itself has been seen as progressing through orderly stages: ‘A developing country, in an open economy context, industrializes and goes through industrial upgrading, step by step, by capitalizing on the learning opportunities made available through its external relation with the more advanced world’ (UNCTAD, 1995: 259, cited in Nam, 2002).

In the case of East Asia, stage theory has taken a particular form, known as the ‘flying geese’ model. Akamatsu created this model in the 1930s to explain Japan’s economic development, which moved from importation of foreign goods, to the production of those goods (with either local or foreign capital), to exporting them in the third stage. Within each stage there was industrial development and diversification:

First, for all industrial goods there exists a sequential order, from import to domestic production and further to export. Secondly, the time for the curves of domestic production and export to go beyond that of import will come earlier in crude goods and later in refined goods, and similarly, earlier in consumer goods, and later in capital goods. Thirdly, the import curve falls in proportion to the rise of the domestic production curve, and it is probable that the export curve will sooner or later begin to fall with respect to crude or consumer goods and the domestic production curve of these goods will also decline in the future (Akamatsu, 1961; cited in Kasahara, 2004: 4).

This model was subsequently extended to explain regional economic development in East Asia, with declining industries in leading geese, particularly Japan, developed

sequentially by following geese. Indeed, this became the official Japanese government view in the late 1980s, influencing Japan's international relations. Japan capitalized on the rise of its declining industries in other East Asian countries by exporting capital goods and licensing technology to them.<sup>3</sup>

What is the continued relevance of stage theory? The concept of compression is inherent in the notion of late development, but when does the speed of development become such that it blurs the stages, or even undermines the notion of sequential stages itself? This blurring has been recognized by scholars such as Nam (2002: 5), who argues that 'sharp separation among the three developmental stages [labour intensive, capital intensive, high tech] is weakening as these stages now overlap.'

The concept of blurring or compression of stages of industrialization can be extended to the process of *de*-industrialization. De-industrialization happens when manufacturing's share of employment begins to decrease, with the surplus absorbed in services. Britain, pioneer of industrialization in the 18<sup>th</sup> and 19<sup>th</sup> centuries, began to de-industrialize in the 1960s (Singh, 1977; Cairncross, 1979). When other countries followed, it became clear this was not simply a British malaise, and indeed that it was not necessarily a malaise at all. Rowthorn and Wells (1987) described 'positive' and 'negative' forms of de-industrialization, a position refined in subsequent research.

Rowthorn and Coutts (2004) suggest that the de-industrialization is no longer restricted to early industrializers, but now includes recent industrializers such as Korea and Taiwan as well, which began to industrialize rapidly in the 1960s, and within three decades were well on their way down the de-industrialization curve.<sup>4</sup> In fact, it appears that the turning point of the inverted U (representing changing share of employment in manufacturing with per capita GDP growth) is happening at lower and lower levels of GDP, and additionally that the inverted U has become shallower (Palma, 2005). As Dasgupta and Singh (2006: 5) note: 'In the past this historical turning point occurred at a per capita of almost US\$10,000 in current prices; it is now being estimated to take place at levels of income as low as US\$3000 in some countries.' Early de-industrialization is not *per se* problematic, they argue, as a number of services industries, including ICT, may in fact drive productivity increases throughout the economy. Their positive examples, however, are taken from Asia, as opposed to less benign de-industrialization in Latin America and much of Africa. Palma also identifies less de-industrialization in the former and more in the latter than might be expected.<sup>5</sup>

Aggregate statistics mask even more dramatic changes at the level of industries and firms. In specific industries, especially those linked to global value chains in electronics, apparel, and consumer goods such as toys and household products, industrialization and de-industrialization have occurred virtually *simultaneously*. In

practice, workers come into factories from farms through the front door, while others leave for the service sector through the back.<sup>6</sup> In China, acceleration has been driven to the point of simultaneity by the sudden appearance of volume factories, often paid for and operated by foreign investors, while much of the domestic economy is still in an earlier stage of development. National aggregations also tend to mask the fact that rural regions might be industrializing while urban areas are de-industrializing.

Given compression of developmental stages, and simultaneous industrialization and de-industrialization, we can expect a complex picture regarding social relations and value orientations. Much sociological effort has been expended in analyzing how some patterns are conducive to industrialization, or conversely, how industrialization changes these, in a shift from collective, status or tradition-defined, community-oriented patterns of social organization to more individualistic, association or contract-oriented patterns.

Japan was an early challenge to theories developed in Europe and the United States. Dore (1958; 1973) contended that Japan had skipped a stage of early, individualistic industrialization and moved directly into its large-scale, capital intensive stage by virtue of adapting its community-oriented social relations, rather than abandoning them. In what became known as the 'reverse convergence' thesis, he argued that British social relations remained stuck in its earlier, atomistic stage of social development, impeding its transition, and if either of the two had to change its social relations, it was Britain, not Japan.

Some scholars, in turn, have tried to describe and measure changes from industrial to 'post-industrial' society, and it might be argued that the social relations of successful late developers like Japan in turn inhibit this transition. With compression of stages, however, it becomes unclear just what social relations and value orientations might be conducive to economic development. On the one hand, would-be developing countries come under intense pressure from developed countries and international bodies to introduce legislation on a broad range of issues, from universal suffrage to property rights protection to information transparency, at a much earlier stage of their development (measured in per capita GDP) than early developers, as Chang (2002a) shows. Some aspects, or pockets, of social relations in compressed developers might in fact appear to be 'hyper-modern' or 'post-modern.' Other pockets, on the other hand, might appear to be 'pre-modern.' In fact, what might be distinctive about the compressed developer is a juxtaposition of contrasts, a point we will return to in section four.

### 3) New paths to economic development

The thread that connects late development theory to the Washington Consensus is an assumption of tight causal relationships between the actions (or inactions) of domestic institutions and the development of national industrial capabilities. Late developers can (or should) ‘borrow’ policies, technologies, and financial and industrial models from more advanced economies, and while these might be combined and deployed in a variety of ways, there is no notion that domestic institutions and industries in late developers are anything but cohesive at the domestic level. Perhaps more than anything else, it is the disjuncture between the developmental projects of the state and the reality of industrialization on the ground, caused in large part by global value chains (GVCs), that differentiates the development paths of compressed and late developers.

In the mosaic of specialization and intermediate goods flows that make up global value chains, domestic ownership and capability development cannot easily be causally linked to domestic sources. Advanced industrial capabilities may be routinely ‘injected’ into less developed societies, though direct investment, through the acquisition of advanced machinery and software products, and as Saxenian (2005) has pointed out, through the movement of people. The result is that development in countries like China and India bears little resemblance to the ideal type laid out so carefully in the late development literature. Taiwan appears to be a transition case. Before looking at Taiwan, however, we must explain what we mean by GVCs, used here as a shorthand for a complex set of institutional, technological and co-evolutionary developments.

