

India's evolving Political Settlement and the Challenges of Sustaining Development

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Executive Summary

India's economic development was given a huge boost by the growth acceleration that began roughly in the 1980s. Coming at precisely the time when India's planning institutions were coming apart, the coincidence was seen by many economists as a vindication of the benefits of liberalization. Greater market access and access to foreign technologies and capital markets did indeed have a role to play in sustaining three decades of high growth in India, but the drivers of the growth acceleration are more complex than a simple liberalization model suggests with significant implications for the policy challenges facing India today. This analysis uses the analytical framework of 'political settlements' (in Khan 2010a) to look at the interface between politics, economics and the enforcement of the institutional framework to look at the technology acquisition processes that have been driving growth.

It shows that the institutional framework for technology acquisition in the period before 1980 did achieve significant successes in building up Indian technological capability in a few sectors and these capabilities played a significant role in driving the growth acceleration after 1980. However, the Indian political settlement at that time did not allow an effective enforcement of the institutions that would have allowed licensing and planning to achieve global competitiveness for India's emerging modern sectors. A significant amount of 'learning' took place but high levels of effort could not be enforced and as a result global competitiveness was by and large not achieved even in the high-capability sectors.

The shift to a more open economy was driven primarily by an evolution in India's political settlement that predates the formal liberalization that happened in the 1990s. India's political settlement changed in the mid- to late-1970s as the number and organizational strength of political organizations increased over the 1960s. This eventually led to a transition from a 'dominant party' system to one that can be described as 'competitive clientelism'. The new political settlement allowed direct and ad hoc links between economic sectors close to the frontier and the political leadership. Direct and indirect financial support was provided through a number of different instruments to sectors near the global competitiveness frontier to engage in a second phase of learning that moved them to the frontier. An analytical model of catching up is used to show the importance of incentivizing 'effort' during any

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process of learning-by-doing financed by external financing. The important change in the new political settlement was that in a number of sectors the design of the financing instruments in this second phase of learning ensured high levels of effort in the context of the new political settlement. Case studies of the automobile and pharmaceutical industries are used to explore the processes through which the movement to the frontier happened.

The analysis based on political settlements and the catching up process can explain important features of the growth process since the 1980s. Growth in India's economy has been driven by a relatively small number of sectors where growth has been very high and it has also been regionally concentrated. Moreover, growth has not created the vast numbers of jobs that India requires and has been based on skill-intensive industries. These features of the growth process are entirely consistent with an analysis that focuses on capability development. The 'planning' period was only partially successful in creating pockets of almost-frontier capabilities. It could not be applied effectively to create broad-based capabilities that were sufficiently diversified across sectors and regions. The second phase of learning after 1980 upgraded some of these sectors to the frontier using sector-specific strategies of state support and these sectors subsequently drove the growth process through market competition.

There are important implications for sustainability and for policy. The spread of growth to new sectors, more labour-intensive sectors and across regions is not likely to happen fast enough simply through market processes of diffusion. An analysis of the capability constraint suggests that labour market liberalization (the preferred policy priority of many market economists) is likely to have negligible effects in solving the sustainability problem. Neither the licensing strategy of the 1950s nor the business-government links that emerged in the 1980s offer a sufficient developmental model for India, but understanding the challenges analytically and politically can help a discussion about policy options. Secondly, as the sectors that were close enough to the frontier to benefit from sector-specific support to reach the frontier have already done so, it has become more difficult to use business-government links for productive purposes. Business-politics links have therefore increasingly been used to drive unproductive rent capture strategies as politicians continue to require off-budget financing for operating the political system. This has resulted in a growing critique of political corruption and demands for more constraints on politicians and more redistribution to the poor. However, in the absence of a growth strategy these demands are unlikely to be fulfilled.

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India's growth acceleration in the 1980s was of great interest to many observers for a number of reasons. For a start, its growth acceleration of around two per cent in the 1980s had not been anticipated or expected and indeed the country was going through a period of considerable political uncertainty. It had just come out of Indira Gandhi's Emergency and Indian politics was headed towards greater party fragmentation and weaker rule at the centre. As one of the few long-standing democracies in the developing world (apart from the brief interlude of the Emergency), India was an attractive model of growth for all those who were looking for an example of rapid growth in a large developing country with democracy. India's political leaders were also distancing themselves, at least in their rhetoric, from the 'license raj' of planning that many orthodox economists argued was responsible for India's poor performance since its independence in 1947. This was attractive to economists who had long said that India would perform much better if only it liberalized and got rid of its restrictive economic controls. In its international political alliances too, India was rapidly moving towards the West in general and the United States in particular, and this further increased the attractiveness of the Indian growth model in many sections of the western media.

On the other hand, many aspects of the Indian takeoff did not fit with the expectations of analytical models coming from mainstream economics and political economy. To begin with, the growth takeoff did not just happen in India but in all three major economies of the Indian subcontinent: India, Pakistan and Bangladesh, whose trajectories towards democratization and liberalization were somewhat different from India's. Secondly, the growth takeoff in India happened a full decade before any substantial liberalization took place, though a pro-business rhetoric and a new set of policies supporting business emerged in the late 1970s. Thirdly, India's democracy had more in common with the models of patron-client democracy that were supposed to block growth than the models of democracies in Weberian states that could drive efficient public good provision and ensure the protection of property rights. The 1980s were also a decade of political instability, with outbreaks of regional, caste and communal violence, the rise of a divisive and often violent political Hinduism and high and growing levels of corruption. Fourthly, even when moves towards a more liberal economy began in the 1990s, labour intensive sectors did not start to grow as economic theory predicted. Rather, Indian growth was driven by capital-intensive and skill-intensive sectors like automobiles, pharmaceuticals, and information technologies. Not surprisingly, most of the population were left out of the direct effects of employment and wage growth in these sectors. The Arjun Sengupta Commission appointed by the government reported in 2006 that 77% of the Indian population had a per capita daily consumption of less than Rs 20 (around 50 US cents). Fifthly, contrary to the predictions of economic theory, rich and poor states did not begin to converge as a result of the movements of capital or labour between them but began to rapidly diverge in their per capita incomes. Instead of convergence, richer states like Gujarat, Maharashtra and Tamil Nadu drove the growth. Large poor states like Uttar Pradesh and Bihar fell rapidly behind. And yet for all these problems, India's overall growth was sustained over three decades, and crept up further in the 1990s. We use the framework of political settlements to identify the factors driving this particular pattern of growth in India and the policy challenges for the future.

1. Introduction

The analytical framework of political settlements allows us to develop an interrelated analysis of features of Indian economic and political development over the last three decades. A political settlement is defined as a reproducible combination of institutions and a distribution of power between organizations that achieves the minimum economic and political viability conditions of society (Khan 2010a). This framework makes explicit the interdependence of economic development and political stability working through the institutional framework. In developing countries informal institutions and informality in the operation of formal institutions play an important role for structural reasons to do with the nature of these economies. Economic organizations in developing countries operate in contexts where many formal institutions like property rights are not appropriate for sustaining development and formal institutions cannot in any case be properly enforced given the limited resource base of enforcement agencies. Even legitimate firms do not therefore rely entirely on formal institutions and well-working markets to solve their resource allocation problems. Their growth and prosperity depends on formal *and* informal arrangements that sometimes work and sometimes do not. Similarly, politics has a significant informal component because resources available from the formal sector are insufficient to ensure political stability. These features of the economy and polity mean that substantial informality marks the operations of institutions in developing countries. However, outcomes can vary significantly depending on the configuration of institutions and organizations: with a fortunate configuration economic development can be rapid with tolerable political stability. With a less fortuitous configuration development can be blocked and political stability can be poor.

The political settlement framework allows us to address and explain important features of economic and political developments in India. In terms of this analytical framework, outlined in Khan (2010a), the distribution of power between political organizations within India immediately after its independence in 1947 allowed the construction of a dominant party ruled state. The economic and political evolution of the country in the next two decades led to the emergence of new political organizations and movements based on regional, caste and class mobilizations. A significant shift in the political settlement happened around the mid- to late-1970s as the new distribution of organizational power could not be accommodated within the dominant party system. By the 1980s, the distribution of organizational power took the form of competitive clientelism and the political system reflected this with the end of the dominant role of the Congress Party. Less inclusive national parties ruled at the centre and the Congress too no longer included enough coalitions to be able to rule on its own. The ruling coalition was now based on a coalition between parties rather than coalitions within parties. The apparent paradox is that the economic takeoff in India coincided with this change towards greater vulnerability and uncertainty. The political settlement framework allows us to see why this was not really a paradox at all.

The economic takeoff was driven by a small number of high technology sectors and this too does not make sense in terms of liberal market theory. However, we can explain what happened by looking at capability development in a number of critical sectors driven by formal and informal institutional arrangements that were effective given the political settlement of the time. The critical transition of the 1980s and 1990s was based on building on capabilities that had already been developed by the industrial policy of the 1950s and 1960s. Earlier strategies of capacity building in

India during the 1950s and 1960s therefore need to be evaluated in a somewhat different light. They were critical for building productive capabilities in a number of sectors and regions and these sectors and regions subsequently drove growth in later decades. The earlier strategies did not fully succeed partly because the institutional and policy framework at that time was attempting to develop specific sectors and technologies through targeted licensing policies. This strategy required a high degree of enforcement and withdrawal of support if effort by infant industries was low, but the political settlement of that time did not allow an effective disciplining of subsidy recipients. The supported sectors did not in most cases reach the international frontier in terms of a competitive price-quality mix. Nevertheless, some of these sectors and firms moved relatively close to the competitive frontier.

The opening up that gradually happened in the 1980s and 1990s was very fortuitous because a new set of policies and a new political settlement emerged that allowed a few of these close-to-the-frontier sectors to actually reach the frontier and become globally competitive. The political settlement in India changed after the mid-1970s as the number of social movements and mobilizations expanded in a way that could no longer be accommodated within the dominant Congress Party. The fragmentation of the party marked a significant change in the political settlement as the ruling coalition could no longer hope to direct and micro-manage sectors of learning and investment in the way that the licensing strategy of the past had attempted. At the same time, the fragmentation of a single ruling party also made it more difficult for anti-business coalitions within the party to block big business interests even if this was now happening in explicit and relatively unconditional ways. Paradoxically, this allowed pro-business policies to emerge explicitly and without significant opposition in the 1980s, long before liberalization (Kohli 2006a, 2006b). The transition to a set of policies that further supported business (pro-business strategies) before a transition to gradual liberalization is well known in the Indian literature. But why this led to an acceleration of growth and the limitations of the growth strategy are more contested.

The political settlement approach can explain both why such a shift in policy could happen but also why it was significant in driving growth at that time. The earlier strategies had created the capabilities that positioned some business groups close to the frontier. The political settlement of the 1950s and 1960s did not give the Indian state the disciplining capacity to push the targeted strategy of catching up any further. But the subsequent strategy of unconditional support to well-connected business houses and high capability sectors from the late-1970s onwards allowed some of these sectors to make their way to the frontier. In fact, if liberalization had happened before these sectors had achieved competitiveness, this would have made their catching up much more difficult. Nor would the pro-business policies of the 1980s have worked if some Indian businesses were not close to the frontier and could not therefore see the advantages in using political support to achieve competitiveness. If all Indian businesses were far from the frontier, it would not have been rational for them to use politically generated rents to invest in catching up. Competitive firms clearly do not need politically-generated rents, but in the context of competitive clientelism and short time horizons of political organizations, only firms that are relatively close to the competitiveness frontier are likely to benefit from and therefore to use political connections to create rents that then allow them to invest in learning-by-doing that can take them to the frontier. Paradoxically, as firms and sectors close to the frontier become competitive, the firms and sectors that remain are eventually further and

further away from the frontier. As this happens, a pro-business strategy of links between political and economic organizations in the context of competitive clientelism can stop being socially desirable. This is indeed what began to happen in India by the end of the decade of the 2000s. Competitive sectors and firms drove growth but politically created rents failed to generate new competitive sectors and firms as the ones that were not at the frontier already were too far away to perceive competitive catching up as a viable strategy. Business-government relationships began to result in speculative investments, cornering of markets, price-setting deals and so on that were much less likely to drive growth. A better understanding of the technological transition in the successful growth-driving sectors in the context of an evolving political settlement can then help to identify future challenges.

The framework also allows us to examine the developmental implications of different patterns of political organization across Indian states and over time. As in other developing countries, India's central and state governments are organized around different variants of patron-client politics. This type of politics uses off-budget resources (like informally organized resource allocations, political corruption, employment and contract allocation on informal principles) to a significant extent in building political coalitions. By definition, patron-client politics cannot be entirely rule-following and many of its resource allocations are unlikely to have a legal status or be enforceable in law. Thus, patron-client politics is both 'personalized' and likely to involve large elements of political corruption. In India, as in other developing countries, the vast majority of political movements are also led and dominated by the intermediate classes. The typical political organization mobilizes wider social groups who may benefit to varying extents from the rents created, allocated or captured by the organization. A characteristic problem of this type of politics is that the competition between patron-client organizations can intensify over time. The greater the number and bargaining power of political organizations demanding rents, the more likely it is that the creation and allocation of value-reducing rents will increase. More seriously, if the ruling coalition is attempting to enforce industrial policies that involve the withdrawal of support from some firms or sectors, the presence of many relatively powerful organizations seeking rents gives threatened firms and sectors greater opportunities of buying protection at a price. The capacity of the ruling coalition to enforce other types of formal institutions can also be adversely affected.

A significant change in the political settlement in India came about as a result of the growing diversity and intensity of political mobilizations within India since the 1960s. By the late 1970s these mobilizations had become so complex that they could not be accommodated within a single dominant party. Indeed, by the late 1970s the dominance of the Congress Party had come to an end. The political fragmentation and multi-party coalitions that became necessary thereafter made formal interventionist policies even more difficult to formulate and enforce. However, both formal and informal business-government relationships remained strong and became stronger. In the initial political settlement when the Congress Party included the vast majority of social interests within it, an explicit support to promote business and industry was part of a complex contract and was offered with many conditions. These conditions included not only strategies for adopting and learning specific technologies by licensing investments in particular sectors, but also reserving some sectors for small-scale firms, attempting regional equity in development and protecting labour in protected sectors. Licensing created rents for licensed sectors by controlling entry and

access to foreign exchange for purchasing machinery. These targeted strategies could have led to rapid learning and capability development in these sectors but only if the support and protection was conditional. But the enforcement capabilities of the Indian state were not adequate and protected sectors generally did not make it to the global competitiveness frontier. By the late 1970s, the licensing system and other aspects of the planning system were ineffective in practice and businesses were adept at working their way around many of the restrictions. Nevertheless, planning and licensing helped accumulation and technology acquisition in a few sectors and states. It was at this juncture that further changes in the political settlement made it both easy to abandon the licensing structure with its complex social contract and to move towards a more explicit support for business without interests opposed to business being able to organize easily and effectively against this.

By locating technological changes in the context of the interface between policies and political settlements we can see that the declining ability of Indian states (as in provinces) to support early-stage catching up strategies for new sectors was a serious constraint for spreading growth to new regions and sectors and creating new jobs. This has problematic implications for sustaining growth in a country where large segments of the population lack the capability to engage in any competitive activities. At the same time, the fragmentation of political organizations that is a feature of the new political settlement has meant that more and more resources are needed to build coalitions at the centre and in the states. Traditional strategies of building political coalitions through job-creation for supporters, granting preferential access to contracts and licenses, and other mechanisms that sufficed in the past are no longer sufficient. Consequently, mega-political corruption has been growing, with billions of dollars being generated for politicians through their informal links with business houses. Some of these links have clearly gone beyond the limits of functional necessity and the scale of predatory corruption that has emerged is not sustainable. At the same time, the inability of the economic system to deliver to the vast numbers of the poor continues to allow intermediate class political entrepreneurs to construct new political movements for inclusion whose main beneficiaries are often the organizers who can enhance their own bargaining power within the patron-client structures in this way. Thus, while the urban middle classes are mobilizing against corruption, the very processes of popular mobilization in the context of patron-client politics continues to create strong drivers for increased political corruption.

The trends in the evolution of politics have varied greatly across Indian states. But in all states, informal and frequently rule-violating politics with high levels of political corruption have continued to dominate as we would expect in political systems based on patron-client politics. If anything, political corruption became more intense over time. In 2010 and 2011 the ruling UPA coalition at the centre was almost brought down by repeated corruption scandals with the office of the Comptroller and Auditor General (CAG) estimating the magnitude of misappropriated resources in just a few public transactions to be many tens of billions of dollars. Corruption has generated significant popular mobilizations against political corruption. The puritanical but populist social movements of maverick civil society activists like Anna Hazare in 2011 captured the mood of a large section of the middle classes who were increasingly disenchanted with the obscene fortunes that were being made by those with political power. Anna Hazare's demand that the government set up an all-powerful ombudsman who can hold any politician (including the prime minister) to

account at any time has to be understood in this context. The demand was both popular and impractical given the dominance of patron-client politics and the fiscal unlikelihood of a social democratic state emerging in the near future. The middle class demand for low corruption, low taxation and economic growth in a very poor economy may be impossible to deliver, with or without an ombudsman.

Corruption has many causes but one important driver is that the political system has to have access to off-budget resources to construct coalitions. To that extent political corruption is integrally implicated in the politics of coalition building and political stabilization in clientelist polities but processes of political corruption can exceed the bounds of functional political requirements and the tolerance of the middle class. The difficulty is to regulate this informal rent allocation so that it succeeds in maintaining political stability and a social order without descending into predatory practices and the looting of public resources which it can easily do. Nevertheless, any solution that is based on the assumption that a zero tolerance of political corruption can be implemented in the near future is unrealistic. This is one reason why greater public awareness and huge democratic pressure on political representatives alone has not achieved a rule-following and accountable democracy in India or in other developing countries. Ultimately, the formal sector is still far too small for its taxes to be sufficient to deal with demands for social inclusion coming from a vast variety of social movements. In this context, the ruling coalition is constructed using significant levels of off-budget resources (Khan 2005a, 2010a). Political stability depends on the ruling coalition having the capacity to deliver off-budget resources where required but not being so greedy that the ruling coalition become intolerable. In the meantime, growing anti-corruption movements are simply likely to add to the list of aspirations that cannot be met.

The tension between economic and political strategies as they have evolved in India represents a race between economics and politics that will determine the viability of the Indian growth model. On the economic front, growth is now driven by those who already have productive capabilities and capital. Some of these economic organizations have now acquired the strength to demand significant rent opportunities for themselves. Moreover, they can offer to share significant rents with politicians who appear to need vast off-budget resources to pursue their political agendas. The evolution of these formal and informal arrangements allows the most competitive and capable economic organizations to continue to build their capabilities but the system can also construct significant obstacles in the path of attempts to build new capabilities and sectors. There is also a significant danger that the access to politically generated rents and the difficulty of competitors to break in can lead to monopolistic practices emerging within the dominant economic organizations. On the political front, without strategies for broad-based employment generation, it will be difficult to meet the political demands of the excluded and their intermediate class political leaders. Attempting to meet or manage these demands using traditional patron-client politics requires political corruption and monopolistic deals for the most powerful economic organizations. Alternatively, attempting to meet growing demands for redistribution through budgetary transfers also has its limits given the relatively narrow tax base and the possibility that corporate taxes and taxes on the incomes of the middle classes are probably already hitting their upper limits.

2. The Limitations of the ‘Liberalization’ Story

The explanations attributing India’s growth takeoff largely to liberalization and opening up after the 1980s can be evaluated in a number of ways. First, there is the problem that has been often identified in the Indian literature that the growth takeoff that began in the 1980s and possibly even in the latter half of the 1970s predates liberalization in the 1990s by at least a decade (Rodrik and Subramanian 2005; Kohli 2006a, 2006b). More sophisticated supporters of the liberal economic model have argued that while growth did indeed take off in the 1980s, it would not have been sustainable without the reforms of the 1990s (Panagariya 2004, 2005a). But to understand the problems that liberalization solved and those that it could not we need to compare the effects of liberalization in the post-1980 period as a whole, which we will call the second phase of liberalization with the liberalization that resulted in a truly open economy in India in the last century of British colonial rule.

India, like other colonies where white colonists did *not* directly settle in large numbers, adopted free trade policies in the ‘high’ colonial period from the late nineteenth to the early twentieth century. But that experience was associated with *low* growth, particularly in industry and other modern sectors. Indeed, so bad was this experience that the post-colonial strategies in all newly independent South Asian countries were deliberately statist and interventionist as a result of that memory. The Bombay Plan of 1944 hammered out between the Congress Party and its supporters in big business like the Tatas and the Birlas made an implicit pact with the state, ratifying its political concerns with income distribution and retaining public control over ‘basic’ industries and in return getting a political commitment for support for the private sector for industrialization. The instruments that the Bombay Plan identified to deliver this social contract included price controls, limits on dividends and profits, minimum wages, government directors on boards of companies and licensing.

These instruments were already in place because of the wartime control structure set up by the British, the Congress simply wanted to take this over and apply it for industrialization. The Licensing Framework was formalized under the Industries Development and Regulation Act 1951. New capacity in industry had to be licensed by the state which would then allocate foreign exchange to import the capital equipment and raw materials required for production. The rents that were implicitly created for the private sector through this mechanism, and through the provision of public sector outputs that the private sector would use as intermediate products allowed infant industries to be set up and embark on learning-by-doing. State intervention to promote industry was therefore strongly supported by Indian industrial interests, both in India and in the new state of Pakistan. Policy-makers, business leaders and economists of all political opinions in the 1950s supported state intervention to promote industries and accelerate the adoption of modern technologies. The distributive limits agreed between business and the state were politically necessary to sell this social contract to the wider nation, in exactly the same way that industrial policy in East Asia set limits on the freedoms of capitalists to export capital or to have excessive living standards.

We will see that while South Asian catching-up strategies were not as successful as those in East Asia, the growth takeoffs in South Asia in the 1980s cannot be understood without accounting for the emergence of the technological and entrepreneurial capabilities that were developed as a result of the strategies adopted in

the decades prior to 1980. This perspective on the second liberalization and its governance and policy challenges is significantly different from that coming from mainstream economics where the focus is mainly on how to deepen liberalization as a strategy for sustaining growth. While opening up has obviously been important in obvious ways for creating opportunities for trade and accessing global finance and technology, liberalization by itself would not have been effective in the absence of (even partially successful) strategies that built capabilities of competitive production in a few sectors. By systematically ignoring the conditions that allowed opening up to be so beneficial in the South Asian economies, contemporary policy-makers have given insufficient attention to developing policies that could contribute to developing *new* capabilities beyond the ones that drove growth in the 1980s and 1990s in a few sectors and regions. This in turn has resulted in unbalanced growth in terms of its regional distribution, rapidly worsening income distribution as a result of slow employment generation and sectoral specialization in a few sectors. If growth is to be sustained and extended to a wider population, strategies for developing new productive capabilities have to be reconstructed and improved. This requires an understanding of why India's political settlement prevented fully effective implementation of industrial policies in the past, but even more so, the implications of changes in the political settlement in recent years.

The implementation of formal industrial policies had always been weaker in South Asia compared to East Asia. Industrial policies required support for firms involved in adopting new technologies and processes that required a period of learning-by-doing. The learning-by-doing in developing countries is risky because relatively small overruns in the time taken to achieve competitiveness can financially cripple investors and entrepreneurs. On the one hand, external support to assist learning-by-doing can also fail if it dampens the incentives to put in high levels of effort into the learning-by-doing exercise. Ensuring high levels of effort requires that any state support is conditional on meeting agreed performance targets, and this in turn requires enforcement capabilities on the part of the state. In the Indian subcontinent firms could protect themselves from threats by the state to withdraw their support because they could make effective coalitions with powerful organizations that could protect the support they received. This meant that the effort put in by firms was less and capability development slower than in East Asia. Moreover, the evolution of the political settlement in South Asia in the direction of the central political leadership becoming weaker relative to lower level political organizations within the ruling coalition meant that it became progressively easier for firms to buy themselves protection and to protect their rents and indeed to claim increasing rents over time.

By the 1980s the implementation of formal industrial policies became virtually impossible in the context of these gradual shifts in the relative power of organizations within and outside the ruling coalition. It was in this context that the 'opening up' happened, an opening up that was driven largely by powerful business groups beginning to drive their own accumulation and technology strategies within the framework of support that already existed. The growing political power of business in some sectors and regions and close ties to sections of the political and bureaucratic machinery allowed them to demand greater freedoms in resource allocation decisions and drove the opening up that happened in the 1980s. Economic orthodoxy and formal liberalization played a relatively small role, as virtually all commentators now recognize. Paradoxically, the collapse of the centralized political structure that had

ineffectually implemented industrial policy created new and even stronger compulsions for firms, sectors and regions that already had some productive capabilities to push their competitiveness to the global frontier. The entrepreneurs and sectors at the forefront of the economy in the 1980s could see that they were within striking distance of becoming globally competitive and they could also see that permanent protection was no longer on the cards and in any case, they did not want to remain limited by the ‘license raj’. This combination of factors led to a successful breaking out of a number of sectors in the 1980s. But the conjuncture of factors that allowed this was very specific and cannot be reduced to ‘liberalization’. Understanding what happened has substantial policy significance in terms of future policies in India and elsewhere that can replicate these early successes to develop entirely new sectors and industries.

The scale of this acceleration is shown in Table 1, which also shows that the growth acceleration of the 1980s was not limited to India. All the three large South Asian economies enjoyed growth accelerations at about the same time. In India and Bangladesh the accelerations in GDP and per capita GDP growth rates were around 2% per annum in the 1980s compared to the decades from 1960-80. In Pakistan, the acceleration was somewhat less at around 1% in per capita terms and 0.5% in GDP growth rates. In Bangladesh and India, both GDP and per capita GDP growth rates crept up further over the 1990s and beyond. In Pakistan the acceleration collapses in the 1990s partly because its economy was exposed to shocks from the worsening situation in Afghanistan. Growth begins to recover in Pakistan in the 2000s but faced new challenges in 2007-08 in the context of a difficult transition to democracy and a global financial crisis. If we focus on the 1980s, it is clear that all South Asian countries enjoyed accelerations in their growth rates at about the same time. In the intense analytical and policy debate about the factors that triggered India’s growth acceleration, the comparative regional data are often ignored. Looking at the region forces us to look for explanatory factors that are consistent with a simultaneous acceleration in the three South Asian countries given that the content and sequencing of their gradual moves towards liberalization were very different.

Table 1 The South Asian Growth Acceleration in the 1980s

Growth Rates %	India	Pakistan	Bangladesh
GDP			
1960-80	3.5	5.5	1.7
1980-90	5.6	6.1	3.6
1990-00	5.8	3.7	4.7
2000-05	6.7	4.9	5.3
Per Capita GDP			
1960-80	1.2	2.6	-0.8
1980-90	3.4	3.5	1.2
1990-00	4.0	1.2	2.6
2000-05	5.2	2.4	3.3

Source: Based on data from World Bank (2008)

The simultaneous growth accelerations, at a time when global growth was slowing down, tell us we should look for common features across these economies that could

have contributed to the acceleration. The common feature could not be their adoption of liberalization strategies at around the same time. Indeed, formal policies of liberalization were not adopted by India till the 1990s. Instead, what we find is a rather curious pattern in the political evolution of these countries from the mid-1970s onwards. From their independence in 1947, competing political factions had been growing in strength and numbers as emerging political entrepreneurs organized new movements and political groups, largely based on caste, regional and linguistic identities. Till the mid-1970s in India competing political factions had been successfully managed and accommodated within the Congress Party which won successive elections to form the government at the centre. Resources, privileges and rent capture opportunities were allocated through the party to different factions in calibrated ways to keep the coalition together and to provide the ruling faction with the political power to enforce a particular social order. In Pakistan and later in Bangladesh, rent allocation to political factions was also centralized over this period, but through military governments. Pakistan's military governments ruled through a combination of repression of powerful political organizations but also by selecting enough political factions to incorporate within the rent allocation system to give the ruling coalition enough political support to rule. When military governments collapsed in 1971, both Pakistan and Bangladesh made an immediate transition to Congress-style inclusive political parties in the form of the Pakistan People's Party and the Awami League, which for a brief period calibrated and allocated rents to a large number of political factions within these parties in the same way as the Congress had been doing in India.

However, in all these countries the underlying social organization was changing in terms of the number and strength of competing factions. Since the 1960s, the growing aspirations of upwardly mobile intermediate classes found expression in the organization of a growing number of new regional and national political movements in new parties, caste mobilizations and opposition coalitions. These processes made it more and more difficult for the Congress to impose internal order within the party as long as it tried to remain an inclusive dominant party. Disaffected factions and coalitions could threaten to leave the party as their threats to leave and join or become the opposition were becoming more credible. The growing fragmentation and competition between factions within the dominant ruling coalition across South Asia led to a series of authoritarian responses in the mid-1970s that were remarkably similar. In India, Indira Gandhi imposed her Emergency from 1975 to 1977, and at almost exactly the same time, Mujib in Bangladesh in 1975 attempted to set up a one-party state that lasted less than a year. In Pakistan, Bhutto's populist version of Islamic Socialism also took a turn towards authoritarianism with attacks on opposition politicians and the threatened use of force to maintain the control of the ruling party. But within a very short period all of these experiments had failed, signalling that the strength and diversity of political organizations across South Asia precluded the organization of order from above.

In India, the Emergency could not silence an increasingly sophisticated and assertive political class. The 1977 election brought in the first non-Congress government and this was the beginning of a transition towards looser coalition governments at the centre. In Bangladesh and Pakistan the transition towards a weaker multi-party governance system took longer. The authoritarian populist experiments in these cases were not overthrown by a vote but by military coups that happened without social

opposition and with the tacit support of many political factions, including (certainly in the case of Bangladesh) factions within the ruling parties. The new military regimes that came in because political regimes failed to impose control on all political organizations from above were operating in a very different social context compared to that of the 1960s. From the outset they had to accommodate many powerful political organizations organized by intermediate class political entrepreneurs. They used clientelist strategies to buy in political support and could now rely much less on repression given the much greater power of political organizations in the new environment. Indeed by bringing in new political forces into the ruling coalition, the military governments helped to engineer the transition to multi-party democracy.

Thus, despite their apparent differences, by the mid-to-late 1970s there were some significant similarities emerging in the political settlements across South Asia. The dominant single party and repressive authoritarian models were both ruled out by the burgeoning power and growing number of political organizations. Political organizations were mobilizing ever newer sections of the population, mainly with a view to capture rents for their political organizers, but also with significant rent distribution down new patron-client chains. By the late 1970s or early 1980s, a looser organization of political competition between competing political factions emerged across these countries, which we have described elsewhere as *competitive clientelism* (Khan 2010a). The change in the political settlement and the underlying distribution of power between political organizations meant that the Congress's position as the dominant party was no longer sustainable. The Congress could no longer rule without making coalition agreements with other parties, and sometimes entirely different non-Congress coalitions would have to be allowed to form the ruling coalition.

These changes in the political settlement had significant implications. The implementation and enforcement of formal industrial policies became more difficult but the possibility of the ruling coalition making explicit pro-business deals with business organizations improved. Long before formal liberalization was adopted and began to be implemented in the 1990s, the declining enforcement capabilities of the central government in India and its neighbours had already had significant implications for the economic strategies and opportunities of economic organizations. The ability of these states to enforce the conditions that would make targeted industrial policies effective had always been poor but by the mid-1970s any pretence that these types of targeted industrial policies were effective could no longer be sustained. The enforcement problem for targeted industrial policy is that the market failures that prevent investments in learning in developing countries require state support to the sectors and firms to finance the loss-making period of learning-by-doing. But the learning-by-doing is only likely to be successful if the firm-level participants put in high levels of effort in learning, and this in turn requires that the support can be withdrawn if performance is poor.

The multiple power centres within the ruling Congress Party in India and the growing number of these competing power centres over time meant that the threat to withdraw support from non-performers (which had never been very credible) became even less credible over time. Firms and sectors threatened with subsidy withdrawal could in principle find backers who would be able to effectively block subsidy withdrawal or the imposition of other types of discipline on them for a price. If the political and bureaucratic leadership know this, they know the costs of trying to force through

subsidy withdrawal in such a context, and they are unlikely even to try and achieve subsidy withdrawal as a disciplining mechanism. It is not surprising that the sectors that were being assisted to achieve competitiveness did not do so, and as a result, the quantum of implicit subsidies was growing over time. While the targeting policy did undoubtedly raise technological capabilities in a few sectors, the absence of compulsions to take firms to the frontier had a number of consequences that eventually led powerful business coalitions themselves to push for the abandonment of the formal policy instruments like licenses. As time went on and the firms initially receiving support never graduated to self-sufficiency, firms that were not already on the gravy train had a steadily declining chance of getting support given the growing fiscal and other burdens associated with the permanent protection of earlier firms. At the same time, even the firms receiving support had growing reasons to fear that their support would decline over time as the fiscal and other costs of protection were becoming less politically defensible over time.