#### *Global value chains and the real-time integration of East and West*

As the stages of industrialization have blurred and compressed toward simultaneity, and critical rungs of the upgrading ladder used by late developers, such as infant industry protection, import substitution, and export promotion have come under strain, partly through external pressure and the rise of liberal market ideology, a new logic of industrialization has emerged, which we call global value chains (GVCs). These embody two new dynamics; geographic dispersal and cross-border functional integration, of work, firms and of entire industries. As Dean, Fung, and Wang (2007: 1) put it:

‘...production processes are sliced thinner and thinner into many stages, and the resulting production fragments are carried out in different locations. The production of a finished product thus involves the participation of many economies, with

countries specializing in different fragments of the vertical production chain. ... While the international division of labor in the global economy is nothing new, the vast scope and the intricate nature of this pattern of global production sharing seems genuinely unprecedented.'

Historically, Feenstra and Hamilton (2006) have argued that too much attention has been paid to state industrial policy in explanations of industrialization and economic development in East Asia, and not enough to markets that facilitated that industrialization. They describe how American retailers such as Sears and JC Penny gained power relative to domestic manufacturers beginning in the 1960s. This 'retail revolution' was a major contributor to de-industrialization in the United States, and a spur for export oriented late development, first as it occurred in Japan, and then later in Korea and Taiwan. Gereffi (1994, 1999) refers to increasingly powerful retailers such as Wal-Mart, and branded merchandisers, such as Liz Clairborne and Nike, as 'global buyers.' Global buyers do more than place orders, they actively help to create, shape, and coordinate the global value chains that supply their products, sometimes directly from overseas buying offices and sometimes through intermediaries, which include wide range of actors, most notably trading companies in Japan, Korea and Hong Kong, Korea.

GVCs have not only been driven by the rise of powerful retailers, however, but since the late 1980s by a broader effort among branded manufacturing firms to increase shareholder value by unloading fixed assets (like factories) and risk to suppliers – both to an emergent set of 'global suppliers' based in the United States and Europe, and to local suppliers in East Asia that could meet, or be taught to meet, the required specifications, and to adopt the right process technologies and procedures (Sturgeon and Lester, 2004). Vertical 'dis-integration' is linked to changing corporate strategies, especially the focus, or core competence movement (Prahalad and Hamel, 1990), which has driven outsourcing of activities deemed to be non-critical and unprofitable, especially volume manufacturing of cost-sensitive products. The result has been the development of interlocking structures of specialization within global value chains, where firms in the West became dependent on East Asian suppliers as sources of low cost intermediate inputs and fully assembled products, while firms in East Asia became dependant on their customers in the West for product ideas, access to Western markets, and the huge orders that helped to drive investment and industrial growth.

On one side of the coin, GVCs have been characterized by increasing fragmentation, but the other side is rapid improvements in the functional integration of these globally dispersed fragments. Of the array of new techniques, technologies, and infrastructure improvements that enable better functional integration, three of the most

important are: 1) improvements in information technology and industry-level standards (including, but not limited to the Internet) that allow the codification and easy hand-off of complex information from one stage of the chain to the next (Baldwin and Clark, 2000; Balconi, 2002); 2) flexible, computerized production machinery that allows capital-intensive manufacturing capacity to be shared and pooled in the same way that labor intensive production can be shared and pooled (Brusoni and Principe, 2001; Langlois, 2003); and, 3) sophisticated supply-chain management tools, such as ‘enterprise resource planning’ software and radio-frequency identification tags, that are pushing even labor-intensive industries up the technology curve (Abernathy et al, 1999).

Taken in combination, these techniques and technologies have introduced new levels of ‘modularity’ in global value chains (Baldwin and Clark, 2000; Takeishi and Fujimoto, 2001), but also unprecedented levels of economic interpenetration and interdependence. Information and communications technologies and the digitization of a range of business processes — from design to manufacturing to test to distribution — combined with the development of standard methods for exchanging complex information between discrete stages of production, has allowed suppliers to link to buyers in ways that do not require geographic co-location, greatly opening the field for the participation of developing countries in global value chains (Sturgeon, 2002; Gereffi *et al*, 2005).

The plants producing vast quantities of electronics, apparel, and consumer goods produced in China, for example, collect inputs locally, but also from a number of other countries in East Asia.<sup>7</sup> Some components make their way into finished goods that are exported, and some into products that are sold in domestic markets. Still others are exported to third countries, such as Mexico and the Czech Republic, where they are combined with other imported and locally produced components in the assembly of a different set of products manufactured both for regional export and for domestic consumption. As global value chains have evolved and expanded with time, foreign direct investment is no longer the sole purview of branded multinationals, but also of the contract manufacturers, component suppliers, equipment producers, and service providers that now support them worldwide.

#### *Taiwan and the end of sequential industrial upgrading*

East Asian industrializers have linked to GVCs in different ways. Japanese trading companies were some of the earliest sources of low cost consumer goods, footwear, and apparel for large retailers in the United States, but wages rose quickly in Japan, and these companies quickly became intermediaries in more complex ‘triangle manufacturing’ arrangements that brought factories in Korea, Taiwan, and Hong Kong

into global value chain fold (Gereffi, 1999). Eventually, global buyers in the West learned how to buy directly from these factories, or from local intermediaries, and while these ‘geese’ migrated, Japanese manufacturers upgraded, and supplied key components and technologies to later developers in East Asia.

As firms in Korea and Taiwan made their own moves to supply more technology intensive products, with help from the state, their paths diverged. By and large, Korean firms followed in Japan’s footsteps. The *chaebol* became large, diversified enterprises groups with a vertically integrated stance toward product development, manufacturing, and marketing. Their initial focus was on import substitution rather than exports, but they followed the late development upgrading path. Today, using their own brand names, Samsung, LG and Hyndai Motors compete on global markets for technology intensive products such as mobile phone handsets, flat panel television sets, and passenger vehicles.

In Taiwan, many manufacturers began by supplying components and sub-assemblies, rather than finished products, but they sought, and indeed were asked and in some cases forced, by global buyers and de-verticalized ‘manufacturers’ in the West, to move up the value chain. As a result they began to assist with the design process and take full responsibility for component purchasing and the organization of multi-country supply-chains in East Asia.

Firms such as Acer hoped to leverage this learning process, moving from the role of ‘original equipment’ supplier, producing to the *detailed* specifications provided by global buyers, to the role of ‘original design’ supplier, designing and producing products according to the *general* specifications set by global buyers, and finally to fully blown ‘original brand manufacturers’ selling their own brand of products in end markets. Few were successful, however, partly because doing so brought them into direct competition with their customers (small in number, and very powerful), putting future orders at risk. The fall-back was to remain within the expanding set of value chain niches that had been made available, and to increase their range of competencies in contract manufacturing and design while expanding geographically into mainland China in an effort to respond to customer demands for ongoing cost reductions. As a result, a fundamentally different business model, and path to development, separates Taiwanese firms such as Quanta and Hon Hai from their South Korean ‘national champion’ counterparts such as Samsung and LG.

Taiwan Semiconductor Manufacturing Company (TSMC), perhaps Taiwan’s most successful company, never aspired to vertical integration. The company founder, Morris Chang, earned his Ph.D. in electrical engineering from Stanford University in 1964, and had a 25-year career (1958-1983) at Texas Instruments, eventually becoming

Group Vice President responsible for worldwide semiconductor business. After returning to Taiwan to become Director of ITRI (Industrial Technology Research Institute), Chang took the CEO role in TSMC, an ITRI spin-off, in 1987. Instead of focusing on catching up, technologically, with semiconductor firms in Japan and the West, TSMC developed a new business model: providing manufacturing (or ‘foundry’) services for a burgeoning set of semiconductor design firms, such as LSI Logic, many of which were (and continue to be) located in Silicon Valley. These design-only firms had been contracting with integrated semiconductor firms, including Texas Instruments, for production when these firms had spare capacity. What was different about TSMC’s business model was the complete abandonment of the goal of vertical integration. To the consternation of his colleagues back at ITRI, Chang developed TSMC as a ‘pure-play’ foundry, focused entirely on providing manufacturing services to fabless design firms.

TSMC grew rapidly with this model, and based on its success UMC, an earlier ITRI spin-off, also entered the pure-play foundry business. UMC had been struggling in the highly competitive and process-intensive semiconductor memory market, and so was well acquainted with providing foundry services with its unused capacity. The example of TSMC allowed it to follow suit by abandoning its line of memory products and focusing entirely on the provision of foundry services. Together, TSMC and UMC now account for 60% of the world market for semiconductor foundry services. As a result, Taiwan’s semiconductor industry became embedded in cross-border networks, or global value chains, and so moved away from earlier attempts by Taiwan industrial policy to create fully blown, vertically integrated, globally competitive semiconductor firms in Taiwan through a process of sequential industrial upgrading.

Of course counter examples might be provided, such as Giant Bicycles, which began as a supplier of ‘private label’ bicycles to US retailers such as Montgomery Wards and eventually developed its own line of high quality branded products. Full success with this upgrading model, however, has been elusive. Although Acer has had some success with its own line of personal computers, especially in Europe and in the developing world, the company was ultimately forced to spin its various divisions off into legally separate companies (branded PCs, contract design/manufacturing, and semiconductors), partly because of real or apparent conflicts of interest between its contract manufacturing and in-house computer assembly businesses (cf. Sturgeon and Lester, 2004), and also a lack of deep experience with product innovation, marketing, and distribution, because of its long specialization in providing contract manufacturing and design services.

The reasons for the different paths of Korea and Taiwan are complex. They



include the more fragmented industrial structure of Taiwan noted by Feenstra and Hamilton (2006), but also the larger home market in Korea, which allowed a (protected) test market for Korean branded products, a different product mix in exports (consumer electronics and white goods from Korea and computers and peripherals from Taiwan), different capabilities in the customer base (retailers for Korean firms rather than deverticalizing manufacturing companies with in-house design capabilities for Taiwanese firms), and different state policies in regard to industry structure (the Korean state actively drove vertical and horizontal integration). Finally Korea's earlier insertion into global value chains also played a role. Global value chains began with more arms-length relationships, but gradually came to be characterized by more explicit coordination when the technology and standards to support value chain modularity were put in place. Taiwan's buyers were more circumspect about off-loading full design and product conception responsibilities to suppliers, in part because they had observed how Japanese and South Korean suppliers had overtaken their customers with their own brands in consumer electronics such as televisions, and home appliances such as microwave ovens. The differences between Korea and Taiwan, then, reflect differences in strategy, developed in a co-evolutionary manner with a set of de-verticalizing customers, not just different starting points in industrial structure.

#### *Turning global value chains on their head*

The allure of the late development model remains strong, and can be seen in mainland China's attempts to nurture a group of former state owned enterprises as national champions (or a 'national team': cf. Nolan, 2001; Sutherland, 2003). China also appears to be following the path of close engagement in GVCs, however, with new twists, and the emergence of unexpected champions. Now that specialized and highly competent suppliers exist in East Asia, why not move directly to the head of GVCs, and forgo, not branded products, but much of the sequential upgrading process itself? The discussion so far suggests that product innovation, marketing, and global supply-chain coordination are capabilities that are not easy to develop, but there are several cases in China that suggest that it might be possible to do this.

Consider the case of Lenovo, founded in 1984 as the Legend Co. in a guardhouse of the Chinese Academy of Science, with a \$25,000 grant provided by the government to encourage researchers to leave state employment and start their own business. The founders' dream was to become the Chinese IBM. Lenovo's initial product was a PC add-on card that allowed the use of Chinese characters. By the mid-1990s, the company was the leading domestic producer of personal computers in China. In 2004, 20 years after founding, the company purchased IBM's huge personal computer division,

but instead of becoming the Chinese IBM, it has been transformed into a China-based, globally operating company.

First, the purchase gave Lenovo a new headquarters and large research and development facility in the United States, an advanced notebook computer development facility in Japan, three final assembly plants in China and one in India, regional distribution facilities in the Netherlands, Dubai, Florida, Australia, and India, and an important corporate planning, finance and business process development group in Singapore. The deal also came with a dense set of ongoing supply relationships, mainly with Korean, Taiwanese and American component producers and contract manufacturers, the largest with global operations, to provide main boards, microprocessors, memory, disk drives, monitors, LCD screens, keyboards, and contract manufacturing services.<sup>8</sup>

The CEO, a former Dell Computer executive from the United States, heads up a management team with top executives from China, Singapore, Australia, and other countries. Overall, Lenovo has 23,500 employees worldwide, 18,200 in China, 2,000 in the USA, and 3,300 elsewhere. In terms of ownership, 36% of the company's shares are publicly traded, 10% are held by IBM, 10% by investment banks, 31% by the company's founders, and 11.3% by the Chinese Academy of Science.<sup>9</sup> While it would be wrong to portray Lenovo as something other than a China-based company, the structure, geography, ownership, leadership, supply-base, and sources of innovation at today's Lenovo are vastly different from the national champions that emerged under late development. It is also a remarkable case of compressed development at the corporate level.

A different, if no less remarkable case is Chery Automobile, a small state-controlled company based in Wuhu, some 20km west of Shanghai. Within a very short time frame, Chery has been able to develop and market a line of branded vehicles that, while perhaps not world class, are nevertheless suitable for both the local market and for export. The first Chery prototype was built in December 1999, and the first production car rolled out in March 2001. In 2007 the company will assemble about 400,000 units, and by the end of the year capacity will grow to 600,000 units. Chery is already China's largest vehicle exporter. In 2007 the company claims it will have exported 50,000 vehicles, a figure that is expected double in 2008, the main export markets being Egypt, Russia and Ukraine.