It is in this context of a partial move of a few productive sectors towards the competitive frontier that the changes in the political settlement in the mid-1970s had significant effects. These changes happened at the right time for these sectors because the failure of the Emergency led to a recasting of the Congress Party as a party that could not hope to include and satisfy all political organizations within it. The most significant consequence of this was that the Party was now able to adopt pro-business policies with much fewer constraints than before. This in turn allowed business organizations that were already close to achieving global competitiveness to break out and reach the frontier. In the first place, the possibility of managing the detailed targeting attempted in the industrial policy system of the past became totally implausible in the face of the greater fragmentation and politicization of rent allocation within the ruling party. The formal structures of industrial policy were therefore gradually wound down, though in practice by the early 1980s they had already stopped being relevant in influencing investment decisions. But it was not before the 1990s that liberalization really began to have a significant effect on say average levels of tariffs or the number of sectors that were under licensing restrictions.

Well before this, however, the other important change flowing from the change in the political settlement was that the leadership of the ruling party was gradually able to take pro-business policy positions in ways that were not possible before. The political inclusion of all political organizations and factions within a dominant party meant that many groups that actually had relatively limited bargaining power in society nevertheless could acquire the ability to influence rent-allocation decisions within the party because of their numbers and strategic party positions. Before the collapse of the dominant party system in the late-1970s, inclusive parties in South Asia like the Congress Party included many factions that could use an anti-business rhetoric to demand rents for themselves if the leadership needed to provide resources to business interests. In the more competitive political environment that emerged afterwards, no party could hope to accommodate and satisfy all relevant powerful political organizations and factions in the country. The strategy of competing parties shifted to one of absorbing political organizations on a selective basis depending on their holding power in real conflicts (which determined how useful they were to the party) and the price they demanded in terms of rent allocation. The consequence of this was that the bargaining power of business interests increased in *relative* terms because

they could offer significant rent-sharing opportunities for cash starved political parties, while the bargaining power of labour and of redistributive political organizations based on caste and other symbols began to suffer a *relative* decline, particularly in the 1990s. Labour in particular found it could no longer impose the same constraints on political decisions in most states. Political factions who sought to capture rents by opposing business interests became weaker as political parties competed actively to woo business interests to their side, offering explicit political support in exchange for the promise of kickbacks from business or the indirect benefits coming from job creation or tax revenues. This change had a significant positive effect on firms and sectors that were close to the frontier as they could now directly lobby for the support that was critical to drive their growth.

Entrepreneurs could see that global competitiveness was achievable in a few sectors in India and that the rewards of achieving that would be high, as would be the penalties for failing to achieve it in an economy that was very gradually but inevitably going towards declining protection of its own industries. These incentives for achieving global competitiveness were important but on their own they may not have been sufficient. Firms needed policy support to engage in a second round of intensive learning-by-doing and this is where the changes in the political settlement in the late-1970s come in to play a critical enabling role. The political leadership knew very well that the economy was not strong and it was in their own interest to try and assist growth by supporting business houses or sectors that appeared to have a chance to grow. It was in their interest because the political leadership would benefit directly or indirectly from growth. The leadership also found, as we have described, that they could now support explicit policies of support for business in general and for particular sectors of business in particular without an immediate political backlash that may require offsetting allocations of rents to other interests within the party. Beginning in the 1980s formal and informal policies began to emerge to provide a different kind of support for firms in a number of critical sectors. This support did not come through complex industrial licensing and planning structures with all the checks and balances that preserved the interests of other social constituencies. This kind of targeted support provided support for firms that could in principle be located far from the frontier and could only have worked in the presence of effective and credible disciplining. The new support came in the form of simpler and less conditional support and (initially at least) went to firms that were relatively close to the competitive frontier and therefore had strong incentives to reach the frontier with the assistance that they were receiving.

The forms of support that were important in the new phase included explicit assistance to firms seeking to acquire land, the continuation of tariffs in critical sectors to assist important firms, or assisting firms in negotiating terms with foreign partners and setting domestic content requirements. These types of policies assisted domestic firms that were close to the frontier but which would not have achieved competitiveness given their existing capabilities. With the assistance they could start producing and engaging in learning-by-doing to reach the frontier. Given their strong incentives to reach the frontier, effective monitoring and disciplining was not required and in many cases Indian firms did indeed become globally competitive in a few important sectors in the 1980s and beyond. A focus on this combination of factors provides a better explanation of the growth acceleration that happened in the 1980s, particularly because a similar approach can also explain somewhat different growth

accelerations in Pakistan and Bangladesh (Khan 2010a). These factors include the existence of a few sectors that had productive capabilities close to the frontier as a result of previous industrial policies, changes in the political settlement that fragmented the opposition to pro-business policies within ruling parties, and the incentives for businesses in some of these sectors to use the additional support that was available to move to the competitive frontier.

Thus, while it was true that growth in South Asia accelerated at a time when the industrial policy structures that had been established in the post-colonial period were collapsing, it would be partial and misleading to say that liberalization alone drove this growth. Industrial policies were unwinding in the context of a substantial entrepreneurial base with moderate productive capabilities, and many of these firms were driving the opening up in their own interest. Most significantly, the distance from the competitive frontier could not have been covered by these firms and sectors in the absence of a second round of 'pro-business' policies that emerged to provide privileged access to resources to favoured firms and sectors. But equally, these types of unconditional pro-business policies are unlikely to have worked in the absence of a number of sectors that had been pushed close to the frontier by earlier industrial policies. The latter observation has important implications for the continuation of a pro-business Indian policy regime in the absence of targeted policies that can create moderately effective capabilities in new sectors. Some of the damaging consequences of pro-business policies on their own began to emerge in the 2000s and beyond. Close partnerships between businesses and political entrepreneurs were increasingly used to engage in unproductive rent capture through land grabbing scams, price fixing and insider dealing. As the number of sectors that were close to the frontier was not growing, businesses that enjoyed government patronage sought to make money in other, more damaging ways. The literature on India recognizes that there was a shift towards 'pro-business' policies in the 1980s *before* liberalization became important in the 1990s. The debate has been over the content of the 'pro-business attitudes' and policies and why they had such a significant effect on growth (Acharya, et al. 2003; Panagariya 2004; Virmani 2004a; Rodrik and Subramanian 2005; Kohli 2006a, 2006b; Basu and Maertens 2007). The focus on changes in the political settlement in this paper and its effects on the specific formal and informal policies that allowed a new round of capability-building in the 1980s adds to this debate and also helps to identify specific policy and political challenges for the future.

3. The First Liberalization: growth with limited capabilities under colonialism

The limited liberalization that happened in the 1980s and 1990s had radically different effects compared to the liberalization that was forced on India by colonial rule in the late nineteenth century primarily because the second liberalization happened when a number of important sectors had already come close to the global competitiveness frontier. The difference in the results achieved in the two periods is a dramatic illustration of the fact that free(r) markets are not likely to magically help an economy if that economy has nothing to sell and its productivity gap with market leaders in different sectors is so vast that even a significant wage gap does not help it to engage in production. This is true in general for most underdeveloped areas within India even today, which helps to explain a number of puzzles that we referred to earlier about the nature of the liberalization-driven growth in India. If capabilities are limited to a relatively small number of skilled individuals with high human-capital, and if these

individuals are located in richer states (which is why these states are rich), liberalization may sustain growth driven by these capabilities but is not likely on its own to bring about either a significant amount of new job creation or the equalization of regional inequalities. To meet these goals we need to understand the contracting failures and transaction costs that were preventing the development of productive capabilities in the first place, and ask if liberalization removes these problems entirely. If not, jumping the productivity gap in new sectors is likely to remain subject to significant market failures that can prevent capability development through market contracting.

In the late nineteenth century, British colonial rule introduced virtual free markets for India (consisting then of India, Pakistan and Bangladesh). Free trade policies integrated India into global markets with almost no tariff protection for domestic industries. In addition, colonial rule effectively guaranteed the property rights of British metropolitan investors in India. Yet, despite free trade, low Indian wages, the effective protection of the property rights of British investors and the possibility of full repatriation of profits and capital, there was virtually no industrial investment in India from Britain. It is often argued that the non-industrialization or even deindustrialization of India under colonial rule is evidence of a deliberate intention to keep India underdeveloped, perhaps to retain it as a market for British products, perhaps to ensure that it was easier to control. An alternative explanation may be that the British simply did not face sufficient political pressure from within India to concede the types of policies like tariff protection that could have countered the market failures facing the financing of learning-by-doing. In either case, the outcome was just as bad. Most foreign investments over this period were in plantations and low technology industry and even this was largely financed by the reinvestment of trading and other profits made in India (Ray 1979: 14; Rodrik and Subramanian 2005). British investment in industry was almost entirely concentrated in the jute industry where India had a global monopoly rather than in areas where competitiveness could be achieved through transferring technology and upgrading labour productivity. As a result, free trade did *not* result in the emergence of new modern domestic production capabilities. From 1860 to 1945, India's per capita income grew at a derisory 0.5% per annum (Hicks, et al. 1989: 217).

Indian merchant capital (dominated by the Marwari and Parsi communities) initially focused on trade and stayed away from industry. When the American Civil War disrupted supplies of cotton textiles in the late nineteenth century a cotton textile industry developed around Bombay (Ray 1979: 4). But by 1911, the industrial census recorded that there were only 7000 units throughout British India that employed more than 20 workers each, and more than a third of these did not use any mechanical power (Gadgil 1944: 121). A few major developments did of course take place. The giant Tata iron and steel plant at Jamshedpur was established and began production in 1911, without any tariff protection, but not without critical government support that enabled production to commence. Given the reach of the Tata conglomerate today, with global stakes in iron and steel production, in the automotive sector and in software, it is interesting to recall how this Indian giant emerged to set up its first steel plant and almost became bankrupt in the process. In a context where there was no formal support to Indian capital, Tata's relationship with the British Raj was an early example of how the political access of advanced sections of Indian capital even with a

colonial state could sometimes (with a bit of luck in the shape of the First World War) result in industrial development.

While the Raj was not interested in tariff protection in colonies without significant numbers of white settlers, during the planning and construction phases, TISCO (the Tata Iron and Steel Company) did receive extensive government support in the form of geological surveys, reduced transport costs, access to land and water rights, simplified import arrangements for construction materials and an agreement that the government would buy 20,000 tons of steel rails annually for ten years at the landed import price (Morris 1983: 589). Clearly, the simple story that British colonial rule actively prevented every attempt at Indian industrial development is not borne out by the evidence, though examples to support a more malign interpretation of colonialism can be found particularly in the earlier period of British colonialism in India. Even with this government assistance, Tata faced crippling financial costs while setting up and learning to produce in Jamshedpur. The major costs were not the costs of plant, but the costs of setting it up and learning how to produce high quality steel at a competitive price. Tata did not have any sustained assistance in the form of tariff protection or other policy instruments that could support the longer-run costs of learning-by-doing in plants that were entirely new to India. But Tata's diplomatic and cooperative relationship to the government, and in particular the fortuitous needs of the colonial government during World War I enabled Tata achieve competitiveness in steel production and eventually helped it to develop into a global giant (Ray 1979: 27).

The upfront government assistance, impressive as it was, may not have saved Tata from bankruptcy. As Rothermund (2000: 55-6, 68) points out, if it had not been for the war, the visionary strategy of Jamshedji Tata would probably have ended in failure and the man may well have been remembered as a reckless gambler. The war created the second and essential price margin that financed a further round of learning-by-doing that eventually took TISCO to the frontier. The role of the war was to create an additional demand for steel rails that were required to protect British interests in Mesopotamia and TISCO found itself in a seller's market. The profits during this period allowed the learning-by-doing to be effective and by the end of the war, TISCO was a competitive or an almost competitive enterprise. Tata was in many ways unique for this period of Indian development in entering a relatively advanced sector on the basis of a personal vision (but one that almost did not pay off despite some government support). For the period as a whole, Bagchi (1972) provides estimates of private industrial investment in India from 1900-39 which show steady but not spectacular investment over this period, with little evidence of any acceleration.

Although the state assistance that TISCO received was quite exceptional, for instance with land acquisition, geological surveys and through some assured government purchases, Indian industrial projects did not get long-term assistance for overcoming their initial productivity disadvantage. Thus, even if industrialization was not actively discouraged by the British, industrialization was also not one of the objectives of the early raj. Tariffs that had been allowed by British administrations in settler-dominated colonies like Canada, Australia and South Africa, and which played a crucial role in the development of industry in those countries, were expressly disallowed in non-settler colonies like India on the grounds of the 'Open Door' policy. India was more

important as a market for British products and for the triangular commodity trade with China. In the 1880s Indian customs revenues were only 2.2 per cent of the trade turnover (a measure of the average tariff protection), compared to 21 per cent in Brazil at the same period (Maddison 1971: 57). However, from the early twentieth century onwards, and particularly after the First World War and the growing penetration of India by Japanese textiles, the pressures of expatriate British capitalist interests in India finally began to succeed in getting the state to begin to support industry. Assistance to Indian industry gradually grew in the form of slowly increasing tariff protection, state purchase contracts, preferential infrastructure provision and interventions in commodity and labour markets, without which Indian industry had no chance of taking off (Bagchi 1972: 420-43). Under growing pressure from Indian capitalists, by 1925, the average level of tariffs rose to around 14 per cent from a pre-war level of 5 per cent (Maddison 1971: 57).

How should we assess the performance of India under British free market policies? It is unfair to compare growth in the early part of the twentieth century with growth today because compared to the late twentieth century the earlier period was one of relatively slow growth in the world economy. The appropriate comparison of India's performance is therefore with other contemporary developing countries. The most obvious comparator is Japan, which entered manufacturing at around the same time as India, but with much stronger government support for industry following the Meiji reforms. A comparison with contemporary Japan shows that the real weakness in India's industrialization was not so much the aggregate investment or growth in this early period, but how sustainable it was in terms of meeting Japanese competition and later the competition from other emerging competitors. Effectively, the sustainability of growth depends on investing in technologies that have the *potential* of achieving high rates of productivity growth, and then succeeding in *actually* raising productivity using these technologies. Here, comparative studies on the performance of Indian and Japanese cotton textiles show that while in 1906 India supplied three-quarters of the Chinese yarn market, by 1914 Japan had grabbed the biggest share, and in another ten years had reduced India's share of the Chinese market to under a quarter (Koh 1966: 148). This devastating defeat in the single major Indian-owned manufacturing sector had far-reaching consequences for India's subsequent industrial development.

Thus, despite a few significant success stories, the overall effect of free market policies imposed on India induced it to become in the main a provider of raw materials to the empire and a market for British manufactured products. The success stories emerged despite free trade and not because of it. In particular, the significant breakthrough in iron and steel would probably not have happened without the intervention of the First World War. India's growth rates stayed well behind that of advanced countries resulting in *divergence* over this period, meaning that the gap between Indian per capita incomes and those of advanced countries increased. In 1873 India's per capita income was around 25% of US per capita income at that time. By 1947, the very low growth rates in India had widened the gap and India's per capita income was less than 10% of the US level (Clark and Wolcott 2002: Figure 1).

4. 'Dirigiste' Policies and Capability Development 1947-1980

The debate between Nehru and Gandhi represented two contrasting visions of the future India, but it was Nehru's vision that decisively won. Gandhi's vision of an

India based around its timeless villages and its indigenous technologies appealed to a populist mass audience but had few takers within India's emerging elites. However, big business understood the importance of Gandhi's political appeal and heavily financed his politics. Some of Gandhi's biggest supporters were big capitalists like G.D. Birla, in whose house Gandhi was living when he was assassinated in 1948. How Gandhi's relationship with big business would have evolved had he lived longer we do not know. But his death enabled Nehru's vision to dominate with a few occasional concessions to the Gandhian philosophy. For Nehru, the future India would be a country with modern technology and industry and it would be development that would act as the cement binding together India's diverse population. Development would modernize India's mindset as well as its economy. Caste, religious and linguistic divisions would become less relevant (Khilnani 2003). Virtually all Indian anti-colonial leaders like their counterparts in other countries believed that freedom from colonial domination would be meaningless unless economic freedom could also be achieved. The experience of the colonial period made it clear that the market alone would not ensure this and hence Nehru's interest in planning. His visit to the Soviet Union in 1927 left him impressed with the rapid industrialization that appeared to be possible with centralized planning. Under Nehru's leadership, the National Planning Committee of the Congress, in which India's emerging business leaders played an important role, adopted the broad features of early Indian planning as early as 1939. The instruments that were discussed in these early discussions included public ownership of large scale industries, the regulation of monopolies and licensing to implement an industrial policy that sought to accelerate industrialization.

Licensing and public ownership were designed to accelerate the development of essential and basic industries, and to allocate scarce foreign exchange to maximize investment in critical sectors. India's emerging capitalists would therefore be important players in the future planned economy and they participated in the discussions from the outset. Clearly, business leaders in India as elsewhere wanted government support without responsibility and with minimal state controls. The early discussions and debates reflect the tussles between different constituencies attempting to define the contours of post-independence industrial policy. Recognizing the pressures taking the political leadership in the direction of 'socialism', business leaders took the lead in defining the social contract that would fulfil their requirements as well as satisfying other constituencies in the country. Led by capitalists like Tata and Birla, a small group prepared an embryonic social contract setting out the terms of engagement that came to be known as the Bombay Plan of 1944-5. The first part, published in 1944 was entitled *A Brief Memorandum Outlining a Plan of Economic Development for India* and set out the justification for the role of the state. India's poverty could only be addressed by state action and planning. This was widely supported by the business community. The second part published in 1945 set out the instruments of future policy. Industrialization was to be accelerated using protection, financing and public investments. The allocation of support would be based on the licensing of industries and the allocation of foreign exchange. As concessions to the social contract, regional equity and minimum wages were accepted. The quid pro quo was that the government would remain accountable and a slide towards 'socialism' would not happen.

There was much greater opposition from sections of the business community to the second part of the Bombay Plan because it implied that a permanent set of controls would be established on capitalists and there were also fears that the British would use this statement from business leaders to strengthen the wartime controls on Indian business that were already in place (Chibber 2003: 94-109). There followed a series of negotiations between business and the leadership of the Indian National Congress that continued after independence. Business leaders continued to demand maximum freedoms for themselves, such as the rolling back of plans for the public sector and demands to either not have licensing or have it only as a set of indicative guidelines. They made partial gains but eventually conceded the essential regulatory structure of licensing. The 1948 *Industrial Policy Statement* limited a monopoly for the public sector only in defence, railways and nuclear power, which did not yet exist. In a second area, primarily consisting of capital goods and infrastructure the public sector would take a lead but if the private sector had feasible projects they would not be blocked. In all other sectors the private sector would be free to invest subject to licensing.

The Licensing Framework was finally formalized in the *Industries Development and Regulation Act* of 1951. Business demands for a purely indicative planning structure were not met. New industrial investments or capacity expansion above a certain size in a wide range of sectors had to be licensed by the state which would also allocate any foreign exchange required to import the capital equipment and raw materials necessary for production. Licensing provided the state with a powerful instrument to direct investments into particular sectors. On the other hand, it provided critical rents to the industrial investor on top of the protection provided by tariffs and other import controls. By limiting domestic entry, licensing provided a period of even higher domestic prices (in a context of tariff protection of the domestic economy) that could help to finance learning-by-doing in new sectors. It could also direct potentially significant rents to particular sectors by rationing scarce foreign exchange for the purchase of specific machinery and equipment. Nor did the business sector succeed in getting rid of provisions for disciplining firms that suffered from mismanagement or failed to make investments of the right quality and efficiency. However, business did succeed in diluting the directness with which disciplining could be applied to particular firms. A series of sectoral Development Councils were set up, staffed by industry representatives and technical staff. Complementing these was a Central Advisory Council for Industries that included all sectors and representatives of workers and consumers. It was only in consultation with these bodies that sanctions could be imposed on particular firms.

The 'license raj' has been extensively blamed for India's 'hindu rate of growth' which Virmani reclassifies later as India's 'socialist rate of growth' (Virmani 2004a). If we look at the subcontinent as a whole over this period, both 'socialist' India and the 'capitalist' Pakistan adopted very similar strategies of protecting domestic industries and attempted to build domestic technological capabilities. These policy choices can be easily understood if we remember the dismal experience with industrial growth and development under the colonial free trade regime. In fact, both countries achieved much better results in terms of growth and industrialization in the two decades after independence than they ever had under colonial rule.

Table 2 Dirigiste Growth in India

	1901-30	1931-47	1952-67	1968-81	1982-91	1992-2001
Agriculture	0.5	0.2	1.8	3.3	3.5	2.7
Industry	0.9	1.2	6.3	4.1	7.1	5.7
Services	1.6	1.7	4.8	4.3	6.8	7.6
GDP	0.8	0.8	3.4	3.8	5.6	5.6
Per capita GDP	0.4	-0.5	1.4	1.5	3.4	3.5

Source: Acharya et al. (2003) Table 2.1. The two shaded columns cover the dirigiste period.

Table 2 shows the growth acceleration in India with the new policies that addressed some of the market failures that had constrained growth earlier. The growth of GDP was around 3 per cent *higher* in the three decades after independence compared to the previous fifty years. The jump in the growth rate of industry was even more marked. A very similar growth takeoff happened in Pakistan (which at the time included Bangladesh as East Pakistan) with policies that were substantially quite similar (Khan 2012). To describe these outcomes as dismal failures that demonstrate the poverty of planning strategies is clearly wrong, though we shall see that problems were accumulating under these growth rates. Protection and subsidies proved to be extremely effective in driving investment in sectors that had previously been neglected. Import substitution as a method of developing new capabilities was initially extremely successful in both India and Pakistan. Table 3 shows the dramatic growth of production in sectors like machine tools and chemicals, with the share of imports dropping dramatically across industrial sectors.

Table 3 Import Substitution under Licensing

(Percentage of domestic market supplied by imports)	1951	1971
Iron and Steel	25	13
Aluminium	73	4
Sugar Machinery	100	1
Machine Tools	90	30
Sewing Machines	41	<1
Bicycles	65	<1
Nitro-Fertilizers	84	37

Source: Datt and Sundharam (1991: 339)

The statistician and economist, P.C. Mahalanobis, who headed the Indian Planning Commission in the 1950s formulated a growth strategy where savings were generated in the economy by prioritizing producer goods in the licensing strategy. The underlying logic of the model was that in a poor economy like India, savings and investment were too low. There are many ways of diverting consumption into investment (for instance by repressing wages, increasing the incentives for saving, expanding the banking system to encourage a wider population group to save), but the Mahalanobis model repressed consumption simply by changing the relative output of producer and consumer goods. This strategy, together with an expansion of the banking network did succeed in raising the share of investment in the economy. The share of gross fixed capital formation rose from 12.2% of GDP in 1951/52 to 17.5% in 1965/66 at 1970/71 prices, and stayed around that level till the 1980s.

Table 4 Slowdown of the Mid-1960s (net value added growth rates)

	1955/6- 1965/6	1965/6- 1975/6	1975/6- 1980/1	1980/1- 1983/4
Agriculture	0.9	3.9	1.0	3.5
Industry	6.5	3.5	4.6	6.2
Construction	6.2	2.5	3.8	1.8
Railways	6.4	3.2	1.5	0.1
Other Services	5.4	4.5	6.0	7.7
TOTAL	3.2	3.9	3.4	5.3

Source: (I. J. Ahluwalia 1985)

While savings and investment remained on average stable through the 1960s, the growth rate began to slow down in the mid-1960s, particularly in the industrial sector and within that, in the heavy industrial sectors that had been particularly prioritized by the planners. Table 4 shows the slowdown in overall growth rates and Table 5 shows the more significant slowdown of the capital-intensive and producer goods sectors within industry. As these were the sectors where a greater part of the incentives were created through the licensing system, the slowdown was particularly significant. And most serious of all the statistics was the emerging recognition that productivity growth in Indian manufacturing was effectively not happening. Table 6 shows the negligible rates of productivity growth in Indian manufacturing from 1960 to 1980. The success of a strategy of catching up can be measured by the productivity growth achieved by firms and sectors receiving support. Their levels of productivity are initially low when they start production, but if they remain low, then support can never be viably removed. The figures in are not for individual firms, which is where the catching up is supposed to be happening, but even if some firms in some sectors were rapidly catching up, we would expect to see higher figures for TFP growth for the manufacturing sector over this period. The basic story is not changed if we look at figures for labour productivity instead of TFP (Rodrik and Subramanian 2004).

Table 5 Deceleration in Industrial Sectors after 1965

	1959/60-1965/6	1966/7-1978/9
All Industry	8.8	6.5
Basic Goods (Cement, Fertilizer, Electricity, Metals etc)	12.2	7.2
Intermediate Goods (Spinning, Chemicals, Nuts and Bolts, etc)	9.4	6.1
Capital Goods (Machinery)	15.8	7.3
Consumer Goods	5.9	6.2

Source: (I. J. Ahluwalia 1985)

Table 6 Total Factor Productivity Growth in Manufacturing 1960-80

Period	TFP Growth Rate
1960-65	0%
1965-75	-1.5%
1975-81	0.8%
1960-80	-0.6%

Source: (I. J. Ahluwalia 1991)

Liberal economists like Ahluwalia (1985, 1991) who began to provide the statistical analysis of the slowdown saw the figures as a vindication of the inefficiencies of planning. A series of liberal economists, including Little, Skitovsky and Scott (1970) and Bhagwati and Desai (1970) had made the standard neoclassical argument that restrictions on markets are the source of inefficiency. Prices were distorted and as a result resources were inefficiently allocated. But the simple neoclassical argument did not answer many important questions. Why were growth rates high through the 1950s and early 1960s? Why did controls suddenly become a constraint in the mid-1960s? Moreover, market distortions should create static efficiency losses resulting in a one-time loss of net social benefit and not necessarily a reduction in the growth rate. Unless controls were becoming more distortionary over time, the rate of growth should not have suddenly declined in terms of neoclassical theory.

There was no question that licensing and the system of controls did create entry and exit barriers because that was the intention of these instruments (I. J. Ahluwalia 1985, 1991). The question was whether the restrictions were being effectively applied to achieve the goal of accelerating industrial growth by creating incentives and opportunities for new technology adoption. It was clear to most observers that there were many instances of misuse where licenses had clearly been 'captured' but the licensing authorities appeared to have little capacity to respond. For instance, large business houses would often create excessive barriers to entry by securing more licenses than they needed (using deception or corruption) simply to keep potential competitors out. The licensing authorities also appeared to create protection for sectors where it would be difficult to make a case for protection in terms of technological catching up and learning. These included many relatively low technology engineering sectors that continued to get effective protection even though they appeared not to be approaching international competitiveness. The administrative hurdles and red tape in the management of the licensing system were also unnecessarily complex and open to abuse. There were clearly rent-seeking costs for firms attempting to acquire or retain licenses, taking the form not only of the time wasted but also of corruption.

None of these are sufficient explanations for a slowdown in the growth rate even in terms of neoclassical theory unless there were reasons why the capabilities of the state in these respects were declining over time. But more fundamentally, the neoclassical analysis coming from the critics of industrial policy sees no role for policy in correcting failures of contracting. The market outcome in the absence of any intervention is theoretically the best one in the neoclassical framework and intervention only creates distortions and additional costs in the form of corruption and

rent seeking. The underlying model is flawed because the welfare-maximizing market outcome is a myth that exists only in textbooks. In a world where private contracting cannot solve all problems, intervention can be developmental, provided the benefits of intervention outweigh its costs (Khan 2000a, 2000b). Clearly, in the earlier period of industrial policy in India, up to around the mid-1960s, the particular types of interventions in place were generating growth outcomes that were significantly better than the previous free market outcomes during colonial rule. So the question is whether the planning system had begun to reach its limits, and if so why?

Corruption and more generally rent seeking are both common in systems where there are interventions to correct market failures as intervention will always create rents. The question is whether the corruption results in a change in the allocation of support (for instance if inefficient recipients continue to receive support) or ‘only’ results in a sharing of the benefits of growth with public officials (for instance failing projects are not supported but successful ones are expected to share profits with public officials). In the former case, the corruption can have very damaging effects because it imposes not only direct costs (the loss of resources from potential investment) but it also wipes out the potential benefit of intervention by destroying the possibility of accelerated catching up. In the latter case, the corruption still has a direct cost and is in that sense undesirable but because it does not wipe out the benefit of intervention in the form of higher growth, this type of corruption can coexist with significant growth as in South Korea in the 1960s (Khan 1996a, 1996b, 2002). So if corruption and rent seeking had suddenly become more damaging for the Indian industrial policy system, we would want to know how the bargaining between business and government was changing over time. But this would take us beyond the neoclassical framework that Ahluwalia and other liberal economists were using to criticize the effects of corruption in the Indian industrial policy system.

Finally, liberal economists argued that Indian industrial policy was also affected by the application of laws protecting other parts of the social contract. For instance, the protection of small-scale sectors was preventing the achievement of minimum efficient scale in some sectors such as textiles and garments. Optimum scale was also sometimes impeded by the application of the *Monopoly and Restrictive Trade Practices Act* of 1969 (MRTP) that was introduced by Indira Gandhi to control big business and as an apparent concession to populist sentiments. A particular target of liberal economists was the protection offered to workers as part of the industrial policy social contract. These included the provisions of the *Companies Act* of 1956 and the *Sick Industrial Companies Act* of 1985 which established procedures for closing down companies and provided for additional compensation to workers depending on their length of service. Liberal economists argued that these provisions created very high barriers to exit that prevented entrepreneurs from entering many risky sectors in the first place, for fear of being trapped in case of financial difficulties. As labour market reforms remain an important plank for reformers, we will come back to this issue later. But to explain the slowdown, the restrictive legislation should have become *more* stringent in the mid-1960s. There is little evidence of this, and in any case the most stringent restriction on exit was not enacted till 1985!

Was the Indian state at all aware that its industrial policy was facing problems and did the bureaucratic and political leadership intend to do anything about it? It turns out

that long before liberal economists were pointing out these problems and well before statist economists came up with lists of conditions under which industrial policies could be successful, Indian bureaucrats had pragmatically identified many of the most serious problems the licensing structure faced. *The Industrial Licensing Policy Inquiry Committee* known as the Dutt Committee was set up in the 1960s and reported in 1969 on the problems with the licensing system. It reported that there were a number of key problem areas, and these were not very dissimilar to the ones that economists would later be identifying. The first was a lack of clarity about priorities. The licensing system not only wanted to accelerate growth and development, but also intended to achieve multiple targets like regional equity and protection of small firms that often resulted in contrary incentives and outcomes. Secondly, the licensing authorities were failing to prevent the growth of non-essential capacity. This meant that firms were able to get allocations of licenses that were not planned. Since the bureaucrats knew this was happening, this was a failure of implementation and a failure to discipline businesses, rather than a failure due to information overload.

Third, there was a failure to prevent increases in regional disparities. Regions were able to get allocations of licenses that were not planned. This too was clearly not an accident as the bureaucrats were aware of what was happening. Powerful politicians and factions could get more licenses for their home states. The pace of development of particular states therefore depended on the organization of factions within the Congress rather than efficiency or equity considerations. This was to have significant implications for determining the initial conditions of states in the 1980s when growth became more explicitly market-driven. Fourth, the Committee argued that despite licensing, capital goods were often over-imported. This resulted in excess capacity as multiple firms could not be prevented from importing the same capital goods. Indeed growing overcapacity in some sectors was an important feature of the slowdown of the mid-1960s. As rationing scarce foreign exchange was one of the key objectives of licensing, the failure to prevent over-capacity was a serious failure of implementation and again reflected the ability of firms to override the allocation of licenses set out in plan documents. Finally, the report argued that a disproportionate set of licenses went to large firms and large business houses, again pointing to the importance of power and influence in the allocation of licenses. The top 73 industrial houses accounted for 56% of proposed private corporate investment in machinery and 60% of its investment in capital goods (including buildings) (Datt and Sundharam 1991: 142).

The committee thus identified a series of serious problems in the power of the state to implement its own policies and this had significant implications for outcomes. Its recommendations were aimed at redressing the problem of weak implementation by changing the institutional structure and the scope of the policies. Most interestingly, the Committee wanted to see planning restricted to a few strategic sectors. By reducing the scope of the policy to a few sectors, this would strengthen the implementation capacity of the state in several ways. The limited state capacities of monitoring and enforcement could be allocated better, and by focusing on a few sectors, the political competition over rents would also be limited. Secondly, the committee recommended the immediate banning of investment in overcapacity areas. Thirdly, it recommended that market forces should be used more effectively in a large middle area which did not have strategic implications. Fourth and most important, it wanted to enforce sanctions for the non-implementation of conditions accompanying the granting of licenses and credit. Clearly, it was self-evident to pragmatic

bureaucrats that support to firms should be conditional on performance, and indeed this had been central to the discussions around the setting up the licensing system in 1951. Finally, they recommended experimenting with joint public-private enterprises with properly trained public sector managers coming from a management cadre.