Vehicle design and development are a notoriously difficult set of tasks, typically the realm of companies that have been in the business for 4-5 decades. New vehicle designs require more than 30,000 engineering hours, 3-5 years to complete, and several billion dollars of up-front investment. If a firm does enter the business, it usually

comes from a field such as aircraft, where related design and engineering experience has been accumulated over a similarly long period (cf. Mitsubishi, Subaru, BMW and SAAB).

Chery has been able to launch its own line of branded vehicles in a very short time frame by tapping the new global supply-base, both within China and in the West. For styling and engineering, Chery works with Italdesign, Pininfarina and Torino in Italy. Additional engineering and development work is outsourced to Lotus Engineering and MIRA in the UK and to Porsche Engineering in Germany and Austria. It works with AVL in Austria on gasoline and diesel engines, and with Ricardo in the UK on hybrid powertrains. Heuliez in France supplies a retractable hardtop for the Chery A3 coupe cabriolet, a car designed by Pininfarina. For critical parts and subsystems, Chery sources from global suppliers such as Bosch, ZF, Johnson Controls, Luk, Valeo, TRW and Siemens VDO (*Automotive News*, 2007). These sourcing arrangements show that Chery is nothing like a typical car company, and is far removed from the most recent entrants to the mass market for cars, the vertically integrated and horizontally diversified national champions from Korea, Hyundai, Kia and Daewoo.

While acquiring global capabilities, and global operations, as Lenovo has, or tapping the new global supply base, as Chery has, allows new entrants to establish themselves quickly, companies that move to the head of global value chains sacrifice deep design and system integration expertise that allow them to compete at the vanguard of fast-moving markets. Without distinctive products, they are likely to face intense price competition and experience rapid swings in market share. Song (2007) has shown how profits in China's electronics industries have become very thin, despite massive increases in labour productivity, in what he calls a 'Chinese-style modularity trap.'

Imai and Shiu (2006) point to a similar phenomenon in the Chinese mobile handset industry in which a collection of more than forty domestic branded handset companies (including Bird) soared from a mere 5% share of the domestic market in 1999 to a 55% share of a much expanded market in 2003, but subsequently – and very suddenly – lost ground to foreign brands, notably Motorola and Nokia, as consumers began to expect handsets with colour LCDs and increased functionality, such as MP3 music playback and cameras. Firms were forced to bundle new technologies in larger, more integrated design platforms, which raised the competence required to deliver handset design services, pushing the local handset design houses, and their customers, out of the market.<sup>10</sup>

In sum, the late development path of industrialization has become more tenuous.

While new opportunities have developed through co-evolution of GVCs, which offer the prospect of rapid learning and market entry, this path is far from problem free, and in reality compressed developers will probably be tempted to pursue a mix of late development industrialization and GVC engagement. They will also pursue technology development through a rapid ramping up of investment in R&D, as witnessed by rapidly rising R&D-to-GDP ratios. A recent report by the (US) National Science Foundation notes: ‘The major development over the past decade or more has been the rapid emergence of Asian economies outside Japan as increasingly strong players in the world’s S&T system... (T)he rapidity of China’s emergence as a major S&T player is unprecedented in recent memory’ (NSF, 2007: vii). The question of how, and indeed if, these new S&T resources in China can be put to work an industrial base with deep and dynamic connections to GVCs, which have direct links to the leading edge S&T activities in advanced economies, remains unanswered.

#### **4) Human and social development**

Our discussion so far has focused on building up capabilities for production and consumption. This is, of course, a very narrow and partial view of development, even economic development. In recent years there has been an increasing recognition of the social dimension and role of social policy in development, not just as a residual category, but as a central feature.<sup>11</sup> Citing Pierson (1998), Mkandawire (2001: 15) notes that: ‘(I)mplicit in late industrialization was social policy that served not only to ensure national cohesion (as is often asserted of Bismarck’s innovative welfare legislation), but also to produce the social pacts and the human capital that facilitated industrialization.’

This recognition extends to East Asia (Chang, 2002b). Jomo (2003) identifies a ‘progressive, virtuous cycle’ of state intervention, rapid and egalitarian economic growth with social development in Korea and Taiwan (after Japan) in particular, while Goodman *et.al.* (1998) have proposed an East Asian model of ‘developmental welfare systems.’ They argue that despite relatively low state expenditure on welfare, and weak guarantees of welfare as a social right: ‘Most notable is the strategic role of states in directing a process of economic development with distributive as well as growth objectives, resulting in a relatively egalitarian pattern of income distribution compared with other industrializing regions such as Latin America (White and Goodman, 1998: 13).

Broadly similar views are expressed by Sen (1999a), who sees development as the process of expanding human freedoms and agency, and the removal of ‘unfreedoms.’

The East Asian model, in Sen's view, is characterized by: 1) an emphasis on basic education from the beginning of the development process, if not before; 2) wide dissemination of economic entitlements, through education and training, land reform and credit availability; and 3) a deliberate combination of state action and use of the market. Here human development is enabled by basic education and health care, creating social opportunities that 'make it possible for the bulk of the people to participate directly in the process of economic expansion' (Sen, 1999b: 5). Like the economic model, this model came under intense scrutiny and criticism in the wake of the Asian financial crisis for its reliance on informal practices and vulnerability to external disruptions.

In compressed development, too, the processes of economic development, in a narrow sense, are strongly influenced by human and social development, or vice versa. Here, however, we come to a number of paradoxes and dilemmas, which throw up roadblocks to the East Asian (late) development process, and further complicate the path of development. We summarize these as the 'double burden of disease' and the 'double challenge of education.' After describing these, we will further consider the dilemmas and paradoxes of compressed development from the perspective of gender.

#### *Double burden of disease*

Health may be considered a fundamental freedom, and constituent of, and prerequisite for, development. We have noted the phenomenon of simultaneous industrialization and de-industrialization. We begin our analysis here with a parallel and related observation from health, namely that the transition from under-nutrition and communicable diseases to over-nutrition and non-communicable diseases is happening ever more quickly, and at lower levels of per capital income. In fact, the transition has become so compressed that the two can co-exist, not just in the same generation, but in the same household!

Nowhere is this 'double burden of disease' (WHO, 2006) dimension of compression more apparent than in China: 'Preventable communicable diseases, which are common in low-income countries remain a significant cause of death, particularly among young children. In addition to this, driven by socio-economic and demographic transitions, chronic non-communicable diseases, which are common in high income countries have become increasingly prevalent' (OWHORC/SDDC 2006: 11). On the one hand China is one of the WHO's twenty two 'high burden' tuberculosis countries. It is estimated that 1.4 million people contract active TB in China each year, 600,000 the highly infectious form, and several hundred people die each day.<sup>12</sup> On the other hand, China is also home to an estimated one fifth of the world's obese population.

The following quote by Popkin provides a vivid image of changes inducing the phenomenon:

Another way to consider the types of change the developing world is facing is to consider an urban squatter's life and rural villager's life in China, 20 years ago and today. During the 1970s, food supply concerns still existed, there was no television, limited bus and mass transportation, little food trade, minimal processed food existed, and most rural and urban occupations were very labour-intensive. Today, work and life activities have changed: small gas-powered tractors are available, modern industrial techniques are multiplying, offices are quite automated, soft drinks and many processed foods are found everywhere, TVs are found in about 89% of households (at least a fifth of which are linked to Hong Kong Star and Western advertising and programming), younger children do not ride bicycles, and mass transit has become heavily used. Multiply such changes by similar ones occurring in much of Asia, North Africa, the Middle East, Latin America and many areas (particularly cities) in sub-Saharan Africa and it is evident that the shift from a subsistence economy to a modern, industrialized one occurred in a span of 10-20 years. In Europe and other industrialized, high-income societies, this occurred over many decades or centuries (Popkin, 2002: 206).<sup>13</sup>

Not only are non-communicative diseases costly to treat compared to infectious diseases, but the compression produces distinctive deleterious effects. Low weight infants develop problems with their metabolism that later increase risk of obesity when they are exposed to a new diet and activity pattern (Hoffman *et al.*, cited in Popkin, 2002). Thus countries like China are building up enormous health problems that earlier developers, and even late developers, did not experience.<sup>14</sup>

There are further twists; in developed countries there is typically an inverse relation between obesity and socio-economic status. In compressed developers like China, there is a positive relation. The rural poor have still not acquired the extra income to consume more (animal) fat-rich food, sedentary lifestyles, and food prepared away from home. This is not the case among the growing numbers of urban middle class families, whose propensity to consume such food may be further exacerbated by recent memory of economic hardship, and an associated positive view of excess body weight.<sup>15</sup>

Thus the problem is worst where socio-economic change has been most rapid, and the prognosis is not good for the immediate future, with increasing urbanization, rising incomes and changing lifestyles. Added to this is the prospect of a domestic retail revolution.<sup>16</sup> Rising obesity in countries like China has been linked to urban lifestyles that include not just increased consumption of animal fat, but food produced by the modern food industry. TV viewing does not just lend itself to a sedentary lifestyle

featuring, but viewing of consumer advertising produced with sophisticated marketing techniques (cf. Popkin, 2001). Increased access to the Internet increases exposure to online advertising and ‘advergames,’ which frequently breach even minimal standards of regulation to protect children, as recognized by the International Obesity Taskforce’s call for an international code in 2006.<sup>17</sup> Thus there is an *inbuilt driver* amplifying the effects of changing diets, occupations and lifestyles in compressed development.

Further complicating the situation are problems related to food safety. Where the emphasis has until very recently been on increasing production to feed China’s population, the sudden and rapid expansion of the food industry (estimated at RMB 1.6 trillion, or US\$193.4 billion in 2004; three times the 1997 figure) has also seen a huge increase in various types of contaminants. Price pressures from major retailers abroad are a contributing factor. With compressed development, the control systems which were implemented relatively late in NDCs must be put in place over a much shorter time span, earlier, and with fewer resources.<sup>18</sup>

#### *Double challenge of education*

China’s 11<sup>th</sup> Five Year Plan (2006-10) envisages an increase in government expenditure on education, aiming at 4% of GDP in order for it to achieve levels of ‘middle income’ countries. Major challenges are to ‘promote and consolidate the nine-year compulsory education,’ particularly in rural areas, as well as the eradication of illiteracy; the so-called ‘two basics.’<sup>19</sup> Indeed, the proportion of children moving from primary to middle school has risen markedly, and may soon be effectively universal. However, as in other developing countries, the proportion completing middle school, and in particular the proportion going on to high school after middle school, is substantially smaller, especially among girls. Still, the proportion going on to (senior) high school jumped from 43.6% in 1992 to 58.3% in 2002, according to Chinese Ministry of Education statistics.<sup>20</sup>

On the other hand, these same statistics show an even more dramatic rise in the proportion of high school graduates going on to some form of tertiary education or training. There has been a phenomenal increase in participation in tertiary education among the 18-22-year old cohort, from just 4% in 1990 to 21% in 2005 (OECD/MoE 2007: 15). Moreover, within tertiary education the rise of students on Masters and Ph.D programmes has been even more pronounced (ibid.: 17). Thus there appears to be a bifurcation, with many students, presumably in rural areas, leaving school at or before the end of middle school, and an increasing proportion of the remainder, presumably in urban areas, completing high school and going on to tertiary education. Such has been the increase in the latter that many graduates of tertiary institutions have

been unable to find jobs (reputedly over a quarter in 2005), and with debts to pay, many allegedly regret their decision to attend such institutions.<sup>21</sup>

In consolidating its compulsory education system to promote economic and social development, China appears to be following the route of other East Asian late industrializers, such as Japan and South Korea. The huge expansion of tertiary education is happening comparatively earlier, however, and the expansion of postgraduate education, in particular is happening at *the same time* as Japan, at a time when half of the Chinese labour force is still engaged in agriculture, and while it is industrializing, rather than undergoing a post-industrial transition.<sup>22</sup> This might be interpreted as credential inflation – the ‘diploma disease’ (Dore, 1976) – but it also reflects the different type of development paths opening up in China, including engaging and in with foreign firms, and the development of indigenous science and technology.

Mass participation in tertiary education, moreover, presents the Chinese government with a double challenge, namely improving the quality of provision, learning experiences and job prospects, at the same time as promoting and consolidating compulsory education. It will need every bit of its 4% of GDP, and more, to do so.<sup>23</sup>

#### *Gender and compressed development*

As Chang (2002a) has shown, legislation promoting gender equality has been passed earlier and earlier (in terms of per capita GDP) in later developers, often under pressure from international institutions and conventions. Achieving it, however, is an entirely different matter. The reality is that economic development processes are gendered, and have different outcomes for men and women. This applies even (or perhaps especially) to East Asian late developers, despite their ‘relatively egalitarian income distribution’ and ‘removal of unfreedoms.’ For many policy makers, and scholars, ‘people’ or ‘humans’ generally means an ‘unmarked male’ (Hershatter: 2007: 107).

Studies of gender and development have started with the recognition that ‘women were there, too’ (ibid: 51). In the case of East Asian late developers, this can mean in the labour intensive factories in early stages of industrialization. In succeeding stages of capital intensive and high tech industrial development, however, ‘de-feminization’ typically occurred (cf. Cho et.al., 2004 on Korea, also Razavi and Pearson, 2004). Women were typically employed on less favourable terms, with inferior or no welfare entitlements, while non-paid domestic work went unvalued. Gradual improvements came later, in part with the rise of service sector employment.