This is exactly the kind of strategic and conditional structure of incentives which was later identified in Taiwan and South Korea in the work of Wade (1990) and Amsden (1989). Why, if Indian bureaucrats had identified the importance of conditional support for themselves, were they not implemented in India? Instead the Dutt committee's report was quietly shelved and only the part of the report that criticized licensing was used much later in support of the transition towards liberalization. Clearly, there were impediments to the implementation of effective industrial policy in India. Political economy analysts have offered a number of different explanations for these constraints in India. A state's strength or weakness in terms of its implementation capabilities cannot be assessed in abstract without reference to the organization of the society in which these enforcement organizations are operating. Bureaucrats and political leaders with very similar technocratic and bureaucratic capabilities may succeed in enforcement in one context but fail dismally in another if the second presents them with well-organized opposition coming from powerful groups in society. It is the political settlement as a whole and not just the capabilities of bureaucrats and policing forces that determines relative success in the enforcement of particular institutions and policies (Khan 2010a). Our analysis of the sources of weakness in the implementation of industrial policy will be better understood if we first examine the arguments of Atul Kohli and Vivek Chibber.

Kohli (1994) opens up the discussion by introducing colonial history as a determinant of state performance in India. He does this by looking at the role of Japanese colonialism in explaining why the South Korean state was so strong in its ability to penetrate and control its society. Kohli argues that Japanese colonialism in Korea was brutal and interventionist, and sought to penetrate and control society from above. It could do this because of the demographic and military balance between the Japanese and Koreans allowed the Japanese to rule directly using their own officials and even in the economy they used their own entrepreneurs and landlords to a large extent. It had no need of domestic dominant classes and indeed did its best to destroy their power by confiscating their land and reserving senior and mid-level positions in the state for Japanese nationals. Modern enterprises were owned and operated by Japanese at all higher levels. Nevertheless, large numbers of Korean technicians, engineers and managers were trained, but in terms of decision-making, political or organizational power they remained in a very subordinate position. This interventionist history destroyed the power of domestic ruling classes and imposed the writ of the colonial state on other classes. Thus, Japanese social engineering changed the balance of power between state and society and gave the post-colonial South Korean state a free hand in imposing its own penetrative control over society. This was in stark contrast to India where the British did not have the numbers or the overwhelming military force to attempt such a degree of penetration and control. Instead, as is well known, the British ruled through intermediaries. The post-colonial states of the British Empire therefore faced much better organized and resistant societies, and similar types of developmental interventions were not possible.

Kohli's important contribution is to remind us that the relative organizational power of different groups in contemporary political settlements is likely to have roots in colonial history. Colonial powers used very specific strategies of social engineering to re-order the societies they were ruling to reinforce their rule. These strategies often changed the relative power and legitimacy of different groups and classes and their organizations with lasting implications for the organization of these societies. Kohli's observations about the destructive nature of Japanese colonialism are relevant for understanding the fragmentation of political and social organizations in Korean society, and this took decades to recover. In contrast, British colonialism in India had almost the opposite effect on the strength and numbers of social organizations. As a tiny group of colonialists ruling a huge country, the British had to recruit many different indigenous groups in support of their rule and they had to ensure that these groups did not collectively organize against them. The logical outcome was the strategy of divide and rule that resulted in the sequential mobilization and organization of new groups to balance the demands and pretensions of previously mobilized and organized groups. Sequentially, the groups that were the most loyal at any point in time provided recruits for administering and managing the imperial project. The consequences were the reverse of those in Korea. The fragmentation of society into competing organizations based on different identities and interests was much further developed in British colonies than may have naturally occurred in the absence of colonialism. The relative strength and numbers of political organizations in the two societies are critical variables that can help to explain the success or failure of implementation of particular institutions.

On the other hand, Kohli's use of his social analysis can be misleading because it may appear that he is arguing that colonial history made the South Korean state strong vis-à-vis its society *as a whole*. This is used in the context of his implicit view that developmental states are autonomous and authoritarian entities and the power balance in South Korea gave its state these characteristics. Kohli argues that these qualities are required to give a state the ability to restructure and reorganize society in a developmental direction. He also suggests that a developmental state is pro-capitalist and assists capital by repressing labour. However, states, including the South Korean one, cannot be autonomous of all social forces. A qualification in this interpretation of the developmental state is already evident in the work of Evans (1989) who Kohli refers to. Evans argues that in a developmental state, autonomy has to be embedded in social and economic interests. Embeddedness is important for ensuring that the autonomous state does not become predatory but by that very token its autonomy is also reduced. The rich political economy analysis of developmental states has established that the core characteristic of a developmental state is not that it can do anything it likes but rather that it has the capabilities to enforce developmental outcomes and that it has the incentives and social pressures to this. The important question is what are the functions of a developmental state that we need to assess in the context of specific state-society relationships?

In our analysis, the critical question is what does the developmental state have to enforce when capitalists are being supported to accelerate technology acquisition? Labour repression was arguably not the critical factor that ensured South Korean industrial policy success and indeed working class organizational strength ensured that wages rose rapidly as its industrialization proceeded (Amsden 1989). In fact labour repression can also be high in some rather poorly performing states. The most

important areas where enforcement is actually required can only be identified in the context of a specific policy and institutional analysis because the necessary enforcement tasks of the state depend on the contracting and market failures that state policies are trying to address. We will discuss this in greater detail later. A further twist to this is that the same contracting problem or market failure can potentially be addressed with very different developmental policies and some may be much more difficult to effectively manage than others given the particular political settlement. In other words, developmental outcomes depend not just on the overall characteristics of the state but also on the 'fit' between what policy-makers are trying to do and the political settlement that defines the enforceability or contestability of particular policies. Thus, we need to identify both the most important problems that a particular developmental state has to address (such as capability development for instance) but also the instruments that are most likely to address these problems in particular cases. The South Korean developmental state addressed the capability development problem with a set of instruments that it was very effective in policing. This involved imposing a significant amount of discipline on firms receiving support for capability development. Similar types of instruments could not be enforced to the same extent in India and this was identified as one of the important limitations of Indian industrial policy by the Dutt Committee referred to earlier. This aspect of the failure of the Indian version of the developmental state had less to do with a failure to repress labour and much more to do with the political difficulty of imposing discipline on capitalists in the context of specific financing instruments that intended to address specific problems.

Thus, Kohli makes an important contribution by pointing out the likely colonial roots of important aspects of the distribution of organizational power in developing countries, but his definition of a developmental state is more questionable. The Japanese impact in East Asia was exceptional and atomized social organizations to a very large extent. The successor states enjoyed a large element of autonomy as a result. But the distribution of power within South Korea was more complex than a weak-society strong-state binary divide. The South Korean state was constrained in important ways by organizational threats from within society and indeed within the state, which cannot be sharply divided from society in analytical terms (Khan 2010a). The collapse of the Syngman Rhee regime in 1960 was brought about by popular protests against election rigging and corruption and this was the context in which Park Chung Hee eventually assumed power in 1961. The urgency with which the new regime sought developmental success was driven by its need to sustain its legitimacy in the face of significant social mobilization. The repressive aspects of a developmental state are also over-stressed in Kohli's account and the repression that takes place in non-developmental states thereby under-stressed. Many working class Indians in many parts of India would probably find their state more repressive than many South Koreans workers did. Ultimately, while Kohli is right to look back to the colonial period to understand aspects of the contemporary distribution of power, we need to link this to the institutional and policy challenges facing states using particular industrial policy tools, like targeted support for capability development in firms. Otherwise we can fall into the trap of explaining South Korean success in very general terms of authoritarianism and autonomy which does not do justice to the differences in institutional enforcement capacities of countries.

The importance of disciplining capital in the context of state support to capital is explicitly recognized by Chibber (1999, 2003) who analyses why the Indian state failed to enforce discipline on the capitalists it supported. His argument is that enforcement was poor because a) Indian business effectively opposed disciplining; b) business had no interest in supporting disciplining because it was not rational to do so with import-substituting industrialization, in contrast to South Korea's export-led industrialization; c) South Korea could engage in export promotion because of favourable international conditions, in particular the alliance with Japanese capital which gave South Korea access to developed export markets; and d) by demobilizing organized labour, the Congress further weakened its own bargaining position with capital. As a description of what happened, Chibber's analysis identifies important features of Indian industrial policy from the 1950s to the 1970s, but some of the causal links can be questioned. He provides a detailed documentation of the negotiations that resulted in the emergence of the industrial policy structure in India.

The documentation that Chibber provides also shows how these negotiations resulted in the emergence of a relatively powerless Planning Commission in 1950 with a largely advisory role. The Planning Commission could only work through advice and recommendations that ministries and powerful coalitions would have to accept in order to be implemented. The disciplining mechanism was also diluted from the very outset by involving the advisory role of the sectoral Development Councils and the industry-level Central Advisory Council for Industries as bodies that would mediate between the planning apparatus and individual firms before any measures could be imposed. The involvement of industry bodies in the planning process appeared to have 'embedded' India's planning apparatus in the industrial sector. But unlike the sectoral councils and associations in South Korea and Taiwan, which generated Evan's concept of embeddedness, the Indian councils were not representative bodies and their recommendations could easily be ignored by firms that had no interest in accepting them as legitimate. This structure, according to Chibber, was the result of intense and effective industry opposition to ensure that enforcement was deliberately undermined and easy to evade (Chibber 2003: 146-57).

At the heart of Chibber's argument is an economic thesis that is somewhat problematic. He argues that it was not rational for Indian business to support disciplining because the strategy of import-substituting industrialization did not *require* productivity growth whereas a strategy of export-led growth does. South Korea could attempt such an export-led growth strategy, because it had access to established export markets that Japanese capital was moving out of. Japanese capital was willing not only to provide the technology but also to help market South Korean products. In this context, South Korean businesses had an incentive to support disciplining because their own success depended on it. Not only did the individual South Korean firm need to continuously upgrade its efficiency to keep up in export markets, it also needed the state to coordinate and enhance the efficiency of all South Korean firms because the quality of inputs purchased from other South Korean firms determined the quality of the product of each firm. In contrast in the Indian import substituting model, firms knew that they were selling in protected domestic markets and licensing gave a few firms oligopolistic profits. There was no incentive to improve quality or reduce price and disciplining was therefore rationally perceived to be an unnecessary imposition (Chibber 2003: 32-9).

There is a deeper question here about the jump from collective to individual rationality in Chibber's analysis. An individual capitalist will always prefer to get a subsidy and not put in the high levels of effort that will eventually make the subsidy unnecessary. If the reason why subsidies are necessary is that the initial productivity of a firm in a developing country is low (say because there is tacit knowledge involved in mastering how to produce products of a given price and quality), then the subsidy is what allows the firm to start producing and exporting. As long as the subsidy is there, the firm can keep on exporting. The collective interest obviously is that the firm should put in a high level of effort in its learning-by-doing activities so that the subsidy is no longer required. But once this happens and the subsidy disappears, the firm is not making greater profits, it is making normal profits. It is just that it can now survive without the subsidy. The benefit of its effort is a *collective* one, because now the subsidies are available for other sectors and firms. It is not clear how the collective benefit in this case solves the prisoner's dilemma problem for the individual firm. It has no interest in putting in a high level of effort, the outcome of which will be to lose its subsidy and become reliant on market competition to survive. There *is* a long-term benefit to the individual firm too, because once it learns how to learn it can keep on increasing its productivity and thereby increase its profits over time, or at least learn how to survive without subsidies. If all firms put in high levels of effort and the economy grows faster, the individual firm will also benefit from the growth in quality and output across the economy. Improvements in the quality of the inputs it purchases from other firms and perhaps an increased demand for its own output will help it on both the demand and supply sides. But this long-term incentive to put in high levels of effort in the individual firm is likely to be weak in all types of production strategies, not just export-led growth.

Chibber's logic slides from a statement about the collective benefit from rapid learning in a successful export-led strategy to the claim that individual firms will therefore not be able to prevent their own disciplining given the general support for disciplining. This claim is weak in terms of an economic analysis of what subsidizing learning involves and what the benefit to the individual firm is in putting in high levels of effort in such a context. In principle, a firm can have a rational incentive to support *in general* the enforcement of rules that are of collective benefit and *simultaneously* also have a rational incentive to free ride. It is exactly the same as saying that all drivers have a rational interest in supporting the enforcement of traffic rules, but each individual driver has an individual interest to free ride whenever the opportunity arises. The difference in the adherence to traffic rules in London compared to Lagos cannot be explained by the collective interest of all drivers to support the enforcement of traffic rules being greater in one case compared to another. The general support and individual resistance to the enforcement of traffic rules may be exactly the same in the two contexts. What is missing is an analysis of enforcement. Identifying the collective interest does not tell us why enforcement is more successful in one case compared to another. Indeed, there is no evidence that capitalists collectively helped the state to enforce disciplining in South Korea, or that the state in India called on the collective capitalist to assist in disciplining and found them wanting. Rather, a more plausible story is that the individual capitalist in South Korea could not find any political allies to protect their rents when the state leadership decided their performance did not warrant continuing support for capability development, while in India, capitalists generally found it very easy to find such allies in a fragmented and internally competitive ruling coalition.

This is why the contrast between export-led and import substituting growth strategies is exaggerated. In principle the same logic could hold for a group of firms operating in an import substituting country. If all firms put in high levels of effort and raised the quality of their products and reduced prices rapidly, sales of each individual firm would increase from the growing demand, the extent of the market would increase, input quality for other firms would increase, and indeed after a while, export-led growth would become possible. A state playing an industrial policy game would simply have to change the terms of support a little. Instead of saying that firms would have to meet export growth targets, the state would have to set an equivalent set of domestic sales targets. If the domestic market really was very limited for some products, the target could be set as a declining schedule of tariff protection over a number of years, forcing the firm to achieve international competitiveness but operating initially in the domestic market. In exactly the same way, firms would collectively benefit from the growth in the economy, but they would individually have the same incentive to free ride. By comparing the individual incentive of Indian firms to free ride under import substitution and the collective interest of South Korean firms to enforce an export-led strategy, Chibber is not comparing like with like.

At best, the opportunity of getting Japanese assistance to enter foreign markets significantly increased the *collective* benefit from sustaining productivity growth in South Korea. But the incentives for an individual firm would still suffer from a prisoner's dilemma paradox. The individual firm would want other firms to put in effort and yet make excuses for its own poor performance because it could save its effort and minimize risks by retaining its current production processes. The firm would continue to make normal profits as long as an appropriate subsidy was forthcoming. Thus, there is no automatic incentive of an individual firm to support the enforcement of disciplining on itself, indeed if the firm had the incentive to put in high levels of effort anyway, disciplining would be unnecessary in the first place. Disciplining is necessary because it is impossible to say *ex ante* whether a firm will succeed in its learning effort or not. The threat of disciplining can increase the level of effort but does not necessarily ensure that the particular firm and its management will be successful. Indeed very few of the dominant *chaebols* of the early 1960s remained in the top twenty by the 1980s. The effect of the successful enforcement of disciplining was clearly not beneficial for many individual firms but it enabled South Korea to graduate to an upper-income economy. Chibber does not see the enforcement problem as a free-riding problem at all. The prisoner's dilemma problem is of course that in the absence of effective enforcement (which individual firms will resist) all firms are likely to simultaneously free ride. This is after all what happened in many countries (including Pakistan in the 1960s) where export subsidies led to exports but did not result in successful disciplining or rapid productivity growth (Khan 1999). South Korea's industrial policy enforcement success cannot therefore be explained by the rational incentives of its capitalists, at least not to a very large extent.

This is why the excellent documentation that Chibber provides of how the sectoral Development Councils in India appeared to be deliberately set up to allow individual firms to free ride while sectoral councils in South Korea appeared to have been set up so that individual firms could not, actually begs the question. Why did this happen? Clearly, the South Korean state was able to prevent individual business interests attempting to free ride when the institutions of industrial policy were being set up and

was also able to prevent free riding afterwards, during the implementation of industrial policy. In India, big businesses succeeded in setting up rules that gave them wriggle room from the outset, and even these rules could not be successfully enforced afterwards as the Dutt Committee revealed. Where did the enforcement capacity of the South Korean state come from? Chibber's appeal to the rational interest of South Korean firms to support the enforcement of discipline in an export-led growth strategy does not provide a satisfactory answer.

Finally, Chibber argues (though this is not central to his argument) that the bargaining power of the state vis-à-vis capital was further reduced because the Congress helped to suppress the rights of the working class to mobilize, thereby further strengthening the power of the capitalists. Throughout the 1940s Gandhi opposed strike actions and insisted that unions should settle disputes through compulsory arbitration. The 1947 *Industrial Disputes Act* gave unions the right to strike but only after a two-week notification. But it also gave state governments the right to declare any industry a public utility for a period of six months which automatically ensured compulsory arbitration. The effect of these and other laws effectively demobilized labour after 1947. Incidentally, the ability of the Indian state to push through these changes also shows that it was more autonomous and authoritarian than Kohli suggests. But Chibber's argument that weakening labour reduced the bargaining power of the state vis-à-vis business is not convincing. It assumes that the state could otherwise have unleashed labour mobilization on business if the latter opposed discipline and then withdraw working class demands if business subjected itself to discipline. The alternative of strong unions, businesses and the state collectively reaching a social democratic contract is as Chibber admits, even less plausible as a counterfactual argument because there is no example of such a tripartite social contract driving industrial policy in a developing country.

Political Settlements and the Enforcement of Industrial Policy

The analytical framework of political settlements as a sustainable equilibrium of institutions and organizations offers an alternative explanation of differences in the capabilities of states in different countries to *enforce specific institutions* (Khan 2010a). The ability of the state to enforce particular institutions depends on the relative power of enforcement agencies compared to the organizations subject to enforcement under the institutions in question. Even institutions that are collectively beneficial for a group of organizations can face significant free-riding violations from individual organizations. Some institutions can also impose unequal distributions of costs and benefits on a particular set of organizations. Adversely affected organizations are also likely to resist the enforcement of these institutions. The capability of organizations to resist depends of their holding power, which is a measure of how long they can hold out in contests or conflicts with other organizations or enforcement agencies, the costs they can inflict on other organizations and the pain they can absorb during these conflicts.

The big business houses that were engaged in the negotiation of industrial policy institutions and became the primary beneficiaries of the support available under industrial policies in both South Korea and India do not appear to have had significant holding power on their own. In both cases, modern business houses were a tiny proportion of the economy, let alone of the population. The modern sectors were relatively underdeveloped in both countries, in a relative sense the modern sector in

India in the 1940s was even less developed compared to South Korea in the 1960s. In terms of social legitimacy South Korean business leaders probably enjoyed lower social legitimacy than their Indian counterparts because many of them had been collaborators with the Japanese as managers and agents. But in India too, though big business was playing a part in the independence movement, the collective mood was for much greater social equity and opportunity after the departure of the British, a major role for the public sector and even for nationalization. Indeed, it was precisely because the wind was blowing against them that leading Indian industrialists took initiatives like the Bombay Plan to stave off even more ferocious attacks on their assets.

So in terms of size, numbers and legitimacy, it is hard to argue that Indian capitalists were more powerful than their South Korean counterparts. This is of course why Chibber sought an answer in the differences in the incentives of the two groups of capitalists to support institutions that could enforce discipline and subsequently support the enforcement of these institutions. As his answer is at best very incomplete, we need to come back to the question of enforceability and relative power. Missing so far in our analysis has been an examination of the power of other organizations with which capitalists could align or make coalitions to increase their bargaining/holding power. There was a legitimate tradition of business funding for polices and politicians from the earliest days of the Indian national movement. The nationalist entrepreneur Dadabhai Naoroji backed Congress and Congress politicians during the anti-colonial struggle and exemplified this trend. If capitalist firms can make these alliances and build long-term relationships with particular politicians and factions, their ability to influence policy and enforcement will depend not just on the economic resources and numbers of people it can directly mobilize but also on its alliances with political groups and organizations. The relative power of the latter, and the cost and probability of making these coalitions then becomes a critical determinant of the relative power of business organizations.

Here the organizational structure of political organizations in the Indian subcontinent becomes the immediate subject of interest. How easy was it for Indian businesses to find political backers and champions who would protect the specific interests of that sector or business? How did this compare with South Korea or other countries where industrial policy was being attempted? Put this way, many of the puzzles about the negotiations about industrial policy and their subsequent implementation disappear. How were big business houses able to block attempts at setting up institutions that would expose them to disciplining? The blocking was happening because the big business interests had close political associates at the height of power and they effectively defended the rights of their business allies to have the freedom to select their own level of productivity and effort, while enjoying government subsidies and protection. G.D. Birla not only hosted and financed Gandhi; he was also associated with V.B. Patel, one of the senior leaders of the Congress Party and a rival of Nehru who became Deputy Prime Minister under him. In the discussions about the role of the Planning Commission, Patel blocked Nehru and represented the Birla position against a powerful Commission. Other capitalists had strong connections with different ministries and their political allies in the ministries took the position that a strong Planning Commission would be against the interests of departmental autonomy. The outcome was a toothless Planning Commission whose institutional capabilities were very different from the nodal role that was given to the Economic

Planning Board (EPB) in South Korea. The concerted action by businesses worked, but only because individual business houses found political champions at the highest level to represent their interests. These facts are reported in passing by Chibber in his detailed documentation of the early negotiations but he does not draw the glaring analytical conclusions (Chibber 2003: 137-57).

The EPB in South Korea emerged as a nodal agency for coordinating information that was used for enforcement because the President wanted such an agency. There were no political factions or organizations within his ruling coalition that could be approached by business interests to protect their interests in this way. Indian businesses were more powerful not because they had absolutely greater power but because they could find allies very easily who would 'sell' them bargaining power for a relatively cheap price. The price for finding allies and champions was relatively low because there were a large number of organizations and politicians competing for power and they needed off-budget resources desperately to finance their politics and their hold on their own clients and factions. This was as true for Gandhi and Patel and politicians at the leadership level as it was for politicians who were much lower down the patron-client chains of the Congress Party. From the very outset, big and small business cultivated political friends at levels appropriate for protecting their interest. Their champions protected their interests, both when institutions were being designed, and later on when institutions were enforced. This was as true of the inception phase as it was of the subsequent implementation of the licensing system.

Although the Dutt Committee did not explicitly spell out how it was that some business houses got excessive licenses to block the entry of others or some states got far too many licenses given the goal of regional equity, this was undoubtedly the result of political connections. Business houses did not bargain openly for licenses in any formal process, nor was the misallocation of licenses to particular houses or states simply an accident. Business houses, particularly the ones who had first mover advantage from the 1940s, continued to cultivate and build alliances with politicians and one indication of their success was license allocation. This also meant that the states in which the well-connected houses were located or investing in would get license allocations entirely out of line with regional equity requirements or the intentions of the Planning Commission. For instance, Maharashtrian chief ministers like Vasant Dada Patil and later Sharad Pawar maintained close long-term relationships with particular business houses such as Bajaj and Ambani. These relationships with some of the biggest business houses with politicians who were powerful at the centre meant that Maharashtra and its business houses got a significant share of licenses. On the other hand, the electoral strategies of Congress leaders in Maharashtra could rely to a significant extent on donations from business houses. The political imperatives of maintaining these links meant that India's politicians were quick to shelve the Dutt Committee report. When 'liberalization' came about, the formal and increasingly irrelevant structures of planning were abandoned, but not the close business-government relationships that characterized India's industrial policy from the outset.

An example of the effects of differential political connections between businesses and politicians can be seen by looking at the relative performance of Maharashtra and West Bengal. At the time of independence in 1947, Maharashtra and West Bengal were virtually level in terms of their presence in the manufacturing sector measured in

terms of numbers of factories and workers, though Maharashtra was ahead in terms of value-added. This is shown in Table 7. In the subsequent period, Table 8 shows that Maharashtra's performance in terms of getting industrial investment licenses far outstripped West Bengal and indeed all other Indian states. Many of the biggest business houses were headquartered in Bombay and their owners had close connections with Bombay politicians, who also played a critical role in central Congress politics. In contrast, the businesses located in West Bengal were not Bengali owned and typically had limited political connections with local politicians. As other states began to industrialize under industrial policy, the shares of the two early starters would inevitably have come down. Table 9 shows that the decline happens mostly for West Bengal, with Maharashtra's share declining much less. Finally Table 10 shows the significant differences in underlying industrial growth rates between Maharashtra and West Bengal, partly as a result of the politically driven implementation of licensing policy.

Table 7 Registered Factories in Major Indian Provinces 1946

	No. of Registered Factories	Total Employees	Percentage of Total Employees	Value Added (Rs Crores)
West Bengal	1218	509120	33.6	57.3
Bombay	959	500267	33.0	87.7
Madras	1244	144931	9.6	15.3
UP	559	166763	11.0	21.7
Bihar	316	93523	6.2	19.7

Source: *First Census of Manufacturing Industries in India, 1946*, reported in Dasgupta (1998: Table 2).

Table 8 Statewise Industrial Investment License Allocations 1956-66

	License Applications	Percentage of Applications	Licenses Issued	Percentage of Licenses Issued
Maharashtra	3645	25.9	2741	27.4
West Bengal	2296	16.3	1649	16.5
Madras	1263	9.0	970	4.7
UP	1087	7.7	672	6.7
Bihar	688	4.9	517	5.2
Andhra Pradesh	487	3.5	332	3.3
Mysore	420	3.0	327	3.3

Source: *Report of the Industrial Licensing Policy Inquiry Committee 1969*, reported in Dasgupta (1998: Table 3)

Table 9 Statewise Employment and Value Added 1959-1978

	% of Total Employment 1959	% of Total Value Added 1959	% of Total Employment 1978	% of Total Value Added 1978
Maharashtra	21.2	26.6	17.8	25.0
West Bengal	23.1	23.2	15.0	12.2
Gujarat	10.3	9.7	8.3	10.0

Source: Figures from *Annual Survey of Industries*, reported in Dasgupta (1998: Table 4 and Table 17).

Table 10 Annual Growth Rates of Industry 1960-70

	Basic	Intermediate	Capital	Consumer
Maharashtra	15.5	7.1	8.6	5.3
West Bengal	0.9	3.8	1.2	2.3
India	9.1	7.2	9.4	5.1

Source: Based on *Annual Survey of Industries*, reported in Banerjee (1986: Table 2). In the Indian classification Basic Goods include the products of mining and quarrying industries, metals and chemicals and cement, Intermediate Products are products that are inputs into other industries, including yarns, jute sacking, tyres and leather.

The deeper question is why political power was so fragmented in India that it was easy to protect individual interests and difficult to enforce rules in the collective interest. Here the social diversity, asset and income inequalities and the population density of the Indian subcontinent undoubtedly play an explanatory role, but so does the impact of colonial divide-and-rule strategies. Even without a colonial impact, Indian politics would undoubtedly be more complex than that of a relatively small country like South Korea with a single language and no important religious conflicts. But the colonial impact on South Asia was to organize society along all its major cleavages. Upwardly mobile intermediate class activists could hope to capture rents for themselves by organizing new groups based on class, caste, religious or other identities. If the new mobilization proved useful to the Raj for balancing other groups or providing a new source of recruits for managing and administering Empire, the new group's 'demands' would be accommodated. The result was an exceptionally high level of organizational development for 'political' groups of many different types. The presence of a large number of differentiated political organizations dramatically changed the potential power of business because political organizations needed cash and business needed champions. The very specific political settlement that independent India inherited from the British therefore had important implications for the effective enforcement of institutions that affected business interests. Individual businesses could easily purchase protection and this had seriously distortionary effects on the enforcement of rules that supported the collective interest.

The nature of the Japanese impact on South Korea was important not because it decimated society and allowed the emergence of an authoritarian state, but rather because the Japanese did not need and therefore did not encourage the development of a large number of political organizations. This was to have significant effects of business bargaining power in the future. It is not easy to instantly create political organizations because there is a great deal of investment required to establish the patron-client networks through which such organizations operate to exercise their power. Individual South Korean businesses may have been desperate to have political champions with effective bargaining power when the industrial policy framework was being discussed and later implemented. But there were hardly any political organizations available that combined an ability to block other political leaders and if necessary the President at a price that business could afford. This was the source of the significant differences in the relative power of individual businesses in India (and the other countries of the Indian subcontinent) and South Korea (Khan 2000b).

In the Indian subcontinent, institutions that threatened the interests of individual businesses could be blocked either at their inception, or later during their implementation. The political settlement operating through informal processes thus

allowed a different set of formal institutions to emerge, and informal processes further ensured that their implementation and enforcement was partial. In contrast, the political settlement of South Korea, characterized by the absence of a large number of powerful political organizations and factions, enjoyed a very different outcome. The state found it much easier to institutionalize disciplining mechanisms that individual capitalists found hard to block, and subsequently the success of the state in effectively enforcing performance conditions could also not be easily blocked by the particular capitalists suffering disciplining.

The interesting question is whether some other strategy may have been better for India given the specifics of the distribution of power across political organizations that it inherited. Nehru's strategy was to construct the Congress as a centralized apparatus that could be used for enforcement. His desire for centralization led to the disaffection of the Muslim community in India who felt that the centralization of power in Delhi would make the important Muslim-majority provinces of Punjab and Bengal relatively powerless. Nehru's unwillingness to concede any meaningful devolution to the provinces contributed directly to the eventual partition of India and the emergence of Pakistan (Khan 2010b). But it was clear that despite being willing to pay a very high price, Nehru's attempt at constructing a centralized Congress Party was doomed from the outset. The negotiations over industrial policy were just one manifestation of the limits of centralization given the distribution of organizational power in India. Ironically, the powerful business groups who were driving negotiations at the time also wanted to centralize planning at the centre and away from the provinces which had the jurisdiction to define industrial policy during British times. This was obviously because the powerful business houses wanted to dominate the entire country, and in this they were successful. For a time, the enormous legitimacy of the leaders of the independence movement allowed the Congress Party to retain a moderate level of internal cohesion by allowing internal rent allocation to different political leaders and factions proportionate to their importance within the party. But as time went on and new social groups, castes and regions began to mobilize in the 1960s, the centralized structure of the Congress Party faced growing stresses.

It was in this context that Indira Gandhi eventually declared the Emergency in 1975 that we referred to earlier and which marked the beginning of the end of the attempt to construct an inclusive and yet centrally controlled Congress Party. It is impossible to satisfactorily answer the counterfactual question: would India have been better off if this thirty year experiment with centralized political control not been attempted? It is possible to imagine both a better and a worse outcome. The worse outcome is the possibility that if concessions to political federalism and regional structures of planning had been conceded too early, India may have fragmented into a greater number of countries with consequences for violence and suffering. This would obviously be the response of supporters of Nehru and the Congress. But equally, if the federalism was moderated with central control over key aspects of integration like infrastructure, power and defence, an earlier devolution may have preserved India's unity and allowed a more regionally equal development as alliances between local capitalists and politicians would have been easier. Nevertheless, the enforcement of industrial policy institutions may still have been far weaker than South Korea because regional capitalists would still be able to find champions amongst regional politicians.

Another counterfactual is to ask if a narrower remit of industrial policy objectives, a smaller number of sectors, or a different set of instruments may have been more successful in terms of enforcement given the characteristics of the political settlement. Interestingly, some of the recommendations of the Dutt Committee were precisely to narrow the remit of industrial policy. It is very likely that a narrower remit would have been more effective. If the state's industrial policy was focused on a regionally equitable infrastructure development programme combined with interventions to accelerate catching up in a very few sectors at a time, the outcome may have been far better. If the rents up for grabs at any moment were relatively limited, the attention of all the big business players would not have been attracted. If this was combined with a strategy of supporting middle sized firms and technologies where the number of players would be larger, this too could have reduced the ability of individual businesses to protect themselves through political alliances.

Finally and before moving on to a discussion of the second liberalization we need to examine the question of growth and slowdown under dirigiste policies from the perspective of this alternative political economy analysis. Neither Kohli nor Chibber offer an explanation for why growth accelerated and was initially quite high with all the limitations of the industrial policy regime, and then started to splutter in the mid-1960s. The answer to this question is suggested by looking at the growth record in Pakistan which, despite its somewhat different strategy of protection, shows a similar pattern of initial growth and a slowdown in the 1960s. Like India, Pakistan too had a partial industrial policy regime where protection and support was offered to emerging capitalists but disciplining was low or non-existent. The theoretical expectation is that with this combination of incentives many new factories would be set up in protected sectors but productivity growth within each factory would be low as there would be limited incentives for managers to put in high levels of effort in raising productivity rapidly. In other words, we would expect to see rapid extensive or horizontal growth as capacity increased, but relatively low intensive growth, based on productivity growth or quality growth. This is exactly what the figures of high output growth and low productivity growth during this period confirm.

But there are limits to growth based on an ever larger quantum of explicit and hidden subsidies being captured by a growing productive base that needs a subsidy for every unit of additional output. The limits to this growth strategy emerge when the growth of sectors is constrained by an absolute resource shortage that can in theory manifest itself in different ways. Foreign exchange or bank credit may begin to dry up if subsidies are largely granted through manipulating the exchange rate or interest rate. The ability to finance public sector losses may face fiscal constraints if subsidies are provided to the private sector by under-pricing public sector output particularly if the public sector is itself less than efficient. Slow productivity growth in the economy can limit the growth of domestic demand and constrain the growth of output from the demand side resulting in growing excess capacity. These symptoms did emerge in India and Pakistan in different combinations. In India fiscal constraints and excess capacity, in Pakistan a growing stress on bank balance sheets as non-performing loans increased. Both countries were also simultaneously hit by a parallel growth in the demand for rents coming from the mobilization of new political organizations and groups. This combination of rent demands coming from the failure of productivity growth to free up economic rents and growing demands for political-redistributive rents led to the political crisis of the 1970s. The similarity in the social organizations

and patterns of social evolution of the political settlements in the two countries as well as their economic strategies of unconditional protection help to make sense of the surprising similarities in the timing of the economic slowdown and the types of political crisis they began to confront in the mid-1970s.