Is the situation any different under compressed development? It appears so.



Compression produces bifurcated, and sometimes unpredictable, results. At a very basic level, the value placed on male babies for future productive and welfare reasons, commonly associated with pre-industrial societies, may not only persist, but be stimulated by (supposedly gender neutral) social policy seeking to limit population growth, and be amplified by modern medical technology, resulting in large numbers of 'missing girls.'<sup>24</sup> Girls may also face discrimination over access to nutrition, medical treatment and education, magnifying gender differences. For instance, illiteracy in China has declined markedly among both men and women, but in 2000 almost three quarters (72.7%) of those illiterate were women, up from 70.1% in 1990 (NBS, 2004: 59). An All-China Women's Federation survey in 2001 found declines in women's social status in a variety of dimensions.<sup>25</sup> This is in spite of China's ratification of a number of international treaties on human and women's rights, and extensive legal protection (ibid.).

On the other hand, there will be growing numbers of women seeking advancement through education and work, drawn to the cities, or in the case of elites, going abroad for higher education. The rapid increase in Chinese tertiary education noted above, for example, is marked by an even higher increase on the part of women, from 35.4% of those registered in 1995 to 44.0% in 2002. The proportion of women among those registered for Masters degrees rose from 28.0% to 38.7%, and for Doctorates from 12.0% to 26.0% over the same time (NBS, 2004: 63). Surveys have also found high ratios of businesses with women in senior management posts, and high ratios of women senior managers.<sup>26</sup> Elite women who go abroad to study might either stay abroad, or return to work for foreign firms or the 'progressive' domestic businesses that interact closely with them through global value chains linkages.<sup>27</sup>

Paradoxically then, while potentially promoting gender equality within mainstream society, a result of compression could be further enforcement of gender inequality. The predictable outcome will be an amplification of phenomena already evident in late industrializers like Japan and Korea; delayed/late or non-marriage, declining birth rates and accelerated ageing of the population.<sup>28</sup> This means that compressed developers will confront the distributional questions associated with ageing, without adequate accumulated resources to deal with them, just as they have not accumulated the resources to deal with obesity. They will also face gender-related social tensions, including the trafficking of women, and large numbers of unmarried, potentially frustrated, men.

## 5) Policy stretch through compression

Our analysis so far reveals four distinctive sets of policy dilemmas facing the compressed developer. First, there is the choice of which path or paths to follow for economic development. This involves not just industrial policy, but economic, trade and related policy areas as well. Second, the compression of stages of development reinforces the simultaneous pursuit of multiple targets, including those commonly associated with different stages of industrialization on the one hand, and de-industrialization on the other. Third, in human and social development, the consequences of compression create new and unanticipated challenges, in health, education and a range of social policies. And fourth, there is the difficulty of co-ordination between all of these, rendered particularly problematic by their respective complexities.<sup>29</sup> This would be a tall ask for any government and bureaucracy; it is an especially tall ask for would-be developers with limited resources (and a lot of mixed advice and pressures over what to do by others).<sup>30</sup>

The inevitable result is ‘policy stretch,’ a thin spread of resources, and limitations to policy implementation or enforcement. In education and training, resources will be spread over basic education and training institutions, through to tertiary education, pulled by a multi-pronged economic development strategy. Health resources oriented to fighting malnutrition and infectious diseases must be switched rapidly to tackling obesity and non-communicative diseases, not just retrospectively, but proactively, which is much harder. The tight focus of late development is impossible in this new context.

Policy stretch will have critical impact on government-market relations. With policy stretch (and with strong encouragement by NDCs and development institutions, some of it self-interested), there will be a strong temptation to allow the role of the market to expand (relative to the late developer), either explicitly or tacitly, or to barter with those likely to benefit from the expansion of markets to fill gaps, such as multinational corporations. Conventional forms of policy implementation will be strongly challenged. For example, not only is the industry mix different, but the mix of players is different as well (including more foreign multinationals), making it more difficult to formulate and implement industry-targeted industrial policy through various intermediate industrial associations, which played a key role in late developers.

The combination of policy stretch, and ambivalence over whether to follow the late development logic or the expanded market logic imported with globalization, has two possible outcomes. More optimistically, it is likely to encourage the government to pursue policies of framework setting and (somewhat hopefully) output monitoring, with less direct involvement than in the late developers. More pessimistically, this policy

ambivalence might engender policy chaos, an incoherent mix of policy initiatives that open the door to cronyism, organized crime and environmental devastation. This is the opposite of the 'state capacity to act' promoted by Evans (1995) as the lynchpin of late development.

As a result of a less emphatic commitment to industrialization, policy stretch, and an expanded role for the market (including global buyers, foreign investors and global capital), support for universal entitlements will be less forceful, and inequality will not be reduced as significantly as in the late developers. In fact, it may grow. To those who have already climbed the ladder, and have witnessed the growth and decline of the welfare state, this may seem natural, but in the compressed developers, spiking inequality will add to social tensions, with limited resources to defuse them. Labour unions associated with the industrialization experience are likely to be weak or fragmented in compressed developers. Some of their functions may be taken up by NGOs, but fragmentation will limit their potential for interest mediation and adjustment ('concertation').

As these comments suggest, a range of current debates can be re-cast from the new perspective of compressed development. For example, the debate over the decline of developmental states is largely confined in the framework of late development, that is, the debate remains very much contingent upon the postulation of government versus market.<sup>31</sup> Instead of viewing governments of late developers as engaged in a struggle to re-gain the control they possessed in the past, however, it is probably more productive to see them facing a new set of issues and challenges, exacerbated by policy stretch. Thus, whether developmental states are in decline or in transformation should be reassessed in the context of compressed development, rather than late development.

Policy stretch will also have geographic consequences. Economic development *per se* is geographically uneven. As Jacobs (1984) argues, a limited number of cities develop the capabilities of improvisation and innovation that spark development, and while these qualities spread to their hinterlands naturally, other cities and regions, lacking these dynamic capabilities, rely on trading resources or welfare transfers. In fact, Jacobs asserts, the national economy is at best a myth, at worst a relentless drain on the vitality of innovative cities. This assessment may be pessimistic, but it highlights the fact that countries with low gini coefficients are either very poor, or combine human development with a range of income equalizing mechanisms, such as transfers to rural areas through food subsidies and public works.

In the compressed developer, the ability of the state to spread the benefits of economic growth through redistribution policies (from cities to rural regions, for example) will be strained. Geographic inequalities in the distribution of growth will

therefore be pronounced, as some key cities and their surrounding regions will be fully engaged in rapid growth and transformation, while others will still be little effected, in a fundamental way, by economic development in those cities, save perhaps for a population drain of young workers which threatens their very ability to generate economic growth locally.

In fact, policy makers may well have created inequalities themselves through concerted investment in the most innovative cities, or the creation of special economic zones (SEZs), such as those pioneered in Taiwan and used famously in coastal mainland China such as Shenzhen, adjacent to Hong Kong. SEZs involve transfers through tax incentives, and often public-private partnerships, while enlisting foreign investment, initially for the ports of entry and exit required for real-time integration in global value chains. An attraction is that these focal cities and regions enable trade and economic development doors to be opened in a controlled and manageable manner. They are a quintessential institution for compressed development, as they offer the prospect of rapid economic development, which hopefully can then be diffused in a controlled manner through backward and forward linkages into the wider economy. However, where they succeed they can also create ‘islands of prosperity.’<sup>32</sup>

Somewhat less controversially (in terms of transfer payments), concentrations of globally-connected economic activity may be promoted by ‘cluster’ and ‘corridor’-type industrial policies. These are attractive for various reasons – on the one hand they offer the promise of ‘swimming with the current’ by building on established capabilities and concentrations of expertise, but they may also be blended with regional policy (potentially to serve as wealth distribution mechanisms). They can also be used to promote basic industrialization, global value chain participation, or technological innovation, and in fact, many cluster and corridor plans blur the differences between these. They are also seen as modern and ‘politically correct’ (to development organizations and foreign capital) in that NDCs also commonly pursue them.

Finally, it should be noted that when Gerschenkron first introduced the idea of late development, he discussed both the challenges posed by late development and the solutions of a small number of late developers. In this article, compressed development is juxtaposed as a condition and a phenomenon, and indeed an ideal type. We will have to wait for a clearly successful compressed developer to emerge, and be aware that success stories are likely to be limited in number. Just as successful late developers tackled the challenges of their time, however, successful compressed developers will have tackled the challenges we have identified, and created new solutions.

## Concluding comments

Late developers created different paths to industrialization than the earliest developers. In this paper we have argued that the development path is changing yet again, significantly enough for us to seek a different label to describe it. We have used the label ‘compressed development,’ recognizing that all late development is compressed in the sense that it accelerated, but that new development paths through engagement with global value chains introduces levels of simultaneity and international engagement that is qualitatively different from those of archetypical late developers.

There has been much reflection and criticism in recent years about Western-centric notions of development. On top of this, newly developed countries have been accused of ‘kicking away’ the ladder of development they themselves climbed, creating a distorted field for would-be developers. If they are unable or unwilling to remember their own past, they are even less likely to (spontaneously) recognize and understand the distinctive dilemmas associated with compressed development. This creates grave risk, because the disjuncture between the state’s capacity to act and the pace of change may ‘stretch’ policy tools to breaking point. With compression come problems associated with simultaneous industrialization and de-industrialization, extreme wealth and poverty, and the social frictions associated with the simultaneity pre-industrial, industrial, and post-industrial societies.

By adopting the perspective of compression, we hope to generate interest and debate over these dilemmas. We have also sought to delineate a ground between late development defensiveness one hand, and globalization evangelism on the other; a policy space that lies between state-led development and neo-liberal marketism. The role of the state remains crucial, but more subtle, complex, and difficult than in the past.

The dynamics intensifying compression are powerful. On the one hand, would-be developers seeking to play ‘catch-up’ are chasing a moving target. Science and technology-based innovation in NDCs has undergone ‘intensification’ (Dodgson, Gann and Salter, 2005). Product cycle times have been drastically shortened through synchronization of inputs (Best, 2001) extending back into R&D and forwards into sales. With global integration, many of the engines of compressed development may remain firmly located in advanced economies, even as they drive the pace of development in NDCs past the coping point of the state. On the other hand, NDCs themselves are forced to run as developing countries claim a stake in production and value chains, and seek to claim a more significant stake. These dynamics, then, are mutually reinforcing and beyond the tight control of any single state. The policy stance of compressed developers is less akin to ‘governing’ domestic markets, and more

to surfing the waves propagated by globalization without falling behind or crashing into the foam. This difficult balancing act requires agility and a clear understanding of the forces at work.

Perhaps most significantly, the compressed development perspective enables us to analyze phenomena previously treated completely separately, such as growing the productive economy and the ‘double burden of disease.’ By bringing diverse phenomenon and problems together in the framework of compression, we can begin to appreciate the challenges that confront would-be developers today, and to engage more constructively with them.

## Notes:

- <sup>1</sup> See, for instance, contributions to Navarro ed., 2007.
- <sup>2</sup> Japan's development from the late 19<sup>th</sup> century is a better case of a state-led development than Russia according to scholars like Schwartz (2000: 95).
- <sup>3</sup> From the late 1990s, however, there has been increasing debate as to whether East Asia's geese are still flying in formation, and in the same direction. See Kojima, 2000; also Ozawa 2001 on the ailments of the lead goose Japan due to path dependence.
- <sup>4</sup> Rowthorn and Coutts cite five sets of reasons for de-industrialization, namely specialization (activities formerly carried out in manufacturing organizations are separated out – this is a reclassification, rather than de-industrialization per se); consumption (less income relatively speaking spent on manufactured goods); productivity (rising faster in manufacturing than services, with a resultant shift from manufacturing to services – cf. Baumol, 1967); international trade (various effects, but notably a shift in certain manufacturing jobs to developing countries); and changing investment patterns.
- <sup>5</sup> Both studies point to the importance of policy, and criticize the influence of 'Washington Consensus', neo-liberal policies in forcing countries down the path of negative de-industrialization.
- <sup>6</sup> These observations come from interviews by Whittaker and Inagami with Korean and Taiwanese die and mould makers in 1997.
- <sup>7</sup> According to Dean, Fung and Wang's (2007) calculations, China's 'vertical specialization' of exports, utilizing imported intermediate goods, increased in most industries between 1997 and 2002 – the opposite of what one would expect from progressive import substitution.
- <sup>8</sup> The IBM PC Division was in many ways the vanguard of de-verticalization at IBM, and the focus on design and marketing and select critical technologies and capabilities (e.g., integrated mouse pointer technology and notebook design in its Japanese 'Thinkpad' design facility) is a prime example of what a leading US 'manufacturing' firms had become during the 1990s though the process of co-evolution with its global (mostly Asian) supply-base.
- <sup>9</sup> Interviews 19 March, 2007; Ling, 2006. Figures as of March 2007.
- <sup>10</sup> A design services firm based in Taiwan, Mediatek, stepped into the breach with its own, highly integrated platform. The competitive problem this posed for the local handset makers was that the larger, more integrated platforms could not be as easily customized to create the differentiation on which the local handset firms based their competitive positioning. Thus a competitive window was opened for the multinational brands, whose internal design and system integration capabilities, built up over many decades, allowed them to retake market share.
- <sup>11</sup> See, for example, Mkandawire, 2001; also other publications of the UN Research Institute for Social Development
- <sup>12</sup> WHO Representative Office in China website: [www.wpro.who.int/china/sites/stb/overview.htm](http://www.wpro.who.int/china/sites/stb/overview.htm) accessed 20 November, 2007

<sup>13</sup> See also Prentice, 2006.