The dirigiste period was nevertheless vitally important for understanding what happened next. While measures of productivity growth were low in aggregate, the long periods of learning-by-doing in a number of industries did create real capabilities over time. Even in the best performing firms and sectors these capabilities were for the most part not at the level where global competitiveness could be achieved, but they were significantly higher than the capabilities that existed in 1947. With support drying up because of the rent crisis there was a growing perception amongst businesses which had strong political links that they may do better in getting support outside the already creaking if not entirely defunct planning system. Breaking free of the formal planning system would also give some of them new opportunities for technology and financing partnerships with foreign capital. And some new capitalists had emerged through trading and speculation largely outside the licensing system (like the Ambanis of Reliance) and these politically connected groups found it difficult to operate when many of their competitors enjoyed formal support in the form of licenses within the licensing system (Das Gupta 2007). This combination of incentives and calculations led to the growing calls from business for opening up, calls that their political allies would soon start taking up in earnest.

5. The Second Liberalization and Capability Development after 1980

The growth acceleration in the 1980s is both exciting and embarrassing for liberal economists. Exciting because it happened at a time when India was moving out of its planned economy, embarrassing because the growth happened before any formal liberalization took place. There has been an extensive debate in India about the causes of the growth acceleration. The problem was that the formal removal of rent-creating restrictions in the economy did not happen till the 1990s. Limited reforms began under Rajiv Gandhi in 1984 but it was mostly announcements of intentions with limited implementation. There was a reduction in marginal tax rates and a modest reduction in tariffs. But the duty collected as a share of import value actually increased from 30 to 45% in the 1980s. Formal licensing began to be removed slowly even though licensing was already ineffective in constraining investment decisions. By 1988 licensing was reduced from 77 to 27 industries but these 27 industries constituted 60% of industry by value. This only began to come down in 1991 after Prime Minister Rao began a more serious liberalization drive following the foreign exchange crisis of 1990.

The foreign exchange crisis provided an excuse to the Congress Party leadership to carry out reforms that it was already minded to introduce (Jenkins 2000). Now the licensing system and the system of restrictions began to be wound down. The average tariff was reduced from 85% to 25%. The rupee was made increasingly convertible, allowing Indian firms to raise finance outside, and making foreign direct investments easier. A number of attempts have been made to make sense of the puzzle of growth preceding liberalization. Rodrik and Subramanian (2004, 2005) argue that the reforms of the 1980s triggered growth but they did so because they were pro-business rather than pro-market reforms, essentially signalling a shift in government 'attitude' rather

than a shift in policy. This attitudinal shift was apparently significant enough to unleash the animal spirits of investors, and their investment drive spurred the growth acceleration. To make this claim more credible, they argue that India had a better set of good governance indicators than was warranted by its per capita income, a fact that was picked up by a negative coefficient for the India dummy in cross-country regressions of per capita income against governance indicators. In other words, India had unused growth potential that was lying dormant because investors lacked the confidence to invest. The pro-business announcements of Rajiv worked their magic by raising investor confidence, thereby driving the initial growth spurt.

Rodrik and Subramaniam's argument relies on the meaningfulness of growth regressions based on governance indicators and of an underlying theory relating income and growth to these measures of governance. These regressions are suspect as the direction of causality cannot be established satisfactorily and the governance indicators suffer from significant variance and measurement errors (Khan 2005b, 2007, 2008). More plausible than untapped potential due to the governance environment is the possibility that entrepreneurial capacity developed during the previous industrial policy was driving growth. Rodrik and Subramaniam refer to this when they point out that growth was driven by states where manufacturing sectors were already bigger. But their argument gets muddled because these states also tended to have Congress governments and they argue that because Congress was making the pro-business statements at the centre, confidence increased most in Congress-governed states. A more likely possibility from a political economy perspective is that the good connections between big business and Congress politicians in more developed states was driving Congress politics towards opening up.

A more convincing version of the pro-business shift argument comes from Kohli (2006a, 2006b). Here the focus is not just on an attitude shift in the 1980s but the actual emergence of pro-business policies. These are distinguished from liberalization policies because the latter are based on the absence of rents while pro-business policies are based on directing rents and resources towards existing businesses. In the 1980s the government intervened to change laws that made it easier for business to raise money in the domestic capital market, the Monopolies and Restrictive Trade Practices Act was diluted to allow businesses to expand, and labour activism was restricted with laws that discouraged strikes. Kohli argues that within its limits the Indian state was now demonstrating aspects of a developmental state but his distinction of this from the 'redistributive socialism' of the previous period is not a satisfactory dichotomy. It flows from his earlier criticism of the dirigiste period as non-developmental in comparison to the South Korean state, an argument that we have discussed earlier. Despite these weaknesses the heterodox approaches of Rodrik and Subramaniam and Kohli establish that growth was associated not with liberalization but a series of more subtle changes.

From our perspective the 1980s were associated with the evolution of a more explicit partnership between business interests and political allies. This transition did not mean the end of either redistributive rent creation for political clients of the political leaders nor did it end rent creation for business. The latter simply proceeded now on different principles. The mobilization and competition over redistributive rents steadily increased over this period resulting in a gradual increase in the intensity of political conflicts, political corruption and political violence across all South Asian

countries. The eventual announcements of liberalization, for instance about removing licensing requirements, were in most cases a formal recognition of a reality where licensing had long since stopped being implementable. Hence it is not surprising that many of the effects of liberalization were observable long before the formal announcements, though the formal announcements did have additional effects in accelerating what was already happening.

In contrast to these heterodox arguments, the mainstream consensus is that the acceleration in the 1980s actually began in earnest towards the end of the decade, that there was already some liberalization by that time, and that the growth spurt of the 1980s would not have been sustained without the deeper liberalization of the 1990s (Panagariya 2004, 2005a; Virmani 2005; Kochchar, et al. 2006; Rajan 2006; Ahmed and Varshney 2008). The mainstream arguments are more concerned to fit the sequence of events into the expectations of the efficient market model. However, many mainstream economists also realize that liberalization would not have had any necessary positive effects if *significant pockets of productive capabilities* had not already emerged (Aghion, et al. 2005; Rodrik and Subramanian 2005; Kochchar, et al. 2006). However, the implications of the previous strategies of capacity development are often underestimated. It is clear that there is a strong relationship between the rent allocation strategies that created these pockets of capabilities and the success of the liberalization that followed. But if this is true, there are important implications for sustaining the growth that has been achieved over the three decades after 1980 and ensuring that this growth creates jobs for broader sections of the population and spreads to regions that have so far not participated in this growth.

It is relevant that while the dominant entrepreneurs in every South Asian country had wanted protection and subsidies in the 1950s, by the late 1970s new classes of entrepreneurs had emerged who had accumulated enough and achieved sufficient productive capabilities to find the continuation of protection unnecessary and onerous. The regulatory structures were particularly onerous for productive entrepreneurs given the growing fragmentation of political clientelism in these countries and therefore the capture of more and more rents by all manner of unproductive coalitions. Thus, by the 1980s there were powerful coalitions of new capitalists in all these countries but particularly in India who were not only already operating outside the formal structures of rent creation that they no longer needed, but also felt positively hemmed in by rent-creating regulations that had become dysfunctional for them (Das Gupta 2007). These analysis allows us to explain why the sectors driving growth and the success of post-‘liberalization’ growth strategies have been very different across different parts of the Indian subcontinent and even within India. The specializations of regions after liberalization have been very strongly related to the prior development of technological and entrepreneurial capabilities and not very strongly related to the distribution of factor endowments as economic theory may have led us to expect.

A number of features that we can observe in the growth stories in South Asia are consistent with an approach that focuses on the prior development of capabilities as a critical explanatory variable for the subsequent growth experience of the region. First, there are significant differences in growth rates across regions within the subcontinent and these differentials are widening, rapidly increasing the gap between richer and poorer regions and states. This is consistent with a capability approach because the development of capabilities in the period prior to liberalization was itself patchy and

regionally concentrated. Governance capabilities in South Asia for growth-enhancing corrections to market failures were weak from the outset. Even before the liberalization of the 1980s, the biggest beneficiaries of rent-creation strategies to assist investment and capacity development were firms and entrepreneurs who had favourable political connections, were located in areas where the state was investing for political reasons, or who could leverage prior capabilities and capital.

The link between capabilities and the regional and sectoral pattern of growth is however complex. Corporate conglomerates in India can obviously choose where they locate, particularly after the de-licensing of locational decisions. But the range of corporate capabilities and the labour skills they can draw on are limited. Therefore, with deregulation there was a considerable amount of relocation by corporates, typically favouring some southern and western states in India, but this was at the expense of the regions they moved out of or did not invest in. Many observers of this relocation (Besley and Burgess 2004; Aghion, et al. 2006) concluded that this was evidence of the importance of labour market regulations constraining manufacturing growth in India because the winners from deregulation were states with lower levels of protection for labour. Even if this observation is true, the small differences in effective labour costs could hardly explain the huge gaps opening up in manufacturing growth across states. Moreover, the measurement of labour market restrictions by Besley and Burgess based on counting the number of pro-labour or anti-labour amendments to labour legislation in state legislatures is clearly very problematic (Bhattacharjea 2006).

In contrast, a capabilities approach can explain the sectoral distribution of growth based on prior capabilities that were acquired in the past. The emerging specializations in countries like India have less to do with factor endowments and the efficient choice of technologies by markets. For instance, the importance of high value-adding services in India's growth story is well known. The skills underpinning India's excellent performance in global services were a by product of previous expenditures in technical education that were closely related to the broader context of technology and capability acquisition. Thus India's most dramatic success stories could be said to be the direct result of 'defective' policies which created globally competitive capabilities in specific sectors (Basu 2003). In software, these defective policies included overinvesting in higher education and closing the economy to IBM and other multinationals in 1977, which allowed the development of skills in a public sector replacement to IBM. This public sector company, CMC, became an incubator of skills that later fed India's software sector.

Table 11 South Asian Growth Rates of Gross Domestic Product 1980-2003

	1980-90	1990-2000	2000-03
India Average	5.6	5.6	6.0
Rich Indian States	5.7	5.8	5.9
Poor Indian States	5.1	3.8	3.6
Bangladesh	3.6	4.7	4.8
Pakistan	6.1	3.7	3.3

Source: EPW Research Foundation (2003, 2007), Ahmed and Varshney (2008: Table 3)

Note: Rich Indian states in this table are Tamil Nadu, Gujarat, Haryana, Maharashtra and Punjab. Poor Indian states are Bihar, Uttar Pradesh, Orissa, Madhya Pradesh and Rajasthan. Group growth rates for each period are weighed averages of state growth rates using state domestic products as weights.

If growth in populous South Asian countries is driven by manufacturing and service sectors that one way or another were at or close to global competitiveness, this has important implications for the regional and sectoral patterns of growth. Not surprisingly, one of the features of this growth spurt across South Asia has been the rapid worsening of income distribution as growth accelerated, suggesting that growth was largely being driven by a relatively small number of individuals, regions and sectors that had the capability to benefit from market opportunities (ADB 2007a: 49-59). These sectors greatly increased their incomes, leaving the rest rapidly behind. A striking demonstration of this is the growing gap in growth rates between rich and poor states in India. Table 11 shows the growth gap increased dramatically after 1980 when growth began to be driven by firms and sectors already close to the frontier. In the 1990s poor Indian states performed worse than Bangladesh and only slightly better than Pakistan which was going through serious political crises.

Table 12 Divergence in South Asia 2000-2004

Country	Growth of Per Capita Income			Per capita income in US\$ 2004/05
	1980-90	1990-2000	2000-2004	
India National Average	3.3	4.1	4.4	653
Rich Indian States	3.6	4.8	4.5	688
Poor Indian states	2.6	1.8	1.8	280
Bangladesh	2.2	2.7	3.7	436
Sri Lanka	2.6	4.2	2.3	1031
Pakistan	3.7	1.2	2.2	661

Source: Purfield (2006: Table 2), ADB (2007a), (EPW Research Foundation 2003). Directorates of Economics and Statistics of Indian state governments, World Bank World Development Indicators.

Note: Rich Indian states in this table are Tamil Nadu, Gujarat, Haryana, Maharashtra and Punjab. Poor Indian states are Bihar, Uttar Pradesh, Orissa, Madhya Pradesh and Rajasthan. Indian data for first two periods are of 1981-91 and 1991-2001. Grouped per capita incomes are population weighted. The national per capita income for India reported by ADB and the World Bank appears to be somewhat greater than would be consistent with figures for state per capita incomes from state governments.

The gap in living standards between rich and poor states is therefore also rapidly growing, in contrast to the expectation that market driven growth equalizes incomes in an integrated economic territory through the free movement of labour and capital. Studies of growth rates in rich versus poor states in India show that the divergence in their per capita incomes is steadily increasing (Sachs, et al. 2002). In 1970, the richest state in India had a per capita income around 3.4 times that of the poorest state. By

2004 this ratio had grown to 4.5 and is growing all the time (Purfield 2006: 5). As Purfield (2006: 9) points out, India's five poorest states account for 40 per cent of its population, while the five richest states are home to only a quarter of its population. If current trends in economic growth continue, as they are likely to in the absence of radically different economic strategies, political strains are likely to emerge between richer and poorer states over economic strategies, redistributive strategies, the use of tax revenues, and migration.

Table 12 shows available data on *per capita* incomes and growth rates. This data is consistent with the data on aggregate GDP, showing that in the 1990s the dispersion of growth rates of per capita incomes *within* India was greater than the dispersion observed *between* the major countries of South Asia. It is important to remember that many low growth states within India like Bihar and Uttar Pradesh are the size of countries in their own right. Bangladesh, which is often considered to be a relatively poorly performing part of South Asia, was performing considerably better than some of the largest Indian states not only in terms of the level of per capita income but also in terms of the growth of per capita income in the 1990s and beyond.

The rapid growth in the gap between rich and poor states within India is also shown graphically in Figure 1 for the 14 biggest states of India. The Gini coefficient is a measure of the degree of inequality in their per capita incomes. A higher value indicates more inequality. The figure shows graphically that the rapid growth in inequality appears to have begun in the 1980s at around the same time as the growth takeoff. These observations have policy significance from the perspective of current discussions about the types of economic integration that are appropriate for SAARC countries. Clearly being part of an integrated Indian union with 'free trade' as well as formally unrestricted movement of labour did not ensure that high growth rates were spread evenly. Moreover, factor mobility and market forces did not ensure that these growth rates got equalized over time through the movement of labour and capital between states. If anything, Table 11 suggests that the gap in the growth rates between rich and poor Indian states has been widening over the 1990s.

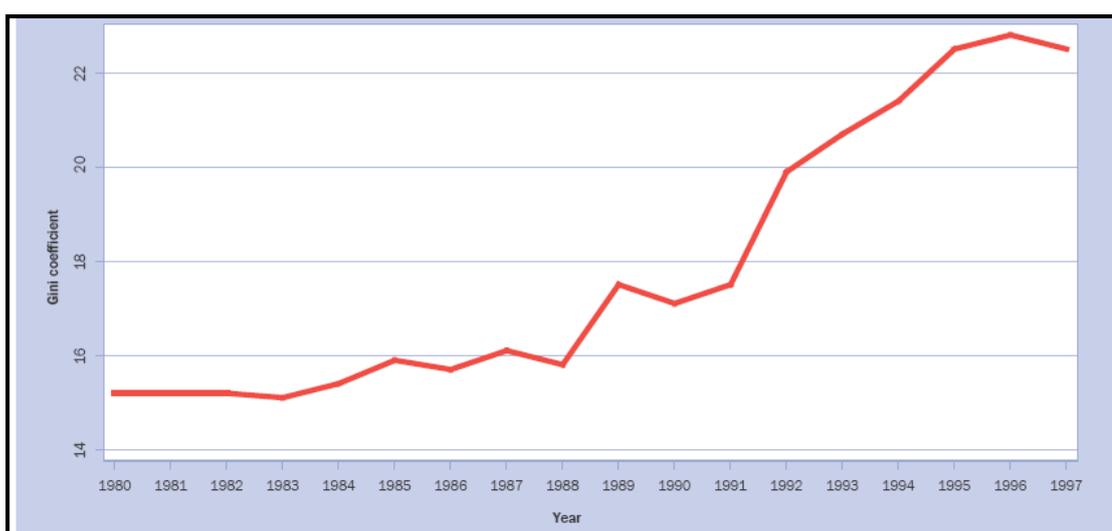


Figure 1 Degree of Interstate Inequality in India (14 Major States)

Source: ADB (2007a: Table 5.4) based on Ahluwalia (2000: Table 3).

The most serious implication of a capability driven approach to the analysis of growth is that it points out that for all its weaknesses some basic technological and entrepreneurial capabilities were developed during the dirigiste period. But these capabilities were developed in pockets and the number of beneficiaries given the size of the population was small. After liberalization these entrepreneurs have driven growth, drawing on pools of skills and capabilities in the labour market that were also the inherited human capital from the past. However, liberalization clearly did not result in the removal of all the relevant market failures. The entrepreneurs and regions driving growth had to develop new and evolving arrangements with politicians and bureaucrats to continue to address the market failures that affected them. The patterns of growth that ensued can be better understood by looking for these new and evolving arrangements and their implications.

The fact that liberalization could not by itself remove potentially significant market failures that could slow down the acquisition and development of new skills has at least two types of implications. First, we would expect the ensuing growth to be driven by capabilities already developed, and therefore to be concentrated in regions, sectors and heavily dependent on high levels of human capital that relatively small sections of the population possess. But secondly, we would expect to see new and evolving strategies through which different pockets of growth deal with market failures. As a result, we would expect to see significant learning and skill development to be continuing within some of these pockets, particularly in firms with high technological capabilities and in firms with foreign technology partnerships. But we would expect the nature of this technology enhancement to benefit those who had already reached minimal levels of competitiveness and to be sensitive to the continuing resolution of market failures through a variety of formal but now increasingly informal mechanisms.

The implications of both sets of consequences are consistent with the observation that large sections of the population may have very slow benefits trickling down to them despite very high growth rates at an aggregate level. This proposition is supported by estimates for the persistence of poverty across the Indian subcontinent, even though absolute poverty may be declining through different trickle down mechanisms. The Arjun Sengupta Commission Report (National Commission for Enterprises in the Unorganized Sector 2007) outlined what researchers like Barbara Harriss-White (2003) had been saying for some time, namely that the informal/unorganized sector accounted for something like 92% of the Indian workforce. The commission also estimated that 77% of India's workforce had a per capita daily consumption of less than 20 rupees (roughly 50 US cents). Clearly, the constraint on broad based growth in countries like India comes from the productivity of much of the workforce (and the market failures constraining improvements in this productivity) rather than the high costs of labour. Indeed, there are significant pockets of poverty even within high growth and high per capita income states like Maharashtra.

Productivity Growth

The growth acceleration of the 1980s was also associated with a productivity turnaround. Both the growth of labour productivity and of total factor productivity (TFP) displayed an improvement after 1980 compared to the previous decades. Table 13 shows that most studies find roughly a 2 per cent increase in labour productivity growth and a 1.5 per cent increase in TFP growth rates after 1980. When labour

productivity and even more so TFP growth rates are measured in a complex economy like India, changes in trends are likely to reflect the net effect of many different processes. Nevertheless, multiple concurrent measurements suggest significant changes in underlying processes in the Indian economy around 1980.

Table 13 India's Productivity Acceleration

Acharya et al.	1951-67	1968-81	1982-91	1992-2000
GDP	3.8	3.4	5.3	6.5
TFP	1.4	0.7	2.0	2.6
Bosworth, Collins & Virmani	1960-80		1980-2004	
Output per Worker	1.3		3.8	
TFP	0.2		2.0	
Virmani	1951-80		1981-2004	
NDP per Worker	1.3		3.5	
TFP	0.7		2.4	

Sources: Acharya et al. (2003: Table 2.2), Bosworth et al. (2007: Table 3) and Virmani (2004b: Table 1)

These observations are very likely to be the result of a combination of a number of factors. The easier access to foreign exchange meant that imports of spare parts and of machinery increased during the 1980s and this alone can be expected to support productivity growth. In addition, there was some employment reductions in existing establishments (possibly rather limited), the closing down of some unprofitable companies, the relocation of some production to alternative locations to allow changes in factor proportions, improvements in X-efficiency in a context of greater competition, better capacity utilization as a result of liberalized imports of spare parts and machinery, changes in product mixes, and the introduction and adoption of new and better technologies, sometimes through joint ventures and foreign direct investment. It is statistically very difficult to identify the importance of these various possibilities. Possibly all of these played a part to some extent.

However, a growth in productivity does not necessarily imply that the sectors and firms that were investing in new machinery or raising their competitiveness in other ways actually achieved competitiveness. Productivity growth may be necessary for achieving competitiveness but does not assure it. If competitiveness improves so that the gap with competitors reduces from 50 per cent to 10 per cent that is an improvement but the firm is still not competitive. The implications of the aggregate productivity improvement figures can therefore only be assessed at the level of sectors or firms. This argument is developed in our discussion of technology adoption. The aggregate productivity growth since the 1980s did result in the emergence of a number of globally competitive sectors in India, and a closer examination of these sectors shows that the achievement of competitiveness was a context process. A number of sectors that were close to the global competitiveness frontier used rents in a more effective way to accelerate their transition to global competitiveness. They achieved this because a) they had already moved close to the frontier despite the lack of hard compulsions in the past, simply through a long period of learning-by-doing and b) they now had strong internal compulsions to reach the frontier because the

explicit support they could now negotiate happened to be structured in a way that created strong compulsions for high effort learning.

India also enjoyed a significant increase in FDI after liberalization. According to Reserve Bank of India figures, from a negligible base in 2000, FDI had increased to almost 20 billion dollars in 2007. At the same time, however, outward investment by Indian conglomerates like Tata also increased dramatically to over 11 billion dollars, implying a net inflow of around 10 billion dollars. Nevertheless, the potential benefits of FDI are not just net increases in investment, but also new technology acquisition that may not otherwise have happened. In 2007 A T Kearney's business surveys ranked India second only after China as the most desirable location for FDI globally. What did this inflow indicate about Indian competitiveness and growth prospects?

A number of studies on the effects of FDI in India support a capability-based analysis of the drivers of growth in post-liberalization developing countries. Siddhartan and Lal (2004) find that multinational investment had positive spillover effects on the value-added per unit labour cost in domestic firms, but only if the initial productivity gap between the domestic and foreign firms was small. Where the productivity gap was initially large, the value-added per unit labour cost of domestic firms either declined or did not increase in the presence of foreign investment. This is entirely consistent with our capability-based explanation of growth. Similar results are reported by Kathuria (2000) and Balasubramanyam and Mahambare (2003). These results are not at all surprising since we expect firms to absorb learning by observing and transacting with more advanced firms in their sector and then carrying out the appropriate investments in learning only if they already have significant technical and entrepreneurial capabilities. Balasubramanyam and Mahambare also point out that multinational investment in India has focused largely on sectors that already have significant technological capabilities, again as we would expect.

Finally, although FDI in the late 1990s only accounted for 5% of gross domestic capital formation, the share of multinational affiliates in the sales of the organized private corporate sector in India is relatively high. At the end of the 1980s this share was estimated at around 23%. More recent estimates of the share of foreign affiliates over the period 1970-94 are between a third and a quarter of gross sales in India's manufacturing sector (Balasubramanyam and Mahambare 2003: 51). The presence of multinational affiliates can be positive or negative for domestic capability development and much depends on the initial capabilities of domestic firms in the same sector and their strategies of developing these capabilities further.

6. Catching up and Learning: An Analytical Model

This section summarizes a model of learning and catching up developed in Khan (2009b) and applies it to understand the catching up process behind the success stories in India's automobile and pharmaceutical sectors. The model enables us to capture the two stages in the transition to global competitiveness that characterizes India's growth takeoff before and after 1980. The model and the two case studies show that a complex process of capability upgrading was involved in reaching the frontier. In the first phase ending in the 1980s, when licensing created targeted incentives for a wide range of firms in new sectors, basic productive and entrepreneurial capabilities were created through learning-by-doing. These capabilities did not exist in the pre-

intervention period, but the relatively low levels of effort put in by enterprises during this period meant that few firms or sectors approached very close to the frontier. In turn, this was related to the problems of enforcing discipline discussed earlier. After 1980, the institutional framework and the political settlement in India both changed. The greater fragmentation of the ruling parties and the gradual emergence of coalition parties at the centre marked a transition from a dominant party system to competitive clientelism (Khan 2010a). The consequence of this was that the formal structure of industrial policy became even less credible and was eventually wound down. At the same time, the relatively high levels of productive capabilities in some sectors encouraged investors in these sectors to use their political links to solicit direct support. When support was forthcoming, this enabled a second phase of learning. This learning was more effective because some firms now had strong internal incentives to put in high levels of effort. Firms in a number of these sectors, like automobiles and pharmaceuticals succeeded in reaching the frontier through these strategies.

First, we identify the contracting problem that intervention has to solve if the adoption of modern technologies is to be accelerated. Developing countries find it difficult to catch up despite their significantly low wages and large pools of underemployed labour, often with many unemployed workers having respectable levels of formal education. This paradox can be explained in terms of a simple catching up model. Competitiveness depends not just on wages but also on the productivity of labour, and its effectiveness in converting expensive (often imported) inputs into outputs. The productivity of labour and input use depend not just on the formal education of workers and managers, but more significantly on their tacit knowledge embodied in routines of production that can only be learnt through actual practice. Without periods spent in learning-by-doing, a developing country typically has productivity levels that are too low for it to competitively engage in production. This is even true for many relatively low quality and basic production processes. As a result, a new firm or even an entire country can find entry into even low-quality production blocked.

Developing countries trying to absorb new technologies are attempting to produce products that already have a global price for different qualities set by the leading countries using these technologies. The machines and technologies for producing these products are likely to be well known but there may be many variants of competitive organizations using these technologies in different leading countries. These organizational variants reflect differences in local conditions, habits of work of the workforce, infrastructural constraints that have to be dealt with and so on, but in every case, the existing organizations define levels of quality and price that the catching-up country has to match. Protecting domestic markets, granting export subsidies or implicit subsidies of different types can provide infant industries in developing countries with the 'loss-financing' to engage in production and learning-by-doing, but unless competitiveness catches up, these strategies become unsustainable in terms of the accumulating subsidy cost.

Competitiveness depends on both price and quality. For a catching-up firm to graduate out of subsidies, it has to achieve a price-quality mix that is globally competitive. Once this is achieved, explicit or implicit subsidies are no longer required. Products can be defined as combinations of characteristics. Broad clusters of characteristics define a particular type of product, but any product also has detailed characteristics of reliability, performance, attractiveness, design and a range of other

functions that can distinguish the ‘quality’ of particular products within a broad group (Lancaster 1966; Sutton 2005, 2007). Products can therefore be indexed by quality, with higher quality cars (for instance) being (in general) more difficult and more expensive to produce, but also attracting a higher price that is high enough to make it worthwhile for producers to always seek to improve product quality.

Developing countries are generally not in the business of innovating new products. This is a relatively small part of the growth process even in middle income developing countries. Rather, the most important problem for developing countries is to learn how to produce an improving range of products from the qualities that already exist, at a price that is equal to or lower than the ones already available. If a country can produce an existing product of a particular quality at a price lower than that currently prevailing it has a chance of capturing markets from already established producers or extending the market to new consumers. Lower quality products are generally easier to produce, but for any quality level a maximum price is defined in global markets and a new entrant will not be able to sell its products without a subsidy if it cannot match this price. The problem for developing countries is that they are often unable to produce products of the requisite price-quality combination even when their wages are lower than their competitors and even when they aim at relatively low qualities and technologies.

Higher quality products have, by definition, a higher selling price, so in general they allow either a higher wage or a higher profit mark-up or both. Improving the quality of products is therefore a way of achieving wage and profit growth. Secondly, productivity growth is likely to be higher in higher quality products to the extent that these are still the subject of innovation in advanced countries. Developing countries that shift to higher qualities and build the organizations that can effectively produce these qualities are therefore likely to enjoy faster incremental productivity growth by being able to copy or adapt these innovations. At the same time, lower quality products can become inferior goods as world incomes increase, and global consumers are likely to gradually shift away from goods of lower quality. Finally, lower quality products are more likely to be targeted as entry points by even poorer countries creating gradual downward pressure on prices. It is therefore both socially and privately desirable to produce the highest quality products that are feasible.

The catching up problem can therefore be defined as a) entering globally competitive production for a variety of products at the highest feasible levels of quality, b) spreading these organizational capabilities broadly to create jobs across the working population and c) systematically moving up the quality ladder across product categories to achieve wage growth and sustained productivity growth. In reality, many developing countries struggle to produce anything competitively. Some produce a very limited range of competitive products but of low quality and find it difficult to move up the product and quality ladder. A few more advanced developing countries produce a range of competitive products, some of higher quality, but face challenges in achieving quality improvements and even greater challenges in entering new product ranges.

The essential features of the catching-up problem can be described using a simple mark-up pricing model for products of a given quality. The current global price of a particular product of quality Q is set by its cost of production in the country that is

currently the global production leader. The unit price can be arithmetically broken down into the unit labour cost plus the unit input cost plus the unit amortized capital cost representing the unit cost of machinery and buildings. This is shown in eq. [1]:

$$P_Q^{global} = \left[\frac{W_Q^{leader}}{\Pi_Q^{leader}} + \sum_i \frac{P_{Qi}}{\alpha_{Qi}^{leader}} + \sum_k \frac{P_{Qk}}{\beta_{Qk}^{leader}} \right] (1 + m_Q) \quad [1]$$

(unit labour cost) (unit input cost) (unit capital cost) (markup)

To simplify the notation we do not denote products and simply refer to a particular quality indexed by Q, so Q+1 represents a higher quality product compared to Q. P_Q^{global} is the international price of a particular product of quality Q. W_Q^{leader} is the wage level in the leading country producing the product of quality Q. Π_Q^{leader} is the productivity of labour in this activity in the leading country, measured by the output per person in this activity. The first term on the right hand side is therefore the unit labour cost.

The second term is the unit input cost. The production of the product requires i inputs as raw materials or semi-manufactured inputs. To simplify, we assume these inputs are globally traded, each with a global price of P_{Qi} . The efficiency with which inputs are used is measured by the productivity of input use (output per unit input). In the leading country, the input productivities of each of the i inputs are represented by α_{Qi}^{leader} . Input productivity primarily measures wastage and input loss due to rejected final products. In many production processes this is a critical determinant of competitiveness.

The third term refers to the unit ‘capital’ cost attributable to the cost of machinery and buildings. There are k inputs of this type, and the most important elements are usually machines, which have a globally traded price, though land and buildings can also be significant cost components in some cases. The unit cost of capital is determined by the fraction of each component of these capital costs attributed to the particular period of production, represented by P_{Qk} divided by the output-capital ratio for each type of capital (the productivity of capital) measured by β_{Qk}^{leader} . As the capital stock that is available in each period is fixed, the output-capital ratio depends critically on the scale of production that determines capacity utilization. The higher the output achieved with any given capital stock, the higher the productivity of capital measured by each β_{Qk}^{leader} . Low capital productivity could therefore be the result of a lack of technological capabilities on the part of the workforce resulting in improper use of machinery but it could also reflect spare capacity if machines and fixed assets are underused because of a suboptimal scale of production. Finally, the mark-up determining price is set at m_Q .

In the same way, the cost of production (in a common currency) in the developing country is the domestic cost $C_Q^{domestic}$ for the product of quality Q, given by an exactly equivalent equation but with the appropriate domestic productivities and prices:

$$C_Q^{domestic} = \left[\frac{W_Q^{domestic}}{\Pi_Q^{domestic}} + \sum_i \frac{P_{Qi}}{\alpha_{Qi}^{domestic}} + \sum_k \frac{P_{Qk}}{\beta_{Qk}^{domestic}} \right] (1 + m_Q) \quad [2]$$

The follower country achieves competitiveness when its $C_Q^{domestic} \leq P_Q^{global}$. The globally traded prices of inputs and machinery are typically similar in the follower and leader countries but wages and some input costs are likely to be lower in the former. The cost of borrowing, which affects the amortized cost of capital, may be higher in the follower (reflecting a higher risk premium), but the difference may not be very significant. It may therefore appear that the developing country should be able to achieve competitiveness for many simple technologies for which the appropriate formal skills exist since its wage level is lower: $W_Q^{domestic} < W_Q^{leader}$, and most other prices are either similar (globally tradable inputs and machinery) or lower (possibly for some non-tradable inputs like land and buildings). But in fact developing countries usually cannot break into the production even of relatively low technology (low quality) products because they typically suffer from significant productivity disadvantages that more than negate their wage and other cost advantages. Output per person is generally much lower, $\Pi_Q^{domestic} < \Pi_Q^{leader}$, as are many input and capital productivities, $\alpha_{Qi}^{domestic} < \alpha_{Qi}^{leader}$ and $\beta_{Qk}^{domestic} < \beta_{Qk}^{leader}$. These productivity differentials explain why despite low wages, the follower country typically has a higher cost of production than the global price even for relatively low technology products.

It may appear that a low wages could compensate for these productivity differentials, but in reality that wage may have to be much lower than is feasible. A more profound problem is that in many cases, even *zero* wages may not be able to compensate for a lower efficiency of input and capital productivity. This is because inputs and capital equipment have global prices that have to be paid. If $\alpha_{Qi}^{domestic} < \alpha_{Qi}^{leader}$ for expensive globally traded inputs, the greater wastage of inputs alone could result in a higher domestic cost of production *even if the domestic unit labour cost could be pushed to zero*. This is why efficiency in controlling the wastage of inputs and reducing product rejection is often a critical variable in achieving competitiveness. In addition, the productivity of critical capital equipment is often lower, with $\beta_{Qk}^{domestic} < \beta_{Qk}^{leader}$ as a result of machinery not being properly set up, or the optimal scale of production not being achieved. Indeed, a small disadvantage in these productivity variables across a number of inputs and types of capital could mean that even with *zero* wages, the cost of production in the developing country may be higher. In fact, wages are typically a relatively small part of the cost of production even in labour-intensive manufacturing processes. Competitiveness, even in low technology products, therefore depends more on the level and growth of productivity rather than on cost advantages.

While it is conceptually useful to distinguish between labour, input and capital productivity, all of these productivity measures are affected by the ways in which production is set up and organized by the management and workers operating machinery of a specific type. The productivity of all inputs including labour depends on how effectively the production process is *organized*. Output per person, Π_Q ,

depends on a variety of economy-wide and firm-level factors. The economy-wide determinants of firm labour productivity include the quality of public goods and utilities including the quality of education, infrastructure and the reliability of utility supplies. Firm labour productivity is also determined by firm-level variables like the capital equipment used by labour and the skill and experience of the workforce and management. The technological capabilities of workers are important determinants of firm-level productivity. These depend on their formal training and education but also on their tacit knowledge of operating equipment effectively as a result of learning-by-doing. However, an even more important determinant of firm-level labour productivity is the *organization* of the firm: how teams are set up to ensure a smooth flow of production, how machinery is set up to reduce bottlenecks, how management systems are set up to solve problems and so on. These organizational capabilities are also the result of effective learning-by-doing that results in the evolution of a work organization that achieves high labour productivity.

In the same way, the efficiency of input use, α_{Qi} depends on the same economy-level variables determining the skills and education of the workforce, as well as firm-level variables like the type and sophistication of the capital equipment used and the technological skills of the workforce using this equipment, based on both formal skills and tacit knowledge. In addition, the firm-level organization of production is again often of critical significance. Organizational design is critical for limiting the wastage of raw materials and for maintaining quality so that final products are not rejected, thereby maintaining input productivity at a high level. Finally capital productivity also varies significantly across countries and firms even for machinery of exactly the same type. This too reflects differences in the organization of production and the skills and capabilities of the workers and managers. However, in addition capital productivity is also a function of the scale of production. For firms entering new lines of production, the scale of production can be constrained by the low competitiveness of the firm. This is because as long as a firm suffers from low labour and input productivity, it can only sell its products at a lower profit margin or at a loss. This can prevent it from expanding the scale of production, and the low capital productivity that results can further damage its competitiveness.

Thus, competitiveness and the underlying productivities that determine competitiveness are not just determined by having the right machinery for producing products of a particular quality and having workers and managers with the right levels of formal education and training. It depends more critically on the technological and organizational capabilities of the teams using the machines to produce products, and both sets of capabilities depend on the successful outcomes of difficult learning-by-doing processes. Early development theory and practice emphasized investment in modern machinery but we now know this is not sufficient without strategies for achieving competitiveness. Crippling differences in productivity persist across countries using identical machinery (Clark and Wolcott 2002; Sutton 2007). While the economy-level constraints on productivity are widely recognized, the firm-level *technological and organizational capabilities* of workers and management are probably much more important in explaining why some countries take off when they do. Takeoffs are rarely triggered by prior improvements in economy-wide infrastructural conditions, though sustaining growth clearly requires an improving efficiency in the delivery of education and infrastructure.

The importance of firm-level organizational capabilities as the critical determinant of competitiveness is based on two interrelated observations. First, there is the observation from observers of technological capabilities that much of the technological and organizational knowledge necessary for competitiveness is *tacit knowledge* embedded in routines (Nelson and Winter 1982; Dosi 1988; Pelikan 1988; Perez and Soete 1988). Engaging in effective productive activity requires a mix of formal or codifiable knowledge (knowledge that can be communicated in words or symbols) and uncodifiable 'knowing-how-to' knowledge that is embedded in unconscious and often complex routines. The latter is defined as tacit knowledge and the significance of its non-codified form is that acquiring this knowledge requires learning-by-doing rather than attending formal courses (Polanyi 1967). The process of learning efficient routines inevitably involves practice and the adaptation of practice to local conditions rather than reading off blueprints from a manual. Compared to the difficulty of 'acquiring' this tacit knowledge, buying the machines and setting up the factory are often much the easier parts of the process of technology acquisition and growth.

The difference between technological and organizational capabilities is often difficult to distinguish in practice because the former can depend on the latter. Technological capabilities refer to the productivity of individual workers which can depend on their tacit knowledge of how to use particular machines effectively. Organizational capabilities refer to the design of the organization that determines the productivity of each individual worker, and this also determines input and capital productivity. The organization of production refers to things such as setting up the layout of the machines so that production bottlenecks are avoided given the pace of work that can be achieved with local conditions, implementing effective quality control routines with incentives that are appropriate for local conditions, managing inventories taking into account local infrastructural constraints, meeting orders on time and so on.

The importance of the organizational capabilities of a production team as a whole becomes obvious when workers migrate from developing countries to more advanced ones. Their individual productivity jumps when they join a modern organization. In migrating to join an already efficient organization, an individual worker rapidly slots into existing routines and thereby rapidly improves their individual productivity, even in terms of the learning-by-doing that improves their individual technological capabilities. In contrast, if the whole team is operating with the routines of an inefficient organization or still experimenting with new routines, the individual productivity of each worker is likely to remain low. Evolving these routines takes effort from all the stakeholders as it involves experimentation and re-allocation of duties and responsibilities till the organization as a whole achieves competitiveness. Even relatively low-technology production of relatively low quality products like garments requires acquiring a huge amount of tacit organizational knowledge embedded in the routines of interaction between the hundreds or even thousands of workers and managers in the organization.

Secondly, the literature on technological and organizational capability also points out that tacit knowledge is largely acquired through processes of *learning-by-doing* (Lall 1992, 2000a, 2000b, 2003). If a firm has to engage in learning-by-doing to achieve competitiveness, the implication is that it has to begin production *before* it achieves competitiveness. This is very significant. Investment in a firm using new technologies

in a developing country therefore requires some implicit or explicit form of loss-financing as the organization cannot *by definition* achieve competitiveness for some considerable time. This marks a very significant difference between advanced and developing countries. In the former, the financing of machinery and buildings to set up production may face uncertainties in terms of markets and prices if the product is a new one, but the organizational capabilities of the firm and its workers are typically not in question. In developing countries, the markets and prices are well known by definition because the product is a well-known one, the uncertainty is about the organizational capabilities of the team attempting to produce the product. While the uncertainty faced by innovating firms in advanced countries is well understood, the uncertainty faced by learning firms in developing countries is often ignored in economic theory and policy.

In principle the lower profits or even losses that firms face during their period of organizational capability development could be privately financed as there is the potential of future profits. The absence of significant private engagement in investments in learning-by-doing in developing countries suggests the presence of important contracting failures that keeps private investors away from this difficult task. The difficulty is not surprising given that a locally specific organizational design is required to achieve competitiveness. External investors who may finance the learning have neither a blueprint of the organizational design that may work nor can they easily observe the effort the production team is putting in to achieve the competitive organization rapidly. In practice, governments in the past have therefore played a significant role in financing infant industry strategies. However, the relative paucity of successful infant industry programmes demonstrates the difficulty of getting the governance capabilities right for ensuring successful outcomes in these public financing strategies. Clearly, ensuring high levels of effort in these learning processes is by no means a simple affair.

The loss-financing required to engage in learning-by-doing depends on the gap between the domestic cost of production and the global price at that quality. The loss financing that would allow production (and learning-by-doing) to commence can be measured as a per unit ‘subsidy’, s_Q , which brings the initially higher domestic cost of production $C_Q^{domestic}$ into line with the global price P_Q^{global} . The ‘subsidy’ does not have to be a transfer from government and could be private loss financing in the form of investors accepting a lower mark-up or putting in additional cash to cover a period of loss-making. When the loss-financing involves a public subsidy, this can also be delivered in a variety of ways, some explicit, others more subtle. The possibilities include export subsidies, import protection, subsidized interest rates, subsidized inputs or infrastructure, or a cash subsidy. Thus a variety of financing instruments are available to enable learning-by-doing to commence, and in general we can describe these instruments as ways of providing ‘rents for learning’ (Khan 2000a).

The essential features of the problem can be described by focusing on the situation where the domestic firm can produce products of quality Q , but at a higher cost than the current global price. The required effective rate of subsidy, s_Q , is given by the equality:

$$C_Q^{domestic} (1 - s_Q) = P_Q^{global} \quad [3]$$

Inserting eq. [2] that defines $C_Q^{domestic}$ into this gives the required s_Q :

$$s_Q = 1 - \frac{P_Q^{global}}{(1 + m_Q)} \left[\frac{W_Q^{dom}}{\Pi_Q^{domestic}} + \sum_i \frac{P_{Qi}}{\alpha_{Qi}^{domestic}} + \sum_k \frac{P_{Qk}}{\beta_{Qk}^{domestic}} \right]^{-1} \quad [4]$$

It follows from [4] that:

$$\frac{\partial s_Q}{\partial P_Q^{global}}, \quad \frac{\partial s_Q}{\partial \Pi_Q^{domestic}}, \quad \frac{\partial s_Q}{\partial \alpha_{Qi}^{domestic}}, \quad \frac{\partial s_Q}{\partial \beta_{Qk}^{domestic}} < 0$$

The required rate of subsidy declines if the global price rises, or if domestic labour productivity, input productivity or capital productivity rise. It follows that the more rapidly domestic labour, input and capital productivities grow, the sooner the subsidy can be removed. The subsidy per unit required for entering production is also likely to be higher for higher quality levels. Lower and higher quality versions of the same product are indexed by Q and Q+1. Using [3], the per-unit subsidy required in each case is shown in equations [5] and [6].

$$s_Q = 1 - \frac{P_Q^{global}}{C_Q^{domestic}} \quad [5]$$

And

$$s_{Q+1} = 1 - \frac{P_{Q+1}^{global}}{C_{Q+1}^{domestic}} \quad [6]$$

Under plausible assumptions $s_{Q+1} > s_Q$, meaning a higher subsidy is required if a firm wants to engage in producing higher quality products. The organization required to produce a more complex product is generally also more complex. The gap in tacit knowledge is therefore likely to be greater for constructing the more complex organization. Both the gap in labour productivity and gaps in input productivities are likely to be greater in higher quality products because the latter typically require more sophisticated production routines and more sophisticated management of inputs. The greater labour and input productivity gaps between the two countries in quality Q+1 compared to quality Q can be represented as a set of inequalities:

$$\frac{\Pi_{Q+1}^{leader}}{\Pi_{Q+1}^{domestic}} > \frac{\Pi_Q^{leader}}{\Pi_Q^{domestic}} \quad \text{and} \quad \frac{\alpha_{Q+1}^{leader}}{\alpha_{Q+1}^{domestic}} > \frac{\alpha_Q^{leader}}{\alpha_Q^{domestic}} \quad \text{for some or all } i \quad [7]$$

The bigger gap in organizational knowledge for higher quality products is also likely to show up in lower initial capital productivity for higher quality products. In

addition, capital productivity in higher qualities is likely to be further affected by the fact that higher quality production often requires more expensive machinery and is therefore likely to require a larger scale of production to become competitive. The low initial competitiveness of the firm can therefore create a further problem because the firm may find it difficult to achieve the scale economies to reduce its output-capital ratio, implying a greater gap in capital productivity in higher quality products:

$$\frac{\beta_{Q+1}^{leader}}{\beta_{Q+1}^{domestic}} > \frac{\beta_Q^{leader}}{\beta_Q^{domestic}} \text{ for some or all } k \quad [8]$$

Returning to equations [1] and [2] we know that the costs of production in both countries are inversely proportional to their labour, input and capital productivities. Given the likelihood that some or all of the inequalities in [7] and [8] are likely to hold, it must be the case that

$$\frac{P_{Q+1}^{global}}{C_{Q+1}^{domestic}} < \frac{P_Q^{global}}{C_Q^{domestic}} \quad [9]$$

The inequality in [9] says that the cost of production in the developing country is greater (relative to the global price) for the higher quality product compared to the lower quality product. Using inequality [9] and comparing equations [5] and [6] it follows that a greater subsidy per unit will be required to overcome the initial competitiveness gap in the higher quality product compared to the lower quality product.

$$s_{Q+1} > s_Q \quad [10]$$

These results suggest a number of propositions.

Proposition 1. The loss-financing required to begin production is in general higher the higher the quality of the product and moreover, the subsidy will be required for longer as more complex organizational capabilities have to be developed.

As against this, the development of more complex organizational capabilities has a number of advantages.

Proposition 2. The production of higher quality products is desirable simply because their production adds more value relative to lower quality products.

A further proposition is plausible. Economics textbooks often show technical progress as an outward shift of a production frontier for a country. In reality, this is misleading because improvements in technological capabilities are likely to be localized around specific technologies (Atkinson and Stiglitz 1969; Stiglitz 1987). The localization of productivity improvements is even more likely if competitiveness is embedded in the routines of particular organizations. In this case successful learning is likely to benefit the future adoption of technologies that are similar or closely related, rather than

raising potential productivity across all technologies. Thus, we are likely to see ‘bumpy’ improvements in productivity clustered around particular technologies. This can explain why countries specialize in clusters of related products, possibly triggered by the random success of learning-by-doing in particular sectors. This is why it can be advantageous to acquire organizational capabilities in more advanced technologies producing higher quality products. Innovation in advanced countries is also more likely in higher quality products like electronics than lower quality products like garments. A follower country that has organizations capable of producing higher quality products is therefore more likely to benefit from further productivity growth by adopting incremental improvements in these products as innovation happens in more advanced countries.

Proposition 3. Learning-by-doing improves organizational capabilities for producing related products and if future productivity growth is likely to be faster in higher quality products, it is beneficial to develop more complex organizational capabilities.

The development challenge is therefore to accelerate the movement up the quality ladder subject to feasibility defined by the loss-financing capabilities of the society and its ability to solve the contracting failures that result in adverse outcomes for loss financing strategies.

Figure 2 summarizes some of the fundamental issues facing catching up and technology acquisition in developing countries. The competitiveness curve for a country summarizes its distance from global competitiveness across different quality products. The x-axis measures the quality of the product, and the y-axis the follower’s competitiveness in producing that quality. Competitiveness is measured by the ratio

$\frac{P_Q^{global}}{C_Q^{domestic}}$. A higher ratio therefore implies greater competitiveness of our country

given the prices set by the leader. When this ratio is 1 or higher our country can sell a product of this quality in global markets and therefore the horizontal line at 1 can be read as the global competitiveness frontier for our country. When the ratio is less than 1 for a particular quality, our country will either not be able to produce that quality or will require (temporary) loss-financing to allow production. The required rate of

‘subsidy’, s_Q , equals $1 - \frac{P_Q^{global}}{C_Q^{domestic}}$ in eq. [5], and is shown in Figure 2 as the gap

between the global competitiveness frontier (the horizontal line at $P/C=1$) and current competitiveness at quality Q defined by the current competitiveness curve.

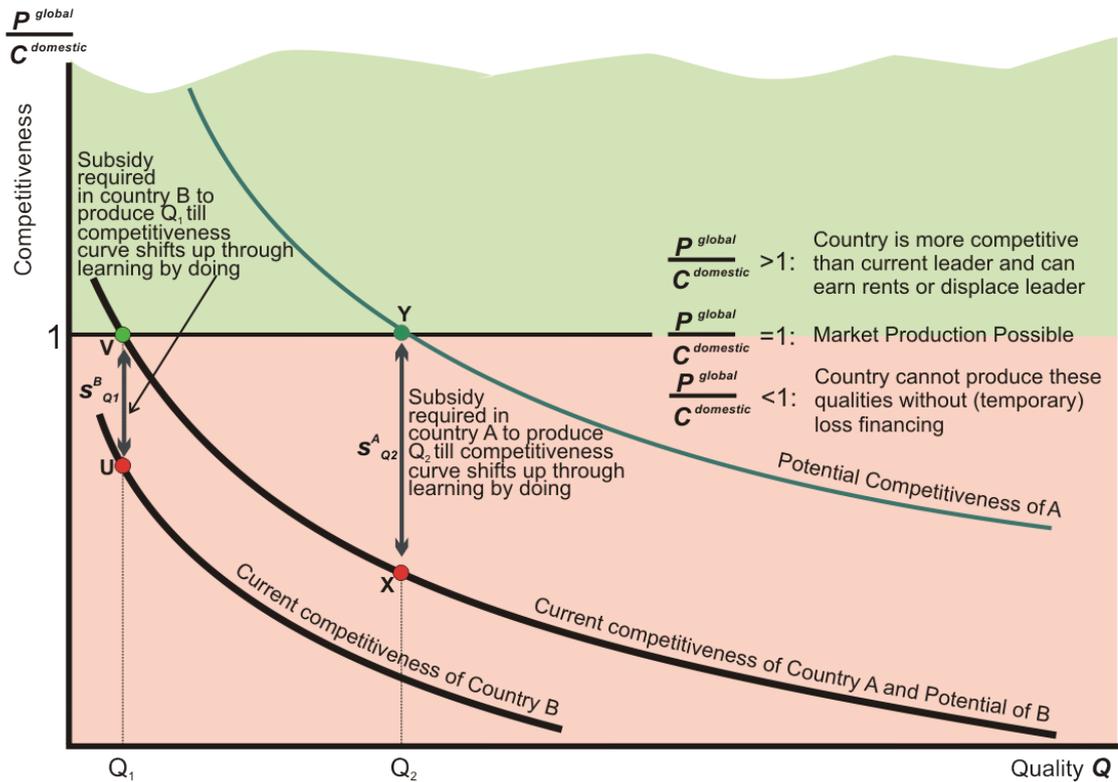


Figure 2 Loss Financing and Learning-by-doing

The competitiveness curve is downward sloping because although world prices of higher quality products are higher (which is why they are more desirable to produce), the cost of production in the follower country is even higher, giving it a greater disadvantage in higher quality products. The greater productivity gap in higher qualities will force market-reliant developing countries to specialize in low quality products. This may have nothing to do with the relative price of labour and capital as in standard neoclassical theory. Consistent with proposition 1, it is possible to imagine a developing country like B in Figure 2 where current organizational capabilities are so low that it cannot even produce the lowest quality of the product. In extreme cases, some developing countries may struggle to produce competitive qualities of any product. The competitiveness curve can be extended to apply to related products of different complexity. For instance, we could see different ‘qualities’ as parts of a vertically organized value chain. Low qualities could be low value-added parts of the value chain (like packing and assembling), medium qualities could be the production of intermediate products going into the assembly and higher qualities could be design, product development and marketing. Once again, the typical developing country would struggle to locate itself at the lower ends of the value chain where the organizational gap was less challenging, and many may not even succeed in that. At an even more general level, we could use the capability curve to think about choices across all products ranked by production complexity for which ‘quality’ is a proxy.

Figure 2 suggests that a country like B will need loss-financing of s^B_{Q1} from the outset to begin production even of low-quality products Q_1 at point U. The success of a strategy of loss-financing would be measured by the pace at which productivity increased as a result of learning-by-doing. Successful learning-by-doing should result in the competitiveness curve moving upward till the loss-financing was no longer

required at V. Note that this does not necessarily require achieving levels of productivity equal to the leader country because the follower is likely to have a wage and cost advantage for some inputs. Sustained productivity growth is therefore likely to raise the follower's competitiveness to more than 1, in which case the follower could either earn a rent (a mark-up higher than m_Q) at the global price or it could bid down the global price in these qualities to below a price acceptable to the leader, thereby displacing the leader from these segments of the market and achieving more sales. If the latter is the more profitable option, the developing country becomes the leader for that quality and the global price is eventually defined by the cost of production and market power of the new leader.

Finally, proposition 3 tells us that if future technological progress is localized around higher qualities and technologies, it may be desirable to further accelerate the move up the quality ladder to the points where innovation is still happening in more advanced countries. In Figure 2 the potential future productivity growth at quality Q_1 may be relatively low because the technology is already mature and no further product and process innovations may happen at this quality level. Thus, for country A, which can produce Q_1 competitively, the imperative may be to move to a higher quality not only to prepare for future competition from country B, but also to enjoy faster productivity growth clustered around quality Q_2 . Thus, for country A, there may be a policy justification to assist learning-by-doing around quality Q_2 by organizing temporary loss-financing of $s^A_{Q_2}$. The challenge for A would be to go from point X to point Y to achieve competitiveness at this higher quality level. This would not only allow the country to raise its domestic value-added and living standards, it may also ensure faster productivity growth in the future.

But if temporary loss-financing can assist a country to raise its productivity through learning-by-doing, how high should a country aim? Proposition 1 tells us that given existing capabilities, the higher the quality level that the country tries to achieve, the greater the financing cost measured by s_Q . Moreover, the greater the gap with leading countries at that quality, the longer is the catching up likely to take to reach the global competitiveness frontier. As a result, trying to aim too high may involve excessively long periods of subsidization. Moreover, the competitiveness gap is only partially due to the absence of tacit knowledge. Some of the gap could also be due to levels of formal education and skills and the poor quality of economy-level public goods. If the initial gap is too big no amount of firm-level experience and learning-by-doing may remove it entirely. As both the social time preference and the cost of finance in poor countries are likely to be high, there is a limit to how high up the quality ladder it is feasible to go.

Learning, Effort and Governance

Investments in new sectors can be constrained by a variety of contracting failures. However, the contracting failures that affect learning are different from other contracting failures that can constrain investments for other reasons. These include several different types of appropriability problems limiting future profits in the presence of externalities and the costs of coordinating complementary investments. The solutions to different contracting failures can appear to be deceptively similar, for instance many of them can involve some form of subsidy or assistance. In principle, several contracting failures may also be operating simultaneously to constrain investments in technology acquisition. Nevertheless, distinguishing different

contracting failures is important because the governance requirements for effectively addressing them can be markedly different. Policies supporting technology acquisition in the past often yielded poor results because the relevant contracting failures were not properly identified and understood. As a result, policies were not designed to be effective in solving these contracting problems with existing governance capabilities, nor were the governance capabilities necessary for the success of specific policies identified and developed.

Table 14 Major Contracting Failures Affecting Technology Acquisition

Contracting failures Affecting Investment	Likely Policy Instruments	Governance Capabilities required for Implementation
Appropriability problems facing investments in skills: investors cannot capture full benefits of training	Public co-financing of labour training and investments in skills	Capabilities in relevant agencies to ensure financing for training is not misallocated or wasted
Appropriability problems facing innovators: Poor protection of innovation rents can discourage advanced technology investors	Protection of IPRs. But TRIPS may be too restrictive and MNCs may have weak incentives to transfer technologies	Enforcement capabilities for IPRs but also policies and strategies to encourage technology transfer by MNCs
Appropriability problems facing ‘discovery’: First movers do not capture full benefits of discovering comparative advantage	Subsidies for first mover start-up companies in new sectors	Capability to make subsidies time limited
Failures of Coordination: Complementary supporting sectors do not develop, constraining investment	Indicative or incentivized strategies for coordinating investments	Significant governance capabilities required to coordinate and discipline investments across sectors
Problem of Contracting High Effort in Learning: Financing technological-organizational learning fails because of low effort	Public co-financing or sharing of risks of financing the learning of tacit technological and organizational capabilities	Financing instruments must be compatible with governance capabilities to ensure credible compulsions for high effort learning-by-doing

Source: Author

Table 14 outlines a number of critical contracting failures affecting technology acquisition, the likely policy responses and the governance capabilities required to make the policies effective. Most of these contract failures been discussed in the literature but the differences in the governance capabilities required to address them have not received sufficient attention (Khan 2009b). The positive externalities of investments in skills can result in an appropriability problem for investors and underinvestment in skills (Dosi 1988; Khan 2000a). Corrective policy involves subsidizing skills development and the required governance capabilities are to monitor outcomes and withdraw public funding if expected outcomes are not achieved. Spillovers can also affect investments in innovation, which requires the temporary protection of technology rents. While this is primarily a concern for advanced countries that rely on innovation for growth, developing countries may have

to protect the intellectual property rights of multinationals in order to attract advanced technology investments (Hoekman, et al. 2004). Apart from a capability to protect intellectual property rights, technology transfer also requires significant negotiating skills on the part of policy-makers in developing countries to negotiate technology transfer strategies with multinationals (Khan 2000a; Stiglitz 2007).

A further set of spillovers affect investments in ‘discovering’ new areas of comparative advantage (Hausmann and Rodrik 2003). Although the proposition that countries have hidden comparative advantages that need to be discovered is not particularly convincing, the possibility that first movers may not be able to capture the full benefits of their investment can justify subsidizing investments in new sectors. One reason that first movers may fail to get the full benefit of their discovery is that profits may be bid down by imitators whose entry pushes up wages. To the extent that this problem dampens investment in discovery, the appropriate policy response is to subsidize investments in new sectors and the governance capability required is to ensure that the subsidies are only available to reduce the costs of the start-up phase.

A further problem is that of coordination failures affecting investments across sectors (Rosenstein-Rodan 1943; Nurkse 1953; Scitovsky 1954; Murphy, et al. 1989). This problem is well-known in the development literature, but solving it is difficult and requires significant capabilities in information gathering, understanding demand and supply complementarities and implementing the coordination effectively. These capabilities are typically missing in developing countries and development planning efforts therefore usually achieve very little. Our focus is on the last of the contracting problems in Table 14, the problem of contracting high-effort learning. Solutions to all the other problems in the table presume that the technological and organizational capabilities to set up competitive organizations already exist. In reality, developing countries lack the capabilities to use modern technologies and without this, attempted solutions to other problems are unlikely to have any effect. Unfortunately, this too is a particularly difficult problem to solve. Strategies of subsidization without incentives and compulsions to induce high effort in the learning process are likely to fail.

Private investment in financing learning may be motivated by the following type of calculation: An investment of s_Q in loss-financing has the prospect of achieving a

competitiveness of $\frac{P_Q^{global}}{C_Q^{domestic}} \geq 1$ after n years. As the follower country has lower

wages, productivity growth could eventually result in cost of production lower than the world price. If productivity improves sufficiently, the investor can earn a normal profit of m_Q or even a rent in the form of a higher mark-up of $m_Q' > m_Q$ (after n years) with an expectation that the rent $m_Q' - m_Q$ will last for x years. The mark-up can decline over time for a number of reasons including the entry of new firms in the sector that bids up wages. The magnitudes of s_Q , n , and if relevant, $m_Q' - m_Q$ and x , and the discount rate or cost of finance facing the entrepreneur will determine whether the investment in learning-by-doing is privately profitable. Private investments in learning may happen even without the prospect of rents because the normal mark-up m_Q may be attractive enough given the alternative opportunities of the investor even taking into account the extra investment in loss-financing. This is therefore a different problem from the discovery problem where a private investor in a new sector will not

invest without a subsidy because the social benefit from discovery is always greater than the private benefit, which may even be negative.

In the learning problem, the contracting failure is internal to the firm and its investors as the latter find it difficult to ensure effort in learning. If this problem can be solved then private investments may happen. If the contracting problem of ensuring high effort cannot be solved, public policy has to co-finance or share the risk of financing learning. However, in some cases the configuration of costs and benefits may require a higher return to justify the investment in learning than the return that is achievable even with high effort. The required higher return may not be achievable because it may not be feasible to achieve a low enough cost of production to generate the required private rents even with feasibly high effort *or* it may not be possible to achieve the rents for long enough because new entrants reduce the returns of the first mover by raising wages rapidly (as in the discovery model). In these cases there may be a second reason why public policy should co-finance learning and that is that the social return on learning may be higher than the feasible private return. This provides additional justification for subsidizing first-movers investing in learning in a particular sector. But even in cases where investments in learning have positive spillovers for society, if the public support for learning does not solve the problem of ensuring high levels of effort the exercise as a whole is likely to fail. This is what makes the solution of the learning problem different from the solution of the pure discovery problem and other positive externality problems which only require the provision of time-bound subsidies.

Effort is important for the learning problem because the development of technological and organizational capabilities requires both time and effort. Time and effort are inversely related: the lower the effort, the longer the learning takes. In Figure 2 firms in country B may be unable to begin production at point U without loss-financing, but the feasibility of the financing depends on *how long* firms take to go from U to V, or even whether V will ever be reached. The rate at which the competitiveness curve rises depends on the degree of effort that is put into the learning process once loss financing allows learning-by-doing to commence. Unfortunately, disciplining the learning process is a difficult problem to solve. Without incentives and compulsions, a production team can keep on repeating procedures without the innovations and experiments that improve its productivity. This is particularly the case if the firm can make a political case for continuing with the subsidy. The political alliances of firms can make subsidy withdrawal too costly for many governments. The institutional and political background can therefore set constraints on what can be done. The 'learning' process can then continue indefinitely, as countries with infant industries that refused to grow up have discovered. Indeed, even if the learning process is just a little too slow, financing may become unviable in terms of opportunity costs. Moreover, if the public or private investors who may have financed the learning suspect its viability, they are unlikely to engage in the financing in the first place.

The time required for achieving competitiveness, defined as the break-even period B_c , can plausibly be determined by a number of variables. First, it depends on the initial gap between the country and the global leader which we can measure by the initial competitiveness gap that the subsidy s_Q is required to cover. The greater the initial gap, the longer it will take to catch up. Second, time required for learning depends on the *effort* of the participants in the learning process. This includes both the individual

efforts in acquiring technological capabilities, but even more so the management effort in acquiring organizational capabilities. Whatever the initial gap, a higher effort is likely to result in faster convergence. Effort can be measured by the intensity of application of workers and managers to continually improve productivity. This can be observed as the rate at which managers and workers experiment with and adapt production processes to achieve improvements in productivity. As experimentation and trials impose costs on individuals, the result can be conflicts as there may be distributive implications in redefining jobs. Thus, higher levels of effort imply costs for participants and particularly for managers. As already noted, the effort referred to here is *not* the intensity of the work process in general, but the effort expended in learning to raise productivity. Typically, low productivity is not the effect of laziness or low effort in general on the part of the workforce (though that may be a marginal contributor) but rather of a failure of effort on the part of the production team as a whole to evolve routines and organizational structures that raise individual productivity, improve quality control, reduce the wastage of inputs, reduce bottlenecks in production and improve capacity utilization.

Finally, the break-even period can also depend on country and firm specific factors. Country specific factors refer to general levels of education, exposure to technology, the prior history of organized modern production, infrastructural quality and so on. If a country is significantly behind in its formal technological capabilities it may fail to approach required levels of competitiveness within any feasible time period. An example of this would be the absence of a sufficient number of formally trained engineers of a particular type required in the production process. Firm level factors refer to idiosyncratic differences in the quality of entrepreneurship, the quality of technicians and managers inherited by a firm and so on. These variables are summarized in eq. [11]:

$$B_t = f(s_Q, e, C, F) \quad [11]$$

The break-even period B_t is likely to be longer the higher the initial gap in competitiveness measured by s_Q , the lower the level of effort, e , and if C and F , which describe country-specific and firm-specific factors respectively are adverse. Figure 3 tracks the pace at which the competitiveness curves in Figure 2 move up as a result of different levels of effort. To simplify, we assume that the value of other variables is such that it is potentially possible for the country to achieve competitiveness in quality Q . At time $t=1$ country A's competitiveness is too low for it to begin the production of quality Q without loss-financing. The initial loss financing is s_Q in Figure 3. If effort levels are high, the break-even period $B_t = n$ periods. At that point, loss financing can be abandoned and indeed if improvements in productivity continue, the country may even be in a position to earn rents in subsequent periods.