<sup>14</sup> Countries like South Korea and Japan had time to mobilize efforts to preserve the healthful elements of their traditional diet. See, for example, Lee, Popkin and Kim, 2002, for South Korea.

<sup>15</sup> Wu, 2006. As the Chinese Vice Minister for Health noted: 'Parents and grandparents often fed their offspring excessively to make up for being fed inadequately themselves' (BBC News, 12 October, 2004). Cf. also Song, 2006.

<sup>16</sup> China's Tenth Five Year Plan envisaged an expansion in the number of chain stores from just over 20,000 in 2000 to 100,000 by 2005. Huang Hai, director-general of the Department of Trade and Market under the State Economic and Trade Commission called for them to 'sharpen their competitive edge via re-organizations, acquisitions and mergers as soon as possible' (*China Daily*, 9 February, 2002; cf. also *China Daily* 19 November, 2002). Experiencing a retail revolution as they industrialize will have important consequences for how manufacturers develop in compressed developers as well (cf. Taylor, 2003: 197).

<sup>17</sup> IOTF press release, 5 September, 2006. IOTF is part of the International Association for the Study of Obesity.

<sup>18</sup> Hu Xiaosong, cited in [www.china-today.com.cn/English/e2005/e200506/p32.htm](http://www.china-today.com.cn/English/e2005/e200506/p32.htm); accessed 1 August, 2007. These observations may be extended to pollution in general.

<sup>19</sup> China Education and Research Network: [www.edu.cn/20060310/3177910.shtml](http://www.edu.cn/20060310/3177910.shtml) accessed 14 November, 2007; also [www.moe.edu.cn/english/planning\\_n.htm](http://www.moe.edu.cn/english/planning_n.htm) accessed 25 November, 2007.

<sup>20</sup> [www.moe.edu.cn/english/planning\\_s.html](http://www.moe.edu.cn/english/planning_s.html) accessed 14 November, 2007.

<sup>21</sup> [www.edu.cn/degree\\_1414/20060310/t20060310\\_166466.shtml](http://www.edu.cn/degree_1414/20060310/t20060310_166466.shtml) accessed 14 November 2007; also *China Daily*, 21 August, 2006 ('Students Regretting Attending University'). The latter commented that the might regret *not* attending even more.

<sup>22</sup> Postgraduate participation in Japan almost trebled between 1990 and 2005, with the proportion of graduates advancing to Masters degrees increasing from roughly 6% to 17%: OECD/MEXT 2006: 136-37.

<sup>23</sup> OWHORC/SDDC (2006: 33) recommends a shift in resources towards the latter, from what it estimates as 10:2:1 (tertiary: secondary: primary) currently.

<sup>24</sup> On China, Hershatter (2007: 31, citing Chu, 2001) notes: 'Technically illegal, the practice of using ultrasound for sex determination is almost impossible to regulate, and skewed sex ratios have spread along with ultrasound machines from coastal to inland provinces.' From 108.5:100 in 1990, the ratio of newborn boys to girls increased to 117:100 in 2000, according to Chinese Sensus data. Experts agree that the impact is likely to be negative in terms of the occurrence of violence, trafficking, commercial sex and sexually transmitted diseases' (OWHORC/EDDC, 2006: 13).

<sup>25</sup> Cited by Zhang Ye, 'Hope for China's Migrant Women Workers' at [www.chinabusinessreview.com/public/0205/ye.html](http://www.chinabusinessreview.com/public/0205/ye.html) accessed 24 October, 2007

<sup>26</sup> E.g. Grant Thornton International press release, 8 March 2007. Both mainland China and Taiwan were in the top echelon on both measures, but the social relations behind these figures were not explored. In general, well-off and elite women have



received little attention from researchers of development, and gender (Herschatter, 2007: 113).

<sup>27</sup> Cf. Turner, 2006; Goodman, 1996; Bai, 2000. Surveys have also found comparatively high ratios of businesses with women in senior management posts, and high ratios of women senior managers in mainland China and Taiwan (also the Philippines, Hong Kong, Thailand: cf. Grant Thornton International press release, 8 March, 2007), but the social relations behind these not explored

<sup>28</sup> 'Ageing but not rich: International, countries entering the list of ageing societies have per capita GDP of about US\$10,000 on average, compared with China's US\$1,500' (OWHORC/SDDC 2006: 14). China has one of the most rapidly ageing populations of any large country. The proportion of those aged 65 and over is expected to treble from 8% to 24% between 2006 and 2050. Already over 100 million people fall into this category: T. Kaneda at [www.prb.org/Articles/2006/ChinasConcernOverPopulationAgingandHealth.aspx](http://www.prb.org/Articles/2006/ChinasConcernOverPopulationAgingandHealth.aspx), accessed 16 November, 2007.

<sup>29</sup> For a concrete expression of these dilemmas, see OECD (2006): 'Challenges for China's Public Spending: Towards greater effectiveness and equity.'

<sup>30</sup> A good example, especially of the second set of dilemmas, is China's new Labour Contract Law, implemented in January 2008, replacing the Labour Law, itself only thirteen years old. Parts of the former are designed to establish basic rights and obligations in the employment relationship, which would offer greater protections, for example, to internal migrant workers. It also establishes an expanded role for labour unions. These provisions would normally be associated with industrialization, while other provisions are decidedly recent in the experience of NDCs, for instance 'non compete' provisions for senior managers, as well as regulation of agency, project and other 'non regular' work. A draft version made public in March 2006 elicited 200,000 responses in one month. The American Chamber of Commerce in Shanghai gained notoriety for its opposition to the draft, and a rebuke from the president of the (US) United Steelworkers Union for its 'immoral campaign to undermine Chinese workers' rights': FT.com, 2 May 2007 ('China's Labour Law Raises US Concerns').

<sup>31</sup> See, for example, Kim, 1999; Moon and Rhu, 2000; Weiss, 2000; Liao, 2001; Maswood, 2002; Wong, 2004; Cherry, 2005; Kwon, 2005.

<sup>32</sup> The expression comes from Raghuram Rajan, former IMF chief economist, who adds: 'Governments can't change the environment in the entire country overnight. It's easier to create islands of good governance through focused intervention rather than the harder – and ultimately necessary – task of creating good governance everywhere' (cited by J. Adams, 'The Enduring Appeal of "Special" Zones', *Far Eastern Economic Review*, March 2007, 170, 2, Academic Research Library, p.13.) Rajan has criticized the transfers and perverse incentives involved in India's SEZs.

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