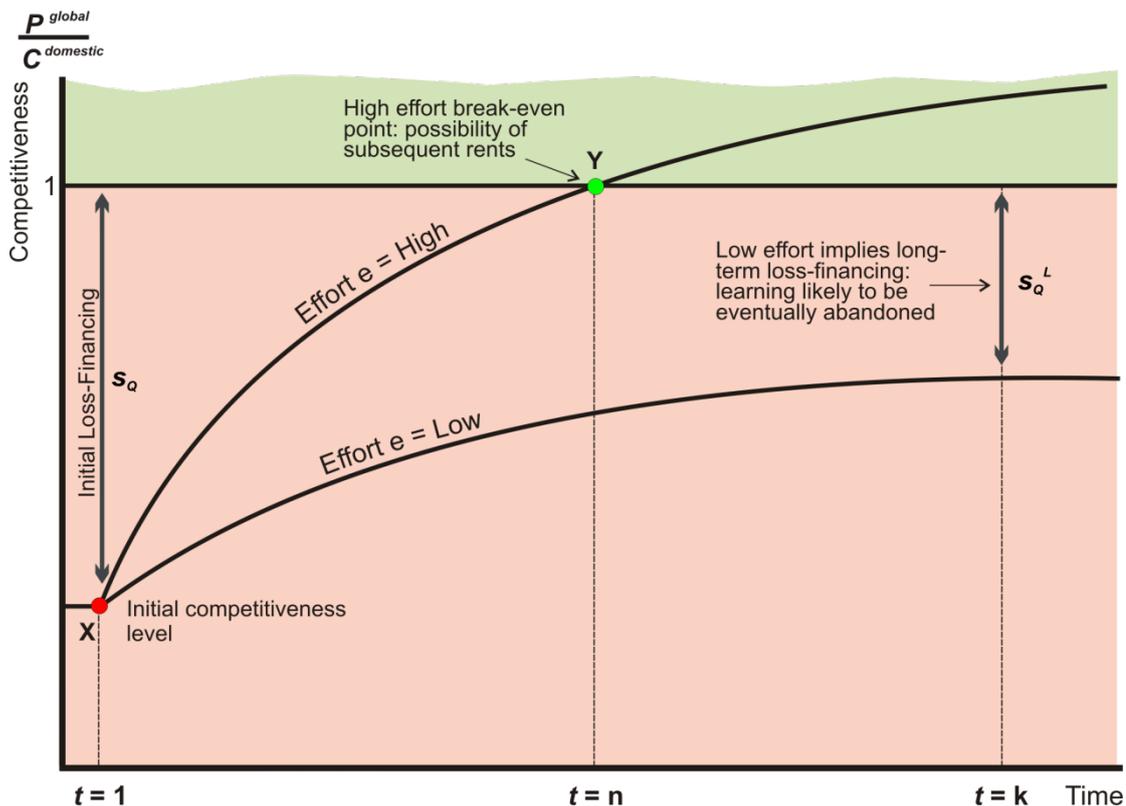


Figure 3 Effort Levels and the Viability of the Learning Process

The problem for the successful firm is that its reward for success is the loss of the rent it was getting in the form of loss-financing. The firm will have substituted a future of uncertain market profits and rents based on continuing efforts at productivity growth for a subsidy that allowed it to perform with low productivity. There is obviously an incentive compatibility problem here that can result in ‘*satisficing*’ behaviour on the part of management. The existing routines of production within the firm may be difficult and costly to change and it may be easier to spend management effort in protecting the subsidy. Not surprisingly, managers typically put a lot of effort into developing organizational capability and competitiveness when there are credible compulsions and pressures on them from outside the firm, possibly from the financing agencies. Otherwise a satisficing strategy may emerge that puts low effort into learning and more effort into protecting the subsidy. Competitiveness may never be achieved even with some productivity growth as productivity is also increasing in the leader. The infant industry will fail to grow up and eventually the catching-up strategies will have to be abandoned, but this may be many years later and managers and workers may not be too concerned about this right away.

Owner-managers financing learning-by-doing in their own organizations would not have to subcontract the management of the learning effort. However, it is unlikely that a single owner-manager will be able to finance a period of loss-making for any organization of substantial size. When external financiers are involved, they have to contract with the owner and managers of the firm to ensure high levels of effort since their returns depend on the achievement of competitiveness. The contracting problem is that the enforcement of complex contingent contracts is usually ruled out in a developing country given the weakness of contract enforcement. The overall loss-financing s_Q is therefore likely to be partly or entirely from public sources,

particularly in cases where a significant organizational gap exists between the country and the market leader. The financing instruments can however vary widely, including import protection, export subsidies, subsidized credit and other forms of interventions that change relative prices and reduce or remove the losses of the learning company. However, while some level of public co-financing may be necessary, appropriate governance conditions are also required to ensure high effort. The outcome depends on the details of the financing instrument and the enforceability of the conditions critical for the success of that instrument. Enforceability depends on the governance capabilities of the relevant public agencies and the holding power of the organizations involved in the financing arrangement to resist enforcement. An important determinant of enforceability is therefore the macro-level distribution of power between firms, political organizations and enforcement agencies of different types, and we call this the *political settlement* (Khan 1995, 2010a).

Our understanding of industrial policy has been influenced by the experience of countries like South Korea where centrally allocated learning rents achieved the rapid development of technological and organizational capabilities in the 1960s and 1970s. For a variety of historical reasons, East Asian states were untypical because their political settlements allowed the enforcement of tough conditions on domestic firms receiving support (Khan 2009b; Khan and Blankenburg 2009). The financing provided to the *chaebol* through low interest loans, protected domestic markets and export subsidies came with conditions, for instance for achieving export targets. These conditions ensured high levels of effort because the enforcement of these conditions was credible. The state could not only withdraw subsidies; it could also re-allocate plants to different owners if they were more likely to enhance competitiveness.

Note that it was not ‘good governance’ that enabled the South Korean state to achieve rapid learning with its centralized industrial policy. The enforcement of performance conditions was not based on the enforcement of detailed formal contracts. Moreover, the withdrawal of subsidies or the re-allocation of plants usually did not respect property rights and the rule of law. Nor was corruption low in South Korea in the 1960s and 1970s. What mattered was that state agencies had the capacity to enforce conditions that it was in their interest to enforce, and that had the effect of ensuring high-effort learning (Khan 1996a, 2000b). The conditions themselves were subject to negotiation and the industrial policy system as a whole evolved as state agencies discovered and developed their enforcement capabilities. What is distinctive here is that firms discovered that subsidies could be withdrawn and even their plants could be re-allocated if they failed to raise their productivity. In contrast, in Pakistan at around the same period a similar system of centrally directed subsidies could not be matched with equivalent enforcement capabilities. The greater dispersion of power across political and bureaucratic organizations in this political settlement allowed firms to make alliances and satisficing rent-sharing agreements with particular political and state organizations to protect their rents (Khan 1999). Not surprisingly policy did not evolve in the direction of enforcing conditions on firms receiving support as state agencies and firms knew that setting such conditions would not be credible. As a result, technological and organizational capabilities developed much more slowly and many sectors did not achieve competitiveness at all.

7. Institutional Problems of Ensuring Effort in Learning

The interface between the rent allocation requirement of particular policies and the rent-seeking strategies of organizations is not simple because the outcome depends on non-linear interactions between several variables. The underlying enforcement success or failure has elements that are similar to principal-agent problems that can result in breakdowns in team effort or in the operation of credit markets (Alchian and Demsetz 1972; Stiglitz and Weiss 1981; Shleifer and Vishny 1997). However, here broader political economy issues are relevant because the *state* is allocating rents and the *political* ability or otherwise of the state to enforce credible conditions for effort becomes salient. This raises issues that go beyond asymmetric information. Rent seeking is now based on the mobilization of organizational and political power and can determine the likelihood of capturing or protecting particular rents without any asymmetric information. In particular, the political power and links of economic organizations and their organizational capabilities can affect the possibility of enforcing effort-inducing conditions on the allocation of particular incremental rents. The problem is that the effect of a rent allocation policy depends not just on the details of the formal rent allocation instrument, but also on its appropriateness for solving the learning problems of firms, on the capabilities of the agencies enforcing it and the political settlement that describes the relative power of the organizations involved. The effect on effort is the outcome of an interaction between these variables that determines the actual conditions of rent allocation and withdrawal, and these determine the real incentives and compulsions of firms to put their effort into productive capability development or unproductive rent maintenance activities. The critical ‘variables’ that determine the level of effort firms put into the learning exercise to raise their productive capabilities are listed in eq. [12]:

$$e = f(FI, GA, FS, PS) \quad [12]$$

Effort e is defined as the intensity with which organizational learning through experimentation is being carried out, to raise firm-level productivity. The higher the level of effort, the steeper the convergence to global competitiveness levels in Figure 3. FI describes the specific *financing instrument* through which the learning rent is delivered. This is broadly defined as any policy instrument that directly or indirectly allocates rents to firms with a possible effect on their learning strategies. The financing instrument is the immediate policy variable that *formally* defines how the rent should be allocated and defines the formal terms and conditions for withdrawal and the formal responsibilities of the different parties. The formal allocative rules defined by the financing instrument FI may of course not correspond very closely to the *actual* allocation and management of rents, which may happen largely in response to political pressures and mobilizations, often operating informally. These informal modifications are hugely important and their nature and extent depends on the interaction of the financing instrument with other variables in the function. GA describes the capabilities of the *governance agencies* that monitor and enforce the conditions implicit in the operation of the financing instrument. The enforcement of the formal rules implicit in each instrument can vary widely depending on the enforcement capabilities of the agencies responsible. FS describes features of the *firm structure*, referring to characteristics of the firm(s) being supported that are relevant including size, initial productive capabilities, political links and the type of markets (competitive or otherwise) in which they operate. PS is the *political settlement* which describes the relative bargaining power of the different types of organizations affected

by the operation of the policy. The function f is *not* a differentiable mathematical function, and the variables in this function are unlikely to have additively separable effects. Rather, each of the variables has an effect whose magnitude and even sign can depend on the values of the other variables. This non-linear interdependence makes the political economy of industrial policy particularly interesting.

Financing Instruments

In the industrial policy strategies of many developing countries in the 1960s and 1970s, very significant learning rents were typically allocated to broadly defined sectors. The financing instruments used included tariff protection to raise domestic prices of particular products thereby providing rents to domestic firms in protected sectors, export subsidies, tax breaks, low interest credit, often from state-owned development banks and subsidized input prices, including utilities and infrastructure. There are important differences in the details of the design of each of these instruments from country to country. However, the general feature of these policies was that a significant portion of these rents were allocated *ex ante*, that is before the firm had established competitive capabilities, and the rents were significant in their scope (in terms of the numbers of sectors and firms supported). A common feature of these policy choices was that the formal pattern of rent allocation, combined with the distribution of power in the political settlement, created strong incentives for recipient firms to spend time and effort in rent-seeking activities to protect the rents once they had been allocated. Very few developing country states had the political capability to enforce the formal conditions on rent allocation that would compel high levels of effort, such as making the rents time dependent or their allocation conditional on performance. In many cases states did not even try to formally define rent allocation conditions, while in the few successful industrial policy states, early successes in attempts at rent allocation resulted in greater formalization of conditions over time.

This was not just an oversight in the less successful industrial policy states. No country began its technology acquisition policies with a complete map of what needed to be done. In the successful countries, trial and error in policy formulation resulted in formal financing instruments moving in the direction of better-defined formal conditions precisely because productivity-enhancing rent allocations were successful. The political and bureaucratic elites in many developing countries where industrial policy was performing poorly were perfectly aware of the problem at a very early stage but in these countries formal policy did not evolve in the direction of greater effectiveness, precisely because the relevant agencies knew that movements in that direction would not be enforceable. For instance, in India, the Dutt Committee recognized by the mid-1960s that the licensing regime that was directing rents to infant industries was primarily helping a small group of large firms who were capturing these rents on their own terms (Government of India 1969). But the politics of responding to this effectively was not simple. To the extent that responses were attempted, they were often blunt and counterproductive. Thus, in India, one response was Indira Gandhi's Monopolies and Restrictive Trade Practices Act (MRTP) of 1969 which set asset limits on the holdings of large business houses that were thought to have unduly prospered under the licensing regime. The new act was largely punitive, was not properly enforced and had little effect on actual levels of concentration. Significantly, it did not seek to address the problem of rent management to achieve better outcomes. The state did not try to set new conditions for achieving competitiveness by changing the broad contours of the policy, including the choice of

supported sectors and firms, even though the necessity of such changes was explicitly recognized by the Dutt Committee.

In other words, the failure to move in the direction of better rent management, at least in India in the 1960s, cannot be attributed to ignorance. However, there may have been missed opportunities of a more complex sort. The problem was that the current financing instruments allocating learning rents were giving significant *ex ante* rents to broadly defined sectors and it was difficult to exclude large business houses from these rents. Enforcing effective conditions on *this* financing instrument was clearly beyond the capabilities of the Indian state of the time given the political settlement and it did not attempt to move in that direction. However, other financing instruments may have been more successful and some insights into what may have worked became clearer with the experiences of the 1980s. But thinking through to those options would require a much more open and interactive analytical framework incorporating the effects of the political settlement in assessing policy options. Only in this sense were opportunities of policy reform missed at that time.

Similarly, widespread public disapproval of state supported accumulation and technology strategies emerged in Pakistan in the late 1960s as a result of the concentration of wealth in the hands of Pakistan's 'twenty-two families'. The weak control over the rent management process led not only to a very high level of wealth concentration, many of the industries that were emerging were not approaching global competitiveness and had the character of industries protected for cronies. Some real capabilities were undoubtedly developed, but the failure of any significant sector to reach global competitiveness undermined the political support for these strategies. The result was widespread nationalizations in Pakistan and the newly created Bangladesh in the early 1970s under Bhutto and Mujib respectively. The nationalized industries were even closer to political power and therefore even more able to distort rent allocation and less likely to put in high levels of effort in learning. This was the prelude to the abandonment of learning strategies and the transition to liberalization.

The types of formal financing instruments used by states are an important determinant of the incentives and compulsions facing firms not only because the formal rent allocations are different, but also because the informal modifications through rent seeking and resistance may be different because different types of organizations are selected or self-select themselves given the incentives. For instance, monitoring requirements are very different depending on whether the learning rents are available '*ex ante*' (before success is established) or promised '*ex post*' (after success is established). The typical patent based Schumpeterian rent that creates incentives for innovation is usually available to successful innovators *ex post*. For rents allocated *ex post*, the public monitoring requirements are less demanding and the institutional requirement is mainly to determine the period of *ex post* rent protection, which primarily determines the magnitude of the prize allocated to the successful innovators (Khan 2000a). Even if rents are only available as *ex post* prizes, they can still help to make the financing of innovation more viable, because innovators can now offer risk-taking investors higher returns in the future, thereby getting access to longer periods of low-interest or zero-interest financing. However, some Schumpeterian rents may also be allocated *ex ante* by public policy, for instance as subsidies to universities or to industries in the form of innovation grants. These *ex ante* rents require much closer

monitoring to ensure progress is being made at different stages of the innovation cycle so that support can be withdrawn and losses minimized if progress is unsatisfactory.

In contrast to Schumpeterian rents, learning rents are typically provided *ex ante* (for instance through tariffs on imports or the provision of low cost credit). Unfortunately, large programmes granting significant learning rents *ex ante* have been associated with low effort in learning in many cases. There are exceptions in countries where the political settlement allowed the state to monitor, manage and withdraw rents from significant economic organizations. Most developing countries did not have state organizations or political settlements that had these characteristics, and as a result these types of financing instruments performed poorly. However, there have been interesting cases of successful technology adoption in countries that did not do well with *ex ante* financing instruments. In the cases of success, the financing often involved the allocation of a significant part of the rent *ex post*, after substantial success in learning had been established. If the financing instrument allocated some of the rent *ex ante* but reserved significant rents as a prize *ex post*, conditional on the achievement of competitive success, these conditions could help to self-select firms that believed they could make the productivity jump as well as creating strong compulsions and incentives for high levels of effort in learning. In addition, if the delivery of the *ex post* rents was sufficiently large and credible, firms engaged in learning could also raise financing on viable terms from investors in the same way as innovators aiming for Schumpeterian rents can raise money for financing innovations.

In the 1980s a number of sectors in South Asian countries made significant progress in technology adoption and in developing organizational capabilities for competitive production. Far from being associated with liberalization, many of these successes were associated with new types of policy-induced rents and rent allocation mechanisms that worked much better. The interesting feature of the new policy environment was that the old financing instruments based on large-scale *ex ante* financing were gradually phased out and new forms of support emerged, many of which provided a significant part of the learning rent as a prize for success *ex post* and targeted rents to more narrowly defined sectors or even to individual firms.

Examples include the rents offered by the Indian state to Suzuki to participate in the Suzuki-Maruti joint venture agreement signed in 1982. Most of the learning rent in this case was accessible *ex post* in the form of access to the protected Indian automobile market which still had tariffs in the region of 85 per cent. But to be able to sell in this protected market, Suzuki first had to make the Maruti-Suzuki car and it had to make it with 60 per cent domestic content within five years. This meant Suzuki had to make a significant investment in improving the organizational capabilities of Indian Tier 1 and Tier 2 component producers to meet the domestic content target and yet produce a car that would be of higher quality than existing Indian cars like the Ambassador. There were additional reasons for not compromising on quality, including the reputation risk for the global Suzuki brand. The design of the financing here clearly created strong incentives and compulsions for effort because Suzuki had no interest in drawing the process out and every interest in completing it quickly. Moreover, there was a very strong likelihood that without fulfilling the domestic content requirement the company could be excluded from the *ex post* rent. Exclusion from the domestic market for contract violation was a condition that could be plausibly enforced on a single foreign company with no domestic political alliances

given India's governance capabilities and political settlement at the time. Not surprisingly, the result was a very successful transfer of organizational capabilities, with the rapid development of a broad group of component manufacturers who later became the foundation of a globally competitive Indian automobile industry.

Another example was the garment industry takeoff in Bangladesh in the 1980s which was based on the MFA (Multi-Fiber Arrangement) providing *ex post* rents to producers in Bangladesh provided they achieved sufficient competitiveness to begin to export. The MFA restricted imports into the USA from established garments exporters and this enabled quota-free countries like Bangladesh to temporarily enjoy rents in these markets as a result of the slightly higher prices at which they could sell. This was an *ex post* rent because the prize could only be captured by firms that had already developed enough organizational capabilities to be able to export. The availability of the prize enabled the first garments firms in Bangladesh to raise money for investing in capability development. Here too there were interesting innovations, including an on-the-job training programme for managers from the Bangladeshi company Desh that was conducted in the South Korean plant of Daewoo. Daewoo undertook to host the Bangladeshis at its own expense, to be repaid by the Bangladeshi company with a percentage of its sales revenue. This financing arrangement for transferring organizational capabilities created strong compulsions on both sides to put in high levels of effort as the costs of all parties went up with a low-effort strategy. The result was a very successful transfer of organizational capabilities. Desh became the pioneer of the garments industry in Bangladesh, and contrary to the first-mover disincentive story, it encouraged and allowed its managers to leave and set up new garments firms so that clustering could rapidly happen. Both these examples are discussed in greater detail in Khan (2013).

The general point to be made here is that while the traditional financing instruments providing *ex ante* rents did not work in South Asia, the experience of the 1980s shows that other types of financing instruments did work in successfully financing the development of new organizational capabilities. These capabilities in turn allowed the transfer and adaptation of technologies new to these countries. Indeed both the automobile sector in India and the garments and textile sector in Bangladesh played an important role in driving economic growth in these countries for more than three decades since the 1980s.

Governance Agencies

Governance agencies are the bureaucracies within the state that are charged with the management of policies including the allocation of the relevant rents. The formal technical capabilities of these agencies to monitor and enforce these allocations clearly matter. Relevant agencies may include central banks, development banks, fiscal agencies and planning commissions charged with monitoring and implementing the allocation of rents associated with particular programmes. However, the actual power of governance agencies depends not just on their technical capabilities and training but also on the political settlement of which they are a part. Governance agencies are organizations and the relative power of these organizations relative to others is an important aspect of the political settlement. The technical capabilities of governance agencies (described in this variable) and the relative power of these organizations relative to others (as described in the political settlement variable)

jointly determine the ability of governance agencies to enforce particular sets of rent allocation conditions.

The governance agency that is relevant depends on the financing instrument. For instance, if rents are allocated to firms in the form of cheap credit from industrial banks, the relevant governance agencies are the managements of the banks and the agencies the banks in turn rely on for the enforcement of their contracts (like bankruptcy courts). Do these agencies collectively have the capability to monitor loans effectively; do they have the power to withdraw loans if firms are failing to adhere to agreed conditions? Similarly, if rents are allocated in the form of subsidies, the relevant governance agencies are the ones responsible for administering the subsidies. Do they have the technical capabilities for monitoring performance and withdrawing the subsidies if necessary?

Technical capabilities alone clearly do not ensure that enforcement will be effective. The distribution of power across organizations in the political settlement and the types of rents that are being allocated through the financing instrument jointly determine the degree of enforcement that is achieved. The same governance agencies may be quite effective in enforcing a rent allocation that involves imposing conditions on relatively weak organizations but may fail when enforcing a slightly different policy that requires them to discipline organizations that happen to be powerful within the current political settlement. For instance, a policy of granting temporary export subsidies to firms using new technologies could create compulsions for high levels of effort if the affected firms had no means of prolonging these subsidies but not if they had the political ability to override the time limits using their political alliances. Industrial development banks are likely to have higher levels of credibility for enforcing threats of capital withdrawal from failing firms if the firms do not have powerful political allies and the bank is supported by a strong president rather than if the bank is operating in a context of divided political authority where powerful political factions can prevent the enforcement of discipline on their client business houses. The contribution of the governance agency to the achievement of a high-effort outcome therefore depends not just on the technical competence of the relevant agency but also on the financing instrument that defines the distribution of rents and the political settlement that defines the relative power of the affected organizations: another example of the non-linear interaction between these variables.

Firm Structure

The outcome of a particular policy framework also depends on the characteristics of the firms that are benefiting from a learning strategy. A number of features of the firms targeted by policy may be relevant. What is their initial productive capability, how are they connected to different types of political organizations, how does this affect their bargaining power to protect rents, what kind of markets do they operate in and are there competitive pressures coming from these markets to raise their productivity? These and other features of the firm structure can affect the 'fit' between the expected outcomes of a formal rent allocation policy and its actual outcome in terms of the effort put in by firms in raising productive capabilities. Once again, there are many non-linear interactions to be aware of that can produce unexpected outcomes if we are not careful.

The productive capabilities of firms can have two contradictory effects on their rent capture strategies. First, more productive firms have more resources to invest in rent-seeking activities. This increases the likelihood that these firms will be more able to protect any incremental rents they get. On the other hand, productive firms that are already close to the competitiveness frontier may find that putting their effort into becoming competitive may be a safer and more viable strategy than focusing on rent protection alone. In contrast, for firms that are far away from the competitiveness frontier, high effort in developing the appropriate organizational capabilities only makes sense if they can be assured of long-run support for learning and if the easier strategies of rent protection are ruled out by effective limits on their rent-seeking activities. By definition, most firms in developing countries initially do not have high levels of technological and organizational capabilities (this is why the country is still developing). Most firms still have to learn how to learn before they actually start learning (Stiglitz 1987). This creates adverse incentives for many firms to invest in political connections because if they had to rely solely on their productive capabilities they would be very vulnerable. Older or larger firms, particularly when they are not very productive are more likely to be well-connected to political organizations and their prosperity is likely to be dependent on these connections. Consequently it may be difficult to discipline such firms in a context where significant learning rents are being provided by the state. One of the advantages of financing mechanisms that provide significant *ex post* rents is that this induces a degree of self-selection in the firms taking up these schemes. A firm that has little chance of becoming competitive in a new technology is unlikely to participate in a scheme that requires it to invest up-front in organizational capabilities based on the promise of significant *ex post* rents.

The political connections and networks of firms are very important for explaining their bargaining power in protecting their rents or subverting conditions attached to these rents, but these connections cannot be read off from their economic characteristics. This is why we need independent data on the overall political settlement which describes the relative power of different types of organizations. The political settlement variable has an interactive effect in determining why apparently similar types of firms may respond differently to similar types of financing instruments. For instance, the modern manufacturing sector in both Pakistan and South Korea in the 1960s was dominated by a small number of large diversified holding companies that each included plants in different manufacturing sectors. In both countries, public policy provided learning rents to these conglomerates to acquire new technologies and move into exports through similar financing instruments like domestic market protection, subsidized credit, and export subsidies. However, high levels of effort could not be achieved for firms of this type in Pakistan but were achieved in South Korea. To a significant extent this was because large conglomerates in Pakistan acquired the political capacity to protect their rents from threats of withdrawal in a way that South Korean *chaebols* could not. To understand this we need to look at the relationships between the firm structure and political organizations within the context of a political settlement. In Pakistan, there were many *political* sub-organizations that were not under the centralized control of the ruling coalition, despite the ruling coalition being a military-led government in the 1960s, just as in South Korea. Behind the formal structure of unified ruling coalition, the Pakistani political settlement described a distribution of organizational power that was significantly fragmented. Many political and bureaucratic organizations were

independently powerful and they could deploy their power to benefit themselves independently of the wishes of the President.

The consequence was that firms in Pakistan that wanted to protect their rents could easily make arrangements to share rents with one or more of these political or bureaucratic sub-organizations. This involved kicking back some of their subsidies to these lower-level organizations and in exchange the latter would assist by effectively protecting their rents. This arrangement benefited the firm and their allied political and bureaucratic organizations but adversely affected the overall industrial strategy and the net social benefits of the country. The interface between the firm structure and the specific political settlement meant that financing instruments that provided a significant part of the rents *ex ante* could not be effectively disciplined in Pakistan. Not so in South Korea. The large *chaebol* were the descendants of Japanese companies and after the defeat and departure of Japan, these companies enjoyed little popular sympathy or support. Moreover, even if the *chaebol* had some legitimacy, they would have found it very difficult to make similar political connections. The ruling coalition in South Korea was differently structured, and could impose its authority on its own lower levels. Political organizations outside the ruling coalition had very limited power to protect the rents of firms. This meant that firms receiving rents would have to satisfy the calculations of the highest authorities to retain their rents. The highest authorities had no incentive to tolerate rent capture by organizations that were not enhancing productivity. This is because a secure ruling coalition that could take a view over several years would always find more productive organizations more attractive to support because the latter could provide greater benefits over time, whether legally in the form of taxes or illegally in the form of kickbacks. The threat of rent withdrawal from low-effort firms was therefore credible in South Korea and because it was credible, this threat rarely had to be used. High levels of organizational effort were always forthcoming (Khan 1999).

Although Taiwan is often loosely included in the 'East Asian' model, its firm structure and financing instruments were quite different from South Korea in the 1960s and 1970s. In Taiwan, financing instruments allocated rents to much smaller firms and once we look at Taiwan's political settlement, it is possible that a strategy of building up very large conglomerates may have failed at that time. The Kuomintang (KMT) was a foreign political force in Taiwan, having been forced there after their defeat in mainland China at the hands of Mao's forces in 1949. Given its external origins, the KMT was clearly unwilling to allow domestic economic conglomerates to become too big because they may well have used their economic power to challenge the political authority of the outsiders. In any case, large Taiwanese conglomerates may have been difficult to discipline in this political settlement. Fortunately for Taiwan, the financing instruments used by the government in its strategies of technology acquisition focused on smaller firms in high technology sectors. These firms had sufficient organizational capabilities to be interested in investing in productive capacity development, but were politically unable to link up with sub-organizations within the KMT or to challenge its authority entirely. As a result, the Taiwanese state's ability to enforce discipline in the form of conditions on its rent allocation decisions was not impaired. The interesting counterfactual is whether countries like Pakistan and India may have fared better if they had designed support schemes for smaller firms who may have found it more difficult to capture policy in the way in which the 'twenty-two families' of Pakistan or the big business

houses of India did (Wade 1988; Amsden 1989; Wade 1990; Whitley 1992; Khan 1999; Khan and Blankenburg 2009).

The pressure on firms to invest in productivity growth is likely to be enhanced if some part of their activity is in competitive markets. Firms that are exporting, even with subsidies, will soon find that without productivity growth, the existing level of subsidy will be insufficient for their continued survival. In contrast firms producing for protected domestic markets or with considerable market power may ignore productivity growth for much longer. This is yet another reason why countries with political settlements where large established firms have many links with political organizations should focus their financing on smaller firms operating in more competitive markets. Apart from the greater difficulty such firms may find in establishing political linkages, their market operations can add to their compulsions for enhancing organizational capabilities. Market competition is not enough on its own, because learning still requires rents and the rents dampen competitive pressures for a while. This is precisely because at existing market prices these firms could not enter production at all given their current capabilities. But some market exposure can reduce the challenges of monitoring and enforcing conditions to compel high levels of effort. Of course, for some products, scale economies mean that a small-firm strategy is implausible. In these cases, policy design has to be aware of the difficulties of disciplining large well-connected firms. Compensatory measures to prioritize the strengthening of governance agencies may be a partial solution. In some cases the answer may be to delegate the governance of learning rents to more independent external agencies like industrial banks. If the management of the industrial bank is less accessible to political pressure, the credibility of withdrawal may be high enough to compel learning. Finally, in some cases, *ex post* rents can work, as in the case of the Maruti-Suzuki partnership in India. Here, the instrument was the offer of large *ex post* rents conditional on the transfer of organizational capabilities to domestic component producers. This led to a large foreign firm self-selecting to participate in the joint venture because it had enough organizational capabilities to believe it could transfer the requisite capabilities to Indian firms and thereby capture the *ex post* rents.

The Political Settlement

The political settlement describes the distribution of organizational and bargaining power across economic, political and bureaucratic organizations in a society (Khan 1995, 2010a). The relative power of different organizations develops in path dependent ways, but at any point in time, the description of the political settlement in a country is an important ‘independent variable’ in an analysis of the outcomes associated with incremental policy changes. Each incremental policy change allocates incremental rents to different organizations on specific conditions. The political settlement is relevant for understanding the likely outcomes of the policy because it describes the capability of organizations to challenge or distort the conditions of rent allocation implicit in the formal policy. The outcome in reality may therefore be far removed from what the formal policy set out to do, because the rent allocation that the formal policy required or the conditions of evaluation and enforcement that it depended on could not be enforced in that political settlement.

Rent seeking by powerful organizations refers not just to their expenditure of resources in order to influence bureaucrats and politicians. More importantly, it refers to their political activities through which they develop their holding power and

construct coalitions to enhance this holding power. Holding power describes the ability of an organization to hold out in prolonged conflicts and it is this capability that determines the probability of winning. Holding power depends not just on the resources the organization can deploy but also on its power to mobilize support. In a developing country this depends on its links with powerful patron-client political organizations. Rent seeking contests between organizations have characteristics of ‘chicken games’ in game theory where a prize can be distributed in two very different ways but each requires one side to win and the other to accept defeat. There are thus two Nash equilibria but which one emerges depends on the perceptions of each side of the holding power of the other. It is only when they each think they can win or if they miscalculate the holding power of the other that a conflict ensues which is costly for both sides. Conflicts of this type end when a new distribution of holding power is accepted by both sides and the distribution of rents reflects this distribution.

The political settlement describes the structure of holding power as it has evolved and helps us to understand some of these rent conflicts better. In many developing countries, there are many competing political organizations each based on mobilizing supporters using patron-client politics. The more such political organizations exist, the easier it is for economic organizations to buy themselves holding power at a relatively low price. When political organizations are at the same time powerful and fragmented, economic organizations, certainly the bigger and more resourceful ones, are likely to find it easy to purchase holding power. On the other hand when the ruling coalition includes the most powerful political organizations and the higher levels of the ruling coalition have effective control over the lower levels, economic organizations can find it much harder to buy themselves holding power and protection at an acceptable price. These are the types of differences in the political settlement between South Asia and East Asia in the 1960s that we have already referred to.

We have already seen how differences in political settlements can explain why apparently similar governance agencies, firm structures and financing instruments can result in very different outcomes across countries. South Korea and Pakistan in the 1960s used fairly similar strategies of providing cheap long-term bank credit and export subsidies to large conglomerates in export-oriented sectors. But the outcomes were significantly different because their political settlements were different and the critical conditions that were required for inducing effort through rent allocation could be enforced in one case but not the other (Khan 1999). Indeed even the evolution of formal policy was affected in South Asia. As we saw in the case of the Dutt Committee report in India, an adverse combination of a particular political settlement and a financing instrument made policy-makers give up on evolutionary developments of formal policy which they knew were pointless given the holding power of powerful economic organizations. Differences in the political settlement can also help to explain why effective financing instruments and governance agencies have *differed* so significantly across *successful* catching-up countries. South Korea, Taiwan, China and Malaysia display significant differences in their catching up strategies and instruments. The general framework outlined here can explain why a different ensemble of instruments and agencies would be effective in inducing high-effort learning given the differences in their structures of firms and their political settlements (Khan 2000b, 2008; Khan and Blankenburg 2009).

Interdependencies Affecting Policies for Learning

Effective learning strategies require as a precondition an ensemble of conditions to ensure high levels of effort. This is not always easy to achieve, and the failure to address or even understand these problems has been responsible for the abandonment of many learning and technology acquisition strategies across developing countries. An important reason why effective policies have been difficult to devise is because the variables in eq. [12] have interdependent non-linear effects on effort. This means that the best financing instrument, for instance, may depend on the type of political settlement and firm structure that a country has inherited. The same instrument may be ranked lower than others in its effects on effort in a context with a different political settlement and firm structure. As a result, there is no single set of financing instruments and governance arrangements that characterize all successful catching up countries. It also follows that it is not possible to simply imitate the policies or governance structures of more successful developers.

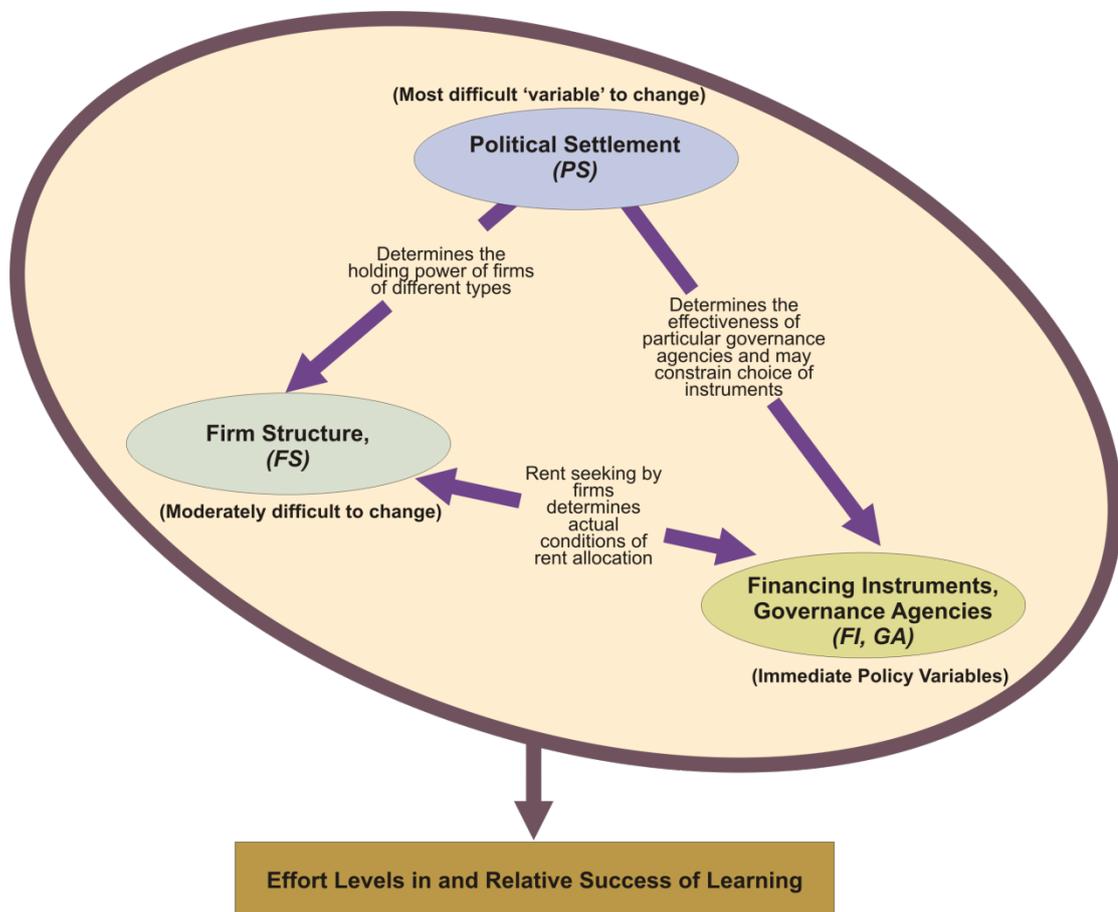


Figure 4 The Interdependence of Variables Determining Effort

Some of the interdependencies between the variables affecting effort in eq. [12] are shown in Figure 4. From a policy perspective, it is important to distinguish between variables that are very difficult to change and which can therefore only be the targets of policy in the long term and variables that are easier to change and are more immediate policy variables. The variables that are most difficult to change are effectively ‘exogenous’ in the short term and policy is likely to have to accept them as given. In Figure 4, the political settlement, *PS*, appears at the top of the list as it is

likely to be the variable that is most difficult to change. However, even the political settlement can of course change, and it can change as a result of political policy, for instance through the organization of new political coalitions or movements. Indeed, if the political settlement is very unfavourable for organizing any serious process of learning, the only meaningful policy would be to begin the process of changing the political settlement. Of course, this is a process with unpredictable outcomes and one that only political organizations with legitimate leaderships can hope to achieve.

Next in terms of difficulty of changing is the firm structure, *FS*. The overall firm structure may be very slow to change, but policy can still select different groups of firms to support, so the firm structure that is targeted by policy is not necessarily fixed. Finally, the variables that are usually the most direct targets for policy appear at the bottom, the financing instruments, *FI*, and the associated governance agencies, *GA*, though governance agencies too may not necessarily be easy to set up or change. However, even if the policy relevant financing instruments are the only entry points for most policy purposes, the most appropriate financing instruments cannot be identified without at least identifying the other variables and the implications for rent management in the context defined by those variables. What is ruled out is the hope that these variables are ‘additively separable’, so that good financing instruments or effective governance agencies can be identified independently of a political economy analysis of the interactions between these variables in particular contexts.

What Went Wrong with India’s Early Learning Strategies

The complexity of the relationships between policy-targeted variables like financing instruments and governance agencies and hard-to-change variables like the political settlement can explain why plausible strategies of learning often failed. India’s attempt to construct effective institutions and governance agencies for driving its catching-up strategy in the 1950s and 1960s can be examined using this framework. With the benefit of hindsight and an analytical framework that looks at the implications for the enforcement of effort, it appears that the firm structure and political settlement that India inherited from the British period made it very unlikely that there would be high levels of effort in the planning strategy that allocated large implicit rents to big business houses. The strategy was very successful in triggering horizontal growth and the expansion of capacity, but the ability of firms to easily purchase protection made the task of enforcement agencies virtually impossible. Indeed, the political process was triggered to set up agencies that had limited capacities to monitor and enforce discipline.

An intriguing question is whether India (and other South Asian countries) could have done significantly better had they followed a different approach for identifying and addressing the market failures that affected their learning. We suggested a number of alternatives earlier and these suggestions can now be rephrased. India and Pakistan (of which Bangladesh was a part at that time) attempted ambitious ‘East Asian’ industrial policies but without the political settlements that would allow effective compulsions for high levels of effort. Large, relatively well-connected firms benefited from different types of ‘learning rents’ but managed to buy themselves sufficient protection from different factions to prevent threats of subsidy withdrawal to be credible. The result was significant industrialization but relatively slow progress towards global competitiveness levels (Khan 2000b).

Figure 4 suggests that there could have been two types of responses to this problem (apart from abandoning the strategy). The first and more ambitious response would have been to use policy to change aspects of the political settlement that were preventing the imposition of credible compulsions on the types of firms receiving external financing for learning. Clearly, the political settlement is difficult to change rapidly, though it is always changing endogenously. The relevant aspects of the political settlement that constrained growth could have been addressed if political entrepreneurs realized that seeking to accelerate growth would further their own interests or if political entrepreneurs within the dominant party could themselves have been more effectively controlled by the leadership. The distribution of power between the state and firms receiving assistance could then have been very different.

Mrs. Gandhi's disastrous attempt to refashion the Congress Party during the Emergency can be evaluated in this way. Clearly, the growing centrifugal tendencies within the party were absorbing rents and were making the implementation of any central policies more difficult. The Emergency attempted to by-pass the intermediate class leadership that controlled the factions within the party to create a presidential relationship between the prime minister and the electorate. If successful, the Congress would have been reconstructed as an effective dominant party and the leadership would have been able to enforce discipline on the political entrepreneurs within the party. The attempt failed because in fact the strength of the political organizations that Mrs. Gandhi attempted to by-pass was far too great to be suppressed in this way. Simultaneous attempts by Bhutto and Mujib to impose their authority over their own parties resulted in similar concerted opposition. It is perhaps not an accident that all three leaders died violent deaths.

Of course, Mrs. Gandhi was not necessarily attempting this change just to enable a better implementation of industrial policy. But all these leaders were responding to the fact that not only was organizational power fragmented in their countries, the fragmentation and intensity of competition between political factions was increasing in the 1960s and 1970s. All policies and institutions that required strong formal enforcement faced serious challenges as a result, and industrial policy was simply one of the most important policies to be affected. We also know that the political and bureaucratic leadership in charge of industrial policy did understand in general terms that there had been a significant failure of disciplining. For instance, the Dutt Committee in India (Government of India 1969) clearly recognized that licensing was primarily helping a small group of very large firms who were difficult to discipline. But the politics of responding to this effectively and constructively was not simple.

Before the Emergency was attempted, Indira Gandhi also attempted to rein in the big business houses directly using the Monopolies and Restrictive Trade Practices Act (MRTP) of 1969 which set asset limits on the asset holdings of large business houses which had accumulated significant concentrations of wealth under the licensing regime. The new act was largely punitive, and had little effect on actual levels of concentration. It had little effect because it did not seek to address the fragmentation of power across political organizations and factions within the Congress that was the source of the problem. The result was that MRTP was no more enforceable than the licensing system had been.

A second and less ambitious response might have been more effective, given the difficulty of changing relevant aspects of political settlements in the short term. This would be to address a combination of the lower level policy variables in Figure 4, such as the types of firms addressed by learning strategies, the financing instruments used, and the capabilities of the governance agencies enforcing these financing arrangements. From our earlier discussion, one response may have been to focus the industrial policy effort in sectors and technologies where the potential number of beneficiary firms was larger and their sizes smaller. These firms may have been less able to politically subvert attempts to impose competitiveness conditions on them. Simpler financing instruments that provided time bound protection in some sectors, or start-up assistance for high technology small firms may have created credible compulsions for productivity growth while providing enough external financing to enable entry into products and technologies that may otherwise not have taken off.

We will see later that the design of the financing instrument in the pharmaceutical industry in India enabled it to achieve much better results even in the context of a competitive clientelist polity. One implication of our analysis is that the scope of an effective learning strategy in these countries should have been narrower and limited to a smaller set of firms and technologies. Nevertheless, a more effective policy may in fact have had a much broader impact than a broad-based policy that was in large part ineffective in achieving sustained competitiveness in the sectors supported.

Positive Legacies: The Possibility of ‘Alpha’ and ‘Beta’ Strategies

Despite the overall problems with the early industrial policies and their eventual abandonment in India, even the limited experience of learning was actually very useful for them in supporting pockets of growth in the subsequent period. While the conditions for enforcing high levels of effort were not fully present when they attempted ambitious learning strategies in the 1960s and 1970s, the attempt to absorb new technologies and move up the value chain was not entirely wasted. An extremely important characteristic of success with market-driven and competence-led growth in the 1980s and 1990s was that the enterprises that drove growth in the latter period had acquired many critical technological and entrepreneurial capabilities as a direct consequence of their learning-by-doing in the previous period. Our case studies show that earlier periods of technology acquisition created the technological capabilities that were essential for the subsequent market success of critical sectors. Documenting these cases is important for understanding the importance of designing technology and learning policies better in the future.

The growth takeoff of the 1980s was based on technological capabilities developed during the ‘ambitious’ period of industrial policy. Given the overall poor performance of these industrial policies this appears to be something of a paradox. In fact this observation can be explained in terms of our basic propositions of tacit knowledge and learning-by-doing. Technological learning and capability development is ‘localized’ around specific technologies and qualities where learning was focused. The policies of building technological capabilities at ‘higher qualities’ may not have resulted in a general improvement in technological capabilities across the country, but they raised capabilities in the technologies where success was achieved. Consequently, even if a particular technology did not achieve global competitiveness during the policy period, in many cases the policies significantly increased technological capabilities in the vicinity of the technologies that were attempted.

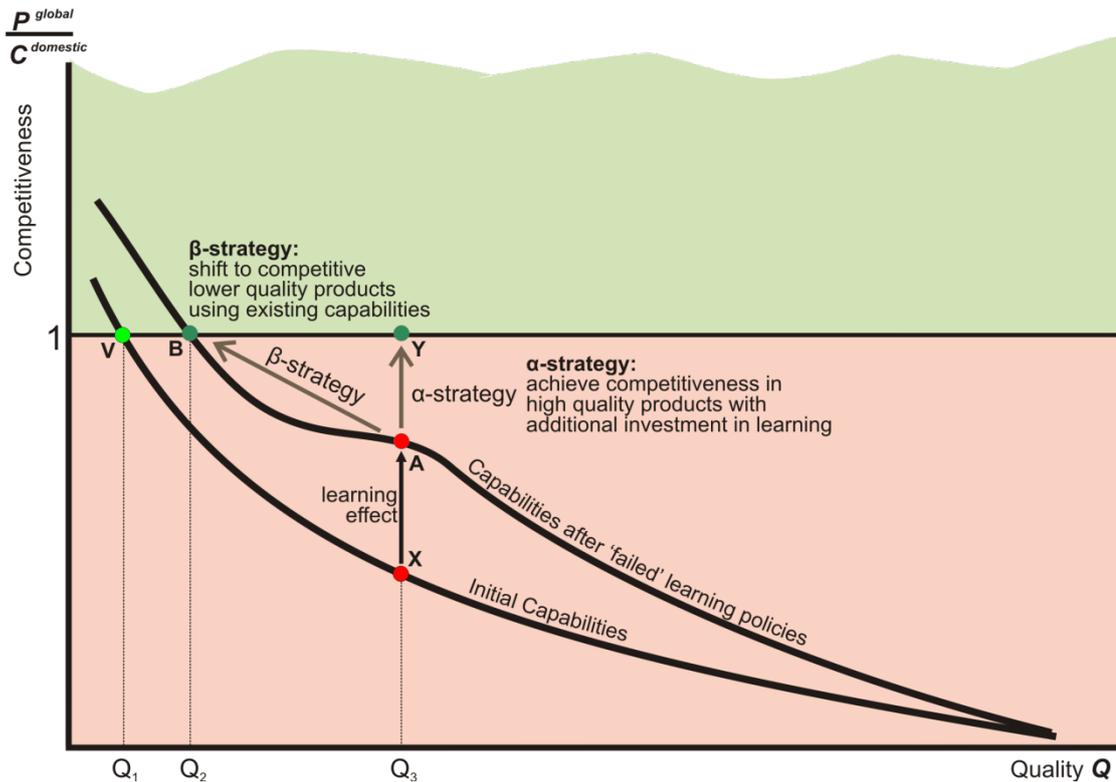


Figure 5 Liberalization Responses: 'Alpha' and 'Beta' Strategies in India

Figure 5 shows a developing country with initially limited technological capabilities, shown by its initially limited capability of producing any but the lowest quality of a particular product. Without learning policies, it could only produce the lowest quality Q_1 , at point V. Technology policies allow it to begin production of a significantly higher quality product Q_3 . Its initial competitiveness in the production of Q_3 is only at level X, which is considerably below the global competitiveness level of Y. However, loss-financing allows it to commence learning-by-doing and technological capability building. But in this case there is a failure to ensure high levels of effort and this prevents global competitiveness being rapidly attained. The underlying competitiveness only improves to point A, at which point the technology policies are abandoned, which means that the loss-financing through existing financing instruments dries up.

The likely response of firms at this stage is the interesting question. The simplest possibility is that the firms become bankrupt and disappear. But this is not the only possibility. The point is that despite the apparent 'failure' of the policy on the whole, technological capabilities in the vicinity of the products that were produced have nevertheless improved well beyond what they may have in the absence of the attempted strategy. The precise way in which underlying competences changed is likely to differ across technologies, and Figure 5 shows one plausible possibility.

Firms that have only reached a true level of competitiveness at level A when producing quality Q_3 are still not at a globally competitive level. If the external financing sustaining them did not come to an abrupt end, and they had time to adjust, they could respond in two different ways to achieve global competitiveness. First, if A

was close to the global competitiveness frontier, one strategy would be to finance the rest of the required learning using alternative sources of financing. These could be in-house or private external financing. In India businesses were also able to directly negotiate support using their political and bureaucratic links as we discussed earlier.

In the past, key stakeholders within the firm had limited compulsions to increase their productivity to achieve global competitiveness. But with the abandonment of institutionalized financing strategies (licensing), more credible compulsions emerged and eventual bankruptcy became a real possibility. At the same time, opportunities simultaneously opened up for private financing, technical tie-ups with foreign firms and political contacts continued to provide sector or firm based support for politically important businesses. The critical feature of these new forms of financing was that they did not come with a high likelihood of being sustained over the long term. Businesses therefore had much stronger incentives to use the opportunity to achieve competitiveness *and critically*, some of these businesses were now close enough to the global competitiveness frontier for this to be a feasible learning project.

We refer to the strategy of a second phase of financing and learning to achieve competitiveness at the initial level of quality as the α -strategy in Figure 5. It is shown by the possibility of an upward move of the firm from A to Y, where it finally achieves global competitiveness in the production of quality Q_3 . This strategy is likely to be rare except in the case of technologies and qualities that were relatively simple to start with, or in the case of a few firms that had already achieved significant learning in the past and were already relatively close to the global frontier. However, we do find some examples of this type of strategy in India, where a number of large, high competence firms did come close to the global competitiveness frontier in sectors like automobiles and iron and steel.

A second type of strategy may be the more common response for firms whose technological capabilities increased under industrial policy but not quite to the level of global competitiveness. If A is still far from the global competitiveness level, or if the firms lack sufficient internal capabilities to risk the rest of the journey using their own collateral or financing, the strategy of moving to Y may be ruled out. The judgement here would be that the required period of learning was still too long or too unpredictable for the financing for the strategy to be viable. However, even in this case, improvements in technological capability in the vicinity of supported technologies may have been sufficient to enable these firms to seek global competitiveness in products of a somewhat lower quality where their existing capabilities would be sufficient to achieve global competitiveness. In some cases these products may be related to the products they were initially producing, but in other cases they may be unrelated products or services, but of lower value-added than the ones initially attempted.

We describe this as the β -strategy. In Figure 5 this is shown by the move from point A to point B where the firm is already competitive using its existing technological capabilities. The quality of product it now produces at Q_2 may be lower than the quality Q_3 that it was initially trying to produce. But Q_2 may still be significantly more sophisticated and more value-adding than the products in the vicinity of Q_1 that it may have been producing in the absence of any history of industrial policy. The critical feature of the β -strategy is that much more limited financing or perhaps no

financing is required to achieve global competitiveness because the capabilities that had already been acquired are sufficient for production at the lower quality.

An example of a β -strategy was the re-deployment of technically skilled personnel (whose training in fields like engineering and science was subsidized by the Indian government as part of its industrial policy) into the IT services sector. Technical training was an important mechanism through which public financing had been targeted to serve industrial catching up. However, the slow progress of capability development in industry meant that many of the individuals leaving technical colleges were not assured employment in the sectors for which they had received training. With the abandonment of industrial policy, employment prospects became worse as the broad-based industrial takeoff that had been planned failed to materialize. The redeployment of significant numbers of graduates from technical universities and colleges into the newly emerging IT-based service sectors provided globally competitive employment opportunities for large numbers of people, and employment growth was therefore rapid. Initially, most of India's global services employment was in the relatively lower value-adding business outsourcing (including call centres) and back office segments, but it has nevertheless been a significant source of growth in the period after liberalization (Panagariya 2005b). The important point is that the capabilities that serviced the growth of this sector would probably not have existed at all in the absence of a history of financing technical capability development for industrialization. Another example of a β -strategy is the response of sections of the Indian pharmaceutical sector after India signed on to protect TRIPS-compliant intellectual property rights. The learning strategy that these pharmaceutical firms had been following had to be abandoned and they converted themselves into lower value-adding contract producers for multinational pharmaceutical companies.

If India's success in market competition was based on the development of capabilities in a few pockets, this has obvious implications for strategies of sustaining its growth and spreading it to more sectors to include more people in the benefits of participating in globalization. In the next sections we look at two case studies, automobiles and pharmaceuticals, to demonstrate the ways in which global competitiveness emerged in a few sectors. These cases illustrate the general arguments made so far.

8. Capability Development in Critical Sectors: Automobiles and Pharmaceuticals

India presents a paradox in that it has some high capability firms particularly in manufacturing, and yet it has an unusually small industrial sector and low overall manufacturing growth. It is particularly interesting that India achieved global competitiveness in a number of critical sectors in the 1980s as a result of α -strategies in these sectors. This analysis qualifies the simple story that India's growth was driven by competitiveness that was compelled by liberalization. Instead, we argue that while the expansion of market opportunities and sources of finance were important, capability development was still required and required financing based on a combination of private and public sources. The big change with the past was that now the financing instruments were fortuitously appropriate for ensuring high-effort learning. This analysis has significant implications for future policy. Large swathes of the Indian economy remain at very low levels of technological capability and the share of manufacturing in the economy is much lower than we might expect. Figure 5 is directly relevant for understanding the Indian case. The long period of industrial

policy in India prior to the 1980s created strong capabilities *but in a narrow range of technologies*. The support and protection provided by the licensing system was in theory broadly allocated but in practice a relatively small number of business houses and regions got the lion's share of the allocations. Moreover, in many cases the effort allocated to learning was so low that enterprises remained too far behind the global competitiveness frontier. Nevertheless, a few sectors did achieve substantial experience and built up a network of technical and managerial expertise. The opening up that gradually happened during the 1980s and beyond allowed the emergence of a new set of responses that were both α and β -strategy responses. A number of these already high-capability sectors achieved global competitiveness as a result of these strategies and played a significant role in driving growth in the subsequent period. The challenge for policy is to understand the full range of factors that allowed the emergence of these sectors.

In an Asian Development Bank estimation of the *expected* share of manufacturing in GDP in 2000, given population, trade openness and per capita incomes, India comes out as a significant outlier in Asia with manufacturing well below its expected share. Most Asian countries have a manufacturing share that is equal to or higher than that predicted by the average international pattern. India's manufacturing was 15.9 per cent of GDP in 2000, around 4 percentage points below its predicted share of 19.6 per cent. China with a manufacturing share of 34.5 per cent was well above its predicted 27.3 per cent. But much of Asia was also equal to or above their predicted share. Thailand's 33.6 per cent was around 10 points higher than its predicted 23.9 per cent. Bangladesh with 15.2 per cent was slightly higher than its predicted 13.5 per cent (ADB 2007b: 294).

Manufacturing is important because it describes a level of capability that many people in poor countries can hope to attain (as members of the workforce) to participate in a global economy. Even the lowest capability requirements for globally marketed services like back-office work require a level of human capital that is not attainable in the medium term for the vast majority of the population in a developing country. Capability development in agriculture is possibility in pockets, but the fragmentation of landholdings and the growing scarcity of water also makes agriculture-driven growth strategies less plausible in many regions within countries of the Indian subcontinent (though pockets of high capability agriculture are possible).

The usual explanation for India's sluggish performance in manufacturing and in industry generally is that inflexible labour markets, in particular, laws protecting employment, increased the cost of exit. In anticipation of future problems, firms apparently did not invest in labour-intensive manufacturing (Besley and Burgess 2004; Panagariya 2004). In a further development of the argument, Rajan (2006) argues that because highly skilled workers were not as strongly protected as less skilled workers, Indian industry had a bias towards the employment of the former. Rajan argues that this explains India's strengths in sectors like pharmaceuticals and automobiles, and its weakness in textiles and garments. The policy implication is that to grow the manufacturing sector, labour laws have to be relaxed in terms of the protections offered to unskilled workers. There may be some truth to some of these arguments but it is questionable whether they can explain significant features of India's performance.

For one thing, it is questionable whether the types of entrepreneurs who may have operated labour-intensive industries like garments and textiles in India have ever been excessively constrained by the enforcement of any laws, labour or otherwise (Bhattacharjea 2006). The relevant thought experiment is the following: we have to imagine that there are many tens of millions of potential workers in India who could have been employed immediately in labour-intensive manufacturing industries but are not being employed because potential employers are worried that if they ever have to lay them off, there may be costs involved. Put in this form, the labour flexibility argument appears less plausible. The real problem may be that given their present levels of productivity and absent tacit knowledge of factory production of any kind, tens of millions of Indian workers cannot be employed in manufacturing even at very low wages and even if they could be fired at a moment's notice. Indeed, at the lowest levels of quality, India may already be suffering from an early form of a middle income squeeze because it is unlikely to be able to compete with countries like Bangladesh for instance in many segments of the garments industry.

The relevant comparison is with China where start-up manufacturers in broad swathes of intermediate technologies received significant implicit subsidies through an undervalued exchange rate, low real interest rates and a host of other hidden subsidies on infrastructure, land and so on. These subsidies provided the implicit loss-financing that enabled millions of rural Chinese workers to enter the world of manufacturing and engage in learning-by-doing that was disciplined by a number of factors including the compulsion to export. In contrast, the specific features of Indian's specialization can be explained by the targeting of its learning policies in the past. The firms that had the capabilities to engage in α and β -strategies after learning policies began to be abandoned in the 1980s were all in relatively high technology sectors because these were the sectors that licensing had supported. This, rather than the relative levels of protection of workers provides a more plausible explanation of the areas where Indian manufacturing and high technology services are currently doing well. Rajan's claim that skilled middle class individuals are not specifically protected by labour laws may be true but workers in the automobile industry are no less protected than unskilled workers in textiles, and yet the auto industry took off in the 1980s and textiles or garments did not experience a similar boom. The policy implications are significant. Greater flexibility of labour markets is unlikely to help India very much (though this is not necessarily an argument for retaining all types of regulations, some of which may indeed be marginally damaging). The policy priority must be to devise new strategies of learning aimed at intermediate technologies, together with the governance capabilities to implement them effectively.

'Alpha Strategies' in the Automobile Sector

In the 1950s and 1960s, centralized Indian industrial policy helped to build up a car industry that produced around 40,000 cars annually but of generally low quality. A protected domestic market and other implicit subsidies provided the loss-financing to low competitiveness producers that enabled them to produce Indian cars. However, low levels of compulsion for effort meant that the low-tech Ambassador never became a globally competitive product. In the 1980s, the apparatus of centralized industrial policy began to unwind, and at the same time, the sector went through dramatic changes. Quality and competitiveness began to rapidly improve and by 2009 Indian producers were producing 1.8 million cars, many of them of export quality (around 330,000 units that year) making India the fourth largest global exporter. It

appeared that market opening had forced quality and productivity growth exactly as liberal economists had predicted. However, a closer look tells us that learning still faced contracting failures and the state played an important though different role in co-financing a new and much more successful phase of high-effort learning.

Indian industrial policy had been supporting capability development in cars from the 1950s with the Ambassador produced by Hindustan Motors (part of the Birla group) and the Indian version of a Fiat called the Premier Padmini. The 'Amby' was based on the vintage Morris Oxford and refused to change its appearance over the decades. Its maker, Hindustan Motors was set up by B.M. Birla in the 1940s. A close supporter of the Congress Party, Birla was one of the nationalist industrialists behind the Bombay Plan that advocated state-supported capitalism. Perhaps because of his close links with the Congress, almost no other licenses were given out for passenger car production. The other early entrant in the 1940s was Premier Auto Ltd., which produced an equally invariant version of a Fiat called the Premier Padmini. Further supporting the case against protection is the observation that neither Hindustan Motors nor West Bengal (where the Ambassador was mainly produced) emerged as significant players in the new motor car industry. West Bengal's failure in 2007 to provide land for Tata's Nano project (Khan 2009a) put the state even further behind in the competition for a share of India's automobile production.

India's new car industry is based around Indian companies, joint ventures and increasingly multinational manufactures like Tata, Mahindra and Mahindra and Maruti Suzuki, and more recently Ford, GM, Volkswagen, Nissan and Renault, with production mostly based in states in the west and south. The three leading states are Maharashtra, Tamil Nadu and Haryana with Gujarat closely following. Maharashtra's Chakan belt near Pune is emerging as India's Detroit, with a cluster of plants that began with Tata Motors, Mahindra, Bajaj, Mercedes-Benz and General Motors. Maharashtra accounts for around forty per cent of India's output of automobiles by value and a similar share of the total workforce. It produces around a third of India's tractors, 70 per cent of medium and heavy trucks and 80 per cent of 'multi utility vehicles' or jeeps. Despite the new corporate players and regions that came to dominate the motor car industry, it would be misleading to conclude that previous policies had little to do with the emergence of the industry. The protection of the Ambassador was only a small part of the package of learning policies that underpinned the growth of capabilities on which the modern industry is based.

Tata began producing trucks and commercial vehicles in 1954 in collaboration with Daimler Benz of Germany. Mahindra and Mahindra produced jeeps and tractors from the 1940s. Both benefited significantly from protection and developed engineering and management capabilities that were indispensable for their entry into the car industry later. A wide range of engineering and automotive firms also acquired capabilities for production as a result of indigenization policies, including Bajaj which specialized in two-wheelers. The 'progressive manufacturing obligation' announced in 1953 aimed to push indigenization and was successful in its own terms. By the 1970s, India had achieved the capability to produce 80 per cent of the vehicles it was producing indigenously, as well as the capability to design and build engines. Of course, many of the regulations of this period did not make sense. The reservation of a large part of the auto component industry for small scale producers since 1965 slowed down the development of the component industry whose eventual achievement of

efficiency was vital for the takeoff that happened later. The component industry suffered from low quality and productivity for a long time. Nevertheless, India developed tier one and two component producers even if they were not competitive relative to market leaders.

The acceleration in the development of competitiveness in the 1980s came about as a result of an accidental train of events set off by Sanjay Gandhi (the prime minister's younger son) who decided in the 1970s to build a 'People's Car': the Maruti. Sanjay attempted to interest Volkswagen in the project, perhaps not understanding that the company that had developed the original people's car in Hitler's Germany may not want to be associated with another project with an aspiring authoritarian politician. The initial overtures were not successful and the project was floundering when Sanjay died in an air crash in 1980 leaving a factory with no immediate prospects of producing anything. The potential loss of prestige for the Gandhi name made Indira's government look for effective policies that in effect created new financing instruments for the transfer of technological and organizational capabilities to India. In 1980, the government of India took over the initially private Gandhi family venture and incorporated it in 1981 as a public sector company called Maruti Udyog Ltd. After a long and committed search by top Indian bureaucrats for a foreign technology provider, an agreement was signed with Suzuki in 1982, with the latter taking a 26 per cent equity stake in the company.

Suzuki, then mainly a motorcycle manufacturer with a relatively minor interest in automobiles had the advantage of knowing the Indian market and political system as they had been scouting for business in the motorcycle sector for some time. Suzuki's experience in India allowed them to recognize that the Indian government was serious about making this project work. The Indian government was effectively willing to open up the protected domestic market with the large rents that had previously been available for domestic learners to a foreign investor if the latter was willing to make a significant investment in transferring capabilities. The domestic market rents were an attractive prize for Suzuki and this allowed the Indian government to insist on significant domestic content requirements along the lines required by its Phased Manufacturing Programme, which required 95 per cent local content in five years (Becker-Ritterspach 2007: 9). The joint venture agreement with Suzuki specified 70 per cent non-company value addition of which at least 60 per cent would be locally procured. On the other hand the government's commitment to make the project work was critical for making the package attractive for Suzuki. Credible government support at the highest level ensured that the policy changes that were required to make the project succeed would be pushed through. For instance, Suzuki managed to get permission to import gear boxes at low tariffs despite the opposition of the Indian machine tool industry. This made the pace of indigenization feasible while maintaining quality.

The result was a new type of arrangement for financing learning. Suzuki was expected to make significant up-front investments in learning and put in the effort to transfer organizational and technological capabilities to its Indian factory and to the Indian supplier chain. But given the risks and costs Suzuki would almost certainly not have made these significant investments without the implicit public co-financing in the form of the very substantial *ex post* rents that were to be made available in the protected domestic market. These potential rewards were clearly great enough to

cover Suzuki's investments and risks in financing the learning. The result was an incentive compatible financing arrangement between the state and the recipient of the rent without the necessity of the type of centralized monitoring and enforcement that was required to make effective earlier financing arrangements for learning. This was because Suzuki's ability to recover its investments in learning depended on its success in producing a higher quality car to capture the domestic market from existing producers and meeting domestic content requirements, a condition that was easy to monitor and within the capabilities of the Indian state to enforce. As a result, Suzuki's effort in managing the technology transfer and learning process for Indian parts producers did not have to be directly monitored.

The result was a remarkable transformation of the competitiveness of the Indian automobile sector based on a significant transfer of technological and organizational capabilities. As Maruti's plant at Gurgaon was virtually an empty shell, the Japanese used the organizational structure of their plant at Kosai as the template around which to develop an appropriate Indian organizational structure. The relatively flat Japanese organizational structure could not be replicated in its entirety as Indian managerial hierarchies were resistant to change. But a high effort learning-by-doing process resulted in the evolution of a new hybrid organizational structure that was much more efficient than previous Indian organizations. Even more remarkable was the success of Suzuki's supplier development programme, which worked with initially technologically weak and suspicious suppliers to improve *their* organizational and technological capabilities in order to meet domestic content requirements and reduce input costs for the planned low cost car. The organizational evolution in Gurgaon and throughout the supplier chain involved considerable investments of effort and resources by Suzuki but the results were very positive. By 1983 Maruti-Suzuki had captured 50 per cent of the lucrative protected domestic market as a result of rapid improvements in quality, displacing the slumbering Ambassador from its dominant position in the market. By the early 1990s Suzuki had captured 70 per cent of domestic passenger car sales. By the late 1990s, Indian-owned tier one component producers began to win international prizes for quality like the Japanese Deming Prize.

Several aspects of the financing instruments and associated governance capabilities are important for explaining these outcomes. First, the *ex post* rent was clearly a big enough prize for Suzuki to justify its risky investments in building new capabilities. The prize was based on access to the large protected domestic market, which remained protected a decade later in the 1990s and even after India began to formally liberalize. In 1993-94, three years after liberalization began, the nominal rate of tariffs on automobiles was still 85 per cent, and this only declined to 60 per cent in 2006-07. The effective rate of protection was even higher and actually increased over this period from 88 per cent to 183 per cent because of a decline in the rate of protection for components (Badri and Vashisht 2008: 84-5). If the *ex post* prize was small, it may not have justified the significant investments and effort on the part of Suzuki in improving technological and organizational capabilities right through the supply chain. Secondly, high *ex post* rents alone would not have ensured that Suzuki would spend so much effort in transforming the domestic supply chain rather than importing the required inputs. This required enforceable domestic content requirements. Fortunately, the agencies monitoring these outcomes were credible in India and the political settlement was such that foreign companies (even if they wanted to) would

have found it difficult to buy political protection if they had failed to deliver on their contractual commitments. India was also lucky in that in the 1980s it was still not constrained by WTO rules (India only joined the WTO in 1995) and it could therefore set domestic content requirements for foreign investors.

The Maruti-Suzuki partnership transformed automobile production in India even though the joint-venture company did not remain in Indian hands for long. By 1987 Suzuki had increased its equity stake to 40 per cent and by 1992 to 50 per cent. After a protracted conflict over the appointment of the managing director in 1997, the Government of India began to divest its holdings and Suzuki rapidly became the dominant shareholder. However, by then Suzuki had transformed the Indian automobile industry by enhancing the competitiveness of Indian-owned tier one and tier two producers. The increasingly competitive supplier network began to attract foreign and Indian car manufacturers who continued to benefit from the financing arrangement that co-financed learning based on the formula of steep domestic content requirements combined with access to the protected domestic market. As part of the liberalization of the automobile industry in 1992, domestic content requirements were reduced to 50 per cent by the third year and 70 per cent by the fifth, and on this basis a number of further MOUs were signed with foreign technology providers. In the 1990s, DaimlerChrysler, Fiat, Ford, GM, Honda, Hyundai, Toyota and others followed Suzuki in similar deals as the Indian state continued to offer the same 'financing instrument' and on similar conditions to subsequent investors. The domestic content rules only began to be withdrawn when India joined the WTO in 1995. In the decade of the 1990s car production went up by a factor of 3.5. Of the eight leading firms driving this growth, six were joint ventures and accounted for 85 per cent of the output (Sutton undated). Yet the indigenization conditions meant that this was much more than assembly. By 2004, the local content of Indian-made cars ranged from 20 to 100 per cent, with the more popular makes in the domestic market bunched around the higher figure (Balakrishnan, et al. 2004: Table 2.5). Domestic content requirements made successive technology providers invest further in technology transfer to the supply chain. By 2004, the development of domestically owned tier one capabilities allowed Indian producers like Tata and Mahindra and Mahindra to produce Indian branded cars with domestic content ranging from 20 to 100 per cent depending on the model.

Auto Components Producers

The clearest evidence of α -strategies in the Indian auto sector comes from the auto components producers. By the end of the 1990s, the improvements in organizational capabilities and in particular quality control in the auto components sector resulted in ten Indian auto companies winning the coveted Deming prize awarded by Japan to companies achieving high levels of quality. Nine of these companies were auto component producers. These awards are consistent with other observations of improvements in the quality of Indian component producers. For instance, Sutton finds that in terms of defect rates of component producers, Indian quality levels by the early 2000s were close to global levels and comparable to Chinese levels. In some areas Indian quality was higher than in China (Sutton undated).

However, when the financial performance of the Deming companies are compared to other Indian component suppliers in the same sector, the surprising result is that the quality improving firms did not perform any better in terms of profitability

(Balakrishnan, et al. 2007). This is a surprising observation because the general international evidence is that improvements in total quality management (TQM) leads to improvements in financial performance and profitability (Hendricks and Singhal 1997). The most likely explanation is that the winning firms were not significantly exceptional. There is likely to have been a general improvement in productivity and quality across much of the Indian auto component sector as Sutton's benchmarking work also suggests. The lack of improvement in profitability suggests that productivity and quality improvements were achieved without price increases, or even with price reductions, resulting in an improvement in the competitiveness ratio. Clearly, what was happening here is exactly a move towards the global competitiveness frontier by component producers that we described as an α -strategy in Figure 5.

The possibility that Indian component producers were moving towards global competitiveness is also confirmed by the growing export success of many component producers. Many of the most successful component suppliers were joint ventures. Of the top ten component exporters in the early 2000s, six were joint ventures, and of the four domestic producers, three belonged to the same domestic group: TVS (Sutton undated). The performance of the Indian component producers is even more significant because comparisons with China show that they suffer on average a cost disadvantage of around 20 per cent due to higher costs of power, taxes, duties, labour benefits and so on (Balakrishnan, et al. 2007). Since there is no evidence that the underlying productivity of labour and input use is higher by that margin in India, the implication is that global competitiveness was achieved by Indian component producers by squeezing their margins, at least compared to China. Nevertheless, the quality improvements by the component producers allowed more and more foreign OEMs to enter the Indian market, and allowed Indian brands to consolidate.

Mahindra and Mahindra: Frugal Engineering

Mahindra and Mahindra was founded in 1945 by J.C. Mahindra, K.C. Mahindra and Ghulam Mohammed and was initially called Mahindra and Mohammed. Ghulam Mohammed moved to Pakistan after partition and became Pakistan's first finance minister and one of the architects of its early industrial policy. Sales in 2009 were around US\$3 billion and the firm is part of the bigger Mahindra and Mahindra Group. Since the 1940s, Mahindra and Mahindra's focus was on agricultural vehicles like tractors and pick-ups. Through that it built significant technological capabilities, particularly in engine manufacturing. In the 1990s it was involved in a joint venture with Ford that introduced Mahindra and Mahindra to car production. The emergence of Mahindra and Mahindra as an Indian branded car manufacturer making passenger cars would not have been possible without the emergence of a strong Indian components sector making globally competitive components. Its production strategy was based on outsourcing to the Indian tier one and tier two producers that had emerged as a result of the transformation. Other than engines, transmission and body skin, everything was outsourced. Even the engine head and block were bought in semi-finished.

In 1998, the company took a strategic decision to walk away from its joint venture with Ford to design and produce a low-cost Indian MUV on its own called the Scorpio (an MUV or multi-utility vehicle is somewhere between a car and an SUV). It had a limited budget of US\$ 120 million to design and develop the production

facilities. It succeeded by using the Indian component producer base in innovative ways. It brought in its suppliers, defined the technological outcomes and cost targets, and then let the key suppliers develop the technology. The suppliers were mainly joint venture companies or foreign companies with Indian operations. In the end, production was outsourced to 110 suppliers, but though many were joint ventures, 98 per cent of the Scorpio was indigenous. This was an example of synergy between a high capability firm that saw an opportunity of further investing in its technological and organizational capabilities in a context where the existence of competitive component producers created new opportunities for product development. A senior executive associated with the project said, ‘lots of costs get added to get the last two per cent of quality right. But if one sets out to make everything perfect the costs go up exponentially’. Mahindra aimed at reasonable quality keeping in mind the profile of the Indian customer. So while it made sure it exceeded the parameters for the engine, it compromised on the noise levels. At the same time the company made sure that it had backup service plans for every area of weakness so that as soon as a customer complained the service team was ready with action. The effect was that the Scorpio entered the market at 11,000 dollars, around 60 per cent of the price expected by industry analysts (Sutton undated: 48-9). After an initially lukewarm reception, the Scorpio captured 50 per cent of the domestic utility vehicle market. The strategy followed by Mahindra and Mahindra in this case was a risky one, but a good example of what Carlos Ghosn, CEO of Nissan has described as ‘frugal engineering’.

The combination of private financing and state support for capability development was initially motivated by a political prestige issue in the case of Maruti but was later continued to support indigenization. The strategy provided financing for learning that took an already moderate-capability sector to the competitive frontier and allowed high capability Indian firms like Mahindra and Mahindra and Tata to become global players. The outcome was a rapid improvement in capabilities and the achievement of global competitiveness by domestic Indian producers, including Indian owned manufacturing plants in automobiles and components. These are clearly examples of α -strategies. The policy challenge is to understand the very specific and fortunate combination of initial capability developments and appropriate combinations of incentives and compulsions after ‘liberalization’ that allowed the α -strategies to emerge.

Factors Supporting ‘Alpha Strategies’ in the Auto Sector

A number of factors contributed to the high effort outcomes that led to the success of α -strategies in the automobile and components sectors. First, a new combination of financing instruments, governance mechanisms, firm structures and a somewhat different political settlement created credible compulsions for high effort in eq. [12]. Secondly, the gap from the global frontier (shown by AY in Figure 5) was low enough in this sector for this level of effort to enable convergence to global competitiveness given the implicit loss-financing that was available. In terms of eq. [11], the initial competitiveness gap, s_0 , in 1980 was low enough, together with the government support that was made available in the form of direct and indirect assistance to different producers, to make the breakeven period, B_t , viable for private investors investing in learning and technology acquisition. The critical aspect of the new financing arrangement was that the prize was now *ex post* and required the private technology provider to make *ex ante* investments in anticipation of achieving competitiveness and collecting the prize. To understand the positive effects on effort

we have to look at the interdependent effects of a number of key variables affecting effort in this context.

First, by 1980 there were many firms in the engineering and automobile components sectors with reasonably high technological capabilities that were within striking distance of international competitiveness. These firms were the products of the more relaxed licensing period but their protected positions in the domestic market had given them decades of learning-by-doing experience. They could hope to attain global competitiveness with relatively small additional investments in developing organizational capabilities, in new equipment and the associated learning-by-doing. This meant that the implicit s_Q in eq. [11] was low. This matters because if private investors had to make very significant up-front investments in capability development and the time required for achieving competitiveness was relatively long, even significant *ex post* prizes may not have compensated for the uncertainty that private investors may have faced. In that context, *ex ante* investments by companies like Suzuki may not have been forthcoming.

Secondly, though the competitiveness gap in 1980 was relatively small, it could not have been covered in a day. A 'big bang' liberalization in 1980 may have meant the end of the indigenous Indian automobile industry with rapid foreign entry into the domestic market and the takeover of more promising parts of the productive capabilities by foreign owners. Instead, government support during the opening up period implicitly provided *ex post financing instruments* (FI in eq. [12]) compensating *ex ante* private investments in learning provided they achieved success. For small global players like Suzuki, the continued protection of the domestic market provided enough *ex post* rents for them to be interested in making *ex ante* investments not just in plant and equipment but also and more significantly in transferring organizational capabilities to its Indian operations and to tier one and tier two Indian component producers. The *ex post* rents made it worthwhile for Suzuki to invest in learning-by-doing and also to work with domestic component suppliers to help them raise productivity and quality to meet the domestic content requirements that were specified. The *ex ante* investment by Suzuki was in investing to improve the capabilities of domestic component producers instead of importing the required components from Japan. The pace of opening up was also very important. Liberalization can only induce high levels of effort if the pace of liberalization is consistent with the pace at which lagging producers can raise their productivity. Indeed, as far as the protection of the domestic automobile market was concerned, there was virtually no liberalization well into the 1990s.

Thirdly, the relevant *governance agencies*, GA , had credible enforcement capabilities for the conditions associated with the *ex post* rents. Governance agencies had to ensure that domestic content rules were enforced so that foreign investors could not simply assemble cars in India to access the protected market. The domestic content rules were critical given the financing instrument for ensuring that *ex ante* investments in transferring organizational and technical capabilities took place. Without the *ex post* rents, the multinationals would almost certainly not have invested in transferring capabilities to domestic producers. But equally, offering the rents without the capability to enforce content rules may also have been a waste for the country. Unlike the challenge of withdrawing subsidies from non-performing domestic firms with powerful connections (which was required to make the earlier *ex*

ante rents effective for high effort learning), monitoring domestic content requirement and enforcing contracts with Suzuki, and later other foreign technology providers, was a credible governance capability of the Indian government.

Fourth, changes in the *political settlement*, *PS*, within India allowed the leadership to offer targeted support to firms like Maruti using new instruments outside the planning and licensing ones. The possibility of doing this without being blocked by anti-business interests or by local competitors of Maruti operating through political factions within Congress had improved because the greater fragmentation of the party paradoxically allowed the political leadership greater freedom of action on an ad hoc basis. The political competition and fragmentation also meant that the firms receiving support understood that they could not rely on this support forever and it was in their interest to put in high levels of effort under these circumstances. The enforcement of domestic content conditions for Suzuki and other foreign investors was also credible because foreign investors had no connections with domestic political leaders and factions that could possibly be used to block enforcement if they failed domestic content tests.

Finally, the *firm structure*, *FS*, was also fortuitous. The old established players like Birla had been sidelined by Suzuki, who gained access to government support for very accidental reasons. Suzuki in turn worked with smaller component firms and newly established joint ventures that did not have the political connections that could help them to influence rent allocation or to ensure that their rents could be protected by changing the terms for Suzuki. The credibility of enforcement both by public governance agencies against Suzuki and by Suzuki on its component suppliers was assisted by this firm structure, as it was by the macro political changes in the political settlement.

By putting the evolution of the auto industry in the context of our interactive variables determining effort (Figure 4) we can see that the outcome was plausibly related to a fortunate configuration that is more complex than may appear at first sight. Clearly, this favourable combination of incentives and compulsions would not be easy to replicate in policy terms in other sectors. But equally, to believe that the auto takeoff happened just because of ‘liberalization’ is also wrong. Our analysis can explain why the results in the auto sector were not replicated all across Indian manufacturing. It also explains why liberalization had very different effects in different countries, and indeed in different sectors within India. Finally, it suggests that the success of some sectors may have more to do with their initial endowments of capabilities and public support for further capability development than the relative flexibility of their labour markets. The latter played a very limited role in explaining the success of this sector according to industry insiders. The implication for policy is obviously to focus on the difficult task of creating incentives and compulsions for capability development in other sectors, and indeed for assisting further capability development in the Indian auto sector over time.

Pharmaceuticals: Catching Up by Capturing Technology Rents

India’s pharmaceutical industry provides another remarkable story of the role of rents in capability development. Here learning-by-doing was financed by a sector-specific ‘financing’ arrangement, based on India’s Patent Act of 1970, which abolished product patents and only recognized process patents. This meant that an Indian

company could legally discover a new process of making a known advanced drug and Indian law would recognize this as a patentable process distinct from the process that created the original molecule. As advanced drugs enjoy significant ‘Schumpeterian’ technology rents, an Indian company that could produce a known molecule using a different process had access to significant *ex post* profits that could justify its loss-making during its organizational learning of production and design capabilities. The promise of large *ex post* rents was therefore a significant spur to the incentive to learn. High-capability Indian pharmaceutical companies could borrow from banks and other financial institutions on the basis of their proven capabilities, and the process of learning-by-doing further enhanced their capabilities. As the company had to invest in up-front learning costs, it had strong incentives to put in high levels of effort. Success in developing capabilities would then be rewarded with significant *ex post* rents. Once again, the sector-specific arrangements for ‘financing’ learning created strong incentives and compulsions for high effort in learning and the enforcement of these contracts were not affected by the generally weak enforcement capabilities of the ruling coalition.

As with automobiles, the history of organizational capabilities in the pharmaceutical sector goes back to the early days of industrial policy. Indeed, one of India’s pioneering pharmaceutical investments was Bengal Chemicals, set up in 1930 by the visionary scientist Prafulla Chandra Roy. But it ran into difficulties before the opportunities created by the 1970 patent laws could be realized and it did not participate in the reverse engineering phase. By the 1970s Bengal Chemicals had become a loss-making enterprise and it was nationalized in 1980. It slowly moved down the value chain, and ended up producing veterinary formulations. State support for India’s pharmaceutical sector had its beginning in 1954 when the Indian government set up the Hindustan Antibiotic Ltd. in the public sector, with technical assistance from the World Health Organization and UNICEF (the UN’s children’s fund). A few years later the government set up the Indian Drugs and Pharmaceuticals Ltd. (IDPL) with Soviet assistance. IDPL was the cradle for many of the future leaders of the Indian pharmaceutical industry, including K. Anji Reddy, the founder of Dr. Reddy’s Laboratories (DRL), a major player in the contemporary Indian pharmaceutical industry. Indian universities and technical colleges contributed strongly to the creation of formal capabilities. The investment in top-end education by the state throughout the 1950s and 1960s paid dividends in the form of large numbers of chemists and biologists leaving university every year. Currently, Indian universities and higher education institutions produce more than 100,000 chemists and biologists annually. Nevertheless, till the late 1960s multinational companies still controlled 68 per cent of the pharmaceutical market in India.

The takeoff in the industry that was observed in the 1990s was based on a combination of this initial capability development and a sector-specific ‘financing’ arrangement that was politically negotiated outside the structure of formal industrial policy. The rents created for the sector by the Patent Act induced a particular type of learning. Although the rents were created through a ‘patent act’, as Indian companies did not have to discover new molecules, this was a form of support for learning rather than innovation. The capabilities that were learnt were in process design rather than innovation proper but it had a significant effect on the technology capabilities and competitiveness of the Indian pharmaceutical sector. By 2001 the success of this strategy became obvious when Cipla, then the second biggest pharmaceutical

company in India offered an AIDS drug to Africa for \$300 when the world market price was \$12,000.

The global drugs companies could be expected to fight back and they did. In 2005 India was persuaded to sign the Patent Amendment Act which recognized patents in TRIPS compliant ways by recognizing a twenty year patent period for drugs discovered after 1995. The twenty year horizon was possibly excessive even in terms of incentives for innovation in advanced countries (Stiglitz 2007). In addition, patents are now subject to ‘evergreening’ where the parent company makes a slight modification and improvement and gets a new patent protecting the molecule. These changes slowed down the flow of funds to Indian pharmaceutical companies and forced them to shift to licensed production for foreign multinationals like GlaxoSmithKline and others. The forms of research also changed to contract research where the foreign financier owns the research and uses cheaper Indian lab facilities and scientists: the so-called CRAMS or Contract Research and Manufacturing Services. A number of the leading Indian pioneer companies were rapidly forced to go into joint ventures or were being taken over outright, like Matrix in 2007, the purchase of Ranbaxy by Japan’s Daiichi in 2008 and Piramal by Abbott in 2010. Thus, international conditions prevented the continuation of this rent strategy for capability development, but India’s important presence in the pharmaceutical sector is to a large extent a result of both phases of capability development. Once again, the success of the sector was not based simply on liberalization but on specific learning strategies in a high-capability sector that created credible incentives for further organizational capability development and technical learning in the 1980s and beyond.

In 2008, the Indian pharmaceutical sector had 20,000 licensed companies employing around 500,000 people. Bulk drugs accounted for close to 25 per cent of the sector and formulations the rest. Between 1996 and 2006 sales of pharmaceuticals grew at around 9 per cent per annum in nominal terms, higher than the global average, but lower than in China and Malaysia. Exports have grown even more rapidly in the last two decades, with 22 per cent export growth in 2006. In 2007, 43 per cent of revenues came from exports. However, the export sector is concentrated in a few firms. In 2010 only 60 production locations were certified by the World Health Organization as compliant with the standards of the US Food and Drugs Administration (FDA). This is still the largest number in a single country outside the US, but it gives an idea of the concentration of quality in a small number of firms. Of the top six companies in the Indian pharmaceutical sector in the 2010s, two are Indian: Cipla, Sun Pharmaceuticals and Piramal. The other three are GlaxoSmithKline, Ranbaxy which was bought by the Japanese company Daiichi in 2008 from its Indian owners and Abbott, which became the market leader after buying Piramal Healthcare Solutions (the generics manufacturing part of Piramal’s business) in 2010. Despite rapid growth, India is projected to lose market share in Asia to China which is likely to establish its position as the biggest player in the Asian pharmaceuticals market (Perlitz 2008).

The Indian states gaining most from the reverse engineering phase of pharmaceutical development after 1970 were mostly in the west and the south. This reflected the strengths of southern universities and the agglomeration advantages that Mumbai had already acquired by the 1980s for attracting high quality human capital. Despite competition from other states, towards the end of the 2000s, Maharashtra accounted for 40 per cent of the pharmaceutical turnover in India and 11 per cent of the total

value of formulations in the industry. The Maharashtrian bulk drugs industries are clustered around Mumbai, Pune, Tarapur and Aurangabad, and the formulations industry is clustered around Mumbai and Pune. Mumbai and Aurangabad are also centres of pharmaceutical R&D. West Bengal lost out in this race despite having some of the earliest pharmaceutical companies.

The 1970 Act thus played a critical role in financing organizational capability development in the Indian pharmaceutical industry. It implicitly created a new type of '*financing instrument*' that could finance the learning of pharmaceutical processes. As success guaranteed significant *ex post* rents to any Indian pharmaceutical company that succeeded in developing a new production process for a known molecule, the cost of financing *ex ante* investments in organizational capability development by pharmaceutical companies declined. These companies found it easy to raise money from banks and investors to finance their learning. Fortunately for the Indian pharmaceutical industry, the design of this instrument and the capabilities of the governance agencies that enforced these rules proved to be very effective for creating incentives and compulsions for high levels of effort in capability development.

First, the implicit *governance agency* allocating the rent was simply the enforcement agencies of the Indian government administering the Patent Act. The legal cover that the Indian state provided to its pharmaceutical companies allowed them to capture significant rents directly through a market process if they succeeded in developing their capability to manufacture the molecule. The critical feature of this financing instrument was that successful capability development was rewarded *ex post*. But because large returns were promised if the development was successful, companies that had some track record and a positive evaluation of their own capabilities to take the risk could raise large amounts of money in capital markets on relatively favourable terms. Only companies that succeeded in developing manufacturing processes and acquiring the tacit knowledge involved in process technologies could capture these rents. There was no difficulty in allocating the reward accurately because the rents could only be captured by successful firms. Nevertheless, the promise of the rent could be converted into *ex ante* financing for learning because the pharmaceutical companies could raise money to support investments in learning based on the enforcement of the Patent Act. These contingent rewards meant the firm had no incentive to save on learning effort. In addition, the pharmaceutical companies were capital and skill intensive so the learning process did not entail organizational change involving large numbers of workers where learning success is more difficult to predict. With scientists, technicians and other skilled personnel, incentives can be more easily aligned with the firm by sharing rewards, and learning effort could be very high given the financing instruments provided by the Patent Act.

For many of the chemist-entrepreneurs who had already emerged in India by that time, capability development became a viable risk to take. Here again was a sector where the gap between capabilities developed in the past (through formal education and the protection of domestic pharmaceutical firms) and those required for global competitiveness in process innovation and the manufacturing of molecules was relatively low. The Indian Patent Act and the incentives it provided were essentially for developing production and process capabilities and *not* for the development of true product innovation. The financing required for operating a broad base of innovative pharmaceutical firms involved in fabricating entirely new molecules is arguably

beyond the capability of developing economies like India. The knowledge gap that had to be traversed, described as s_Q , in eq. [11] was low in this sector if we understand that India was not actually developing capabilities for innovation but rather capabilities for the manufacture of already known molecules. The competitiveness gap was low because of public sector investments in pharmaceutical companies and in universities in the previous period. The best chemist-entrepreneurs in the country could reasonably believe that they would be able to crack the capability development problem for manufacturing known molecules with some investment in organizational and technological learning and this would be worthwhile given the large potential rewards. The only element of the *political settlement* that mattered is that it should allow the state to enforce the Patent Act in the intended way. There were no powerful Indian interests that wanted to block or distort the application of the Patent Act using political access or power and so in the existing political settlement the Act was effectively enforceable. However, India as a whole was relatively weak compared to the home countries of the multinational companies whose rents were being challenged. The strategy began to be undermined when these countries began to put increasing pressure on India to change its Patent Act.

An even more dynamic aspect of this method of financing capability development was that successful pharmaceutical companies gained very significant income streams because they were able to capture a part of the global technology rents associated with that product. These significant income streams coming into the most capable companies had a further effect in spurring more than just the development of reverse engineering and production capabilities. At the margin, it allowed the development of genuine R&D and product development capabilities in the most advanced companies. The technology rents thus not only paid for the initial investments in learning, but also financed subsequent rounds of both learning *and* true innovation in a number of dynamic and rapidly growing companies.

Capability development using this financing mechanism was extremely rapid. Companies like Ranbaxy, Sun Pharma, Cipla, Piramal, DRL and others grew rapidly as a result of this incentive structure. Initially the sights of Indian pharmaceutical companies were set on their domestic market. By 2004 the share of foreign players in India had come down to 23 per cent. But in 2001 the global consequences of India's catching up became obvious when Cipla, the country's second largest pharmaceuticals company at that time offered an AIDS drug to African countries for US\$300 when the global price of the drug was US\$12,000. Some Indian companies also began to develop new products through their own R&D. They planned to achieve new drug discoveries and in a few cases came close. The big players like Ranbaxy, Sun and DRL had new molecules in the pipeline with R&D financed by their cash flows from their technology rents.

Not surprisingly, US pharmaceutical companies soon went all out to enforce the protection of their technology rents by lobbying the US to focus on IPRs in the context of global trade negotiations. US patent protection of pharmaceutical products may well be excessive not only from the point of view of global development but also for sustaining a high level of innovation *within the US* (Stiglitz 2007: 103-32). From this perspective, the legalized Indian capture of a small part of global pharmaceutical technology rents using its 1970 Act may actually have been a global good. Revisiting TRIPS may be difficult but it is a vital global policy issue for the years ahead.

India's learning strategy for capability development in its pharmaceutical sector was fundamentally transformed by WTO rules, under which India had to pass its Patent Amendment Act of 2005. Under tremendous pressure from the US, India was persuaded to recognize patent protection in TRIPS compliant ways. The new Indian act of 2005 recognizes a twenty year period of protection of patents, following US patent law. There are a few loopholes for the time being because this applies only to drugs patented after 1995. On the other hand, there are likely to be serious problems in the future over the possibility of 'ever-greening' whereby a multinational patent holder can re-apply for a patent after twenty years on a marginally modified molecule, or on the basis of some new application of an old molecule.

The result of the 2005 Act has already been a series of fundamental changes in strategies of indigenous capability development in India's pharmaceutical sector. In particular, the change in the IPR environment dramatically altered the projected cash flows of the leading pharmaceutical companies. As the captured technology rents dried up, the financing of capability development and investments to make new discoveries also slowed down significantly. It is possible to argue that the 1970 Act allowed Indian pharmaceutical companies to eat into too many of the technology rents of the advanced country pharmaceutical giants. But it is equally possible to argue that a twenty year patent law and possibilities of ever-greening create a system of technology rents that damage or block opportunities for capability development in developing countries and may even slow down innovation in advanced countries.

The rapid catching up in the 1980s and 1990s in the Indian pharmaceutical sector is bound to slow down without the support for financing learning. The change in the Patent Act has put an end to the implicit financing coming from the ability to capture a share of global technology rents. New entrants in the pharmaceutical sector within India will find it very difficult to finance their capability development in the future. Existing Indian pharmaceutical companies will also have to change strategies to comply with a strict patent regime. The most important strategic response that is already observed is a shift of focus of Indian pharmaceutical companies towards lower value-adding contract manufacturing for foreign multinationals. This can be described as the adoption of β -strategies by most Indian pharmaceutical companies. If this consolidates as the new dominant strategy, India is also likely to face an 'inverse-U shaped squeeze' in this sector in the years to come (Khan 2009b). New lower cost entrants from countries where wage costs are even lower can begin to threaten contract manufacturing at lower quality levels (interpreted as less sophisticated drugs), while movements into higher value addition based on more sophisticated process technologies may be constrained unless new financing instruments can be devised to keep on acquiring the capabilities at that level.

TRIPS-Induced 'Beta Strategies'

The 2005 Act hit Indian pharmaceutical companies hardest if they had significant R&D in the pipeline because their expectations of rent-based cash flows to finance this research suddenly dried up. A number of responses followed, including selling out, shifting focus to contract production and research, separating their R&D activities from the more mundane generics production and seeking venture funding for the former. But overall it is likely that the dominant response for many Indian pharmaceutical firms will be to focus on what has come to be described as Contract

Research and Manufacturing Services (or CRAMS). This is an arrangement where multinationals outsource aspects of manufacturing and even research to companies in developing countries like India, but they continue to own the knowledge (hence the term contract research). The broader research component could also include the conduct of trials, which are an extremely expensive part of overall drug development if conducted in an advanced country. But trials could be much cheaper and bigger in scale if conducted in a developing country like India. Examples of each of these responses can already be found. The feedback of these processes into the development of new organizational capabilities within Indian firms is likely to be rather different compared to the production-oriented organizational capabilities that were developed under the 1970 Patent Act.

The first response, selling out, is obviously the most dramatic. In 2007 US-based Mylan bought out Matrix Laboratories, one of the largest Indian manufacturers of antiretroviral drugs for developing country markets. But it was the late 2008 sale of Ranbaxy to Daiichi that stunned most Indians. Ranbaxy was a trailblazing pharmaceutical company and had several promising products in the R&D pipeline. But its owners felt they could not finance these any more. In 2010 Abbott purchased Piramal's generic drug production outfit, Piramal Healthcare Solutions. The deal made Abbott the dominant company in the Indian market.

The second and more common response has been to focus on contract manufacturing for foreign multinationals. Contract production of drugs implies the payment of significant license fees to the patent owner or it implies producing the drug for the patent owner on a cost-plus basis. In 2010 Piramal sold out its massive generics business to Abbott given the reduced income streams that are likely in the future as molecules remain patent protected for longer. Piramal's strategy was to focus on contract research and manufacturing in the remainder of its business. Either way, the Indian company can expect significantly lower income streams in the future compared to the past. Contract research is equally unlikely to result in broad-based capability development. Multinational pharmaceutical companies are likely to take good care that the technology is controlled and owned by them. In areas like biotechnology where process knowledge is vital, contract research is even less likely. However, some areas of labour-intensive and repetitive research activity may well be outsourced to countries like India. Another area that broadly comes under research is conducting trials. These are expensive in advanced countries and India is likely to become an attractive outsourcing area for clinical trials.

These types of strategic responses can be described as β -strategies. Contract manufacture in particular is relatively simple given the technological capabilities that the major Indian pharmaceutical companies have already demonstrated. Examples of these types of contracts include Aurobindo Pharma which has a licensing agreement with Pfizer to manufacture 60 generic drugs for distribution to other markets. Dr. Reddy's Laboratories entered a similar agreement with GSK to produce around 100 branded drugs for global distribution. As a low cost venue for manufacturing licensed drugs, the Indian pharmaceutical sector could see significant growth. But Indian pharmaceutical companies may also start looking for even cheaper venues for assembling the more basic formulations. The most important consequence of the contracting route is that while Indian pharmaceuticals will be able to survive using this strategy, the revenue stream for financing significant in-house product

development or for developing new production capabilities based on significant investments in organizational learning are unlikely to be assured through this route.

A third response is more ambitious and involves separating the generics manufacturing part of the business from the ongoing R&D in product development. This is now necessary given the more constrained cash flows from the generics business and the risks and cash requirements of investing in product development. A number of the big Indian players have spun off R&D ventures out of their main business and looked for venture capital to finance the development work. In other words, the cash flow of the generics can no longer sustain investments in high level capability development and R&D, and one way of recognizing that is to separate the two businesses. Examples include Sun Pharma, which created the Sun Pharma Advanced Research Company (SPARC) in 2007 to do product development separately, to be financed by risk-tolerant venture capitalist investors. Glenmark and DRL provide other examples of this strategy. However, venture capital groups operating in developing countries, like ICICI Ventures are criticized by industry insiders for investing only when revenue streams are assured, cashing in on growth, not aiding growth.

The probability of relatively small R&D operations funded by venture capital leading to major breakthroughs is relatively small. It is more likely in the specialized field of bio-technology rather than in pharmaceuticals proper. This is because bio-technology is more about process knowledge and relatively small laboratories can keep on attacking a problem with a reasonable chance of eventual success. Innovative and relatively small firms like Bharat Biotech, founded in 1996 may therefore do relatively better in the new environment. It was privately held and had 450 employees but worked on innovative ideas on vaccines like the Rotavirus vaccine with grants from the Bill and Melinda Gates Foundation, and malaria vaccines.

Thus, while pockets of high-capability research continue to find funding for their R&D, one consequence of TRIPS was to sever the internal financing that was driving α -strategies in the broad-based pharmaceuticals sector. While these changes are relatively recent, industry insiders think that the future trajectory of the sector will be driven to a much greater extent by contract production (the β -strategy in this case) with isolated pockets of high-end research. The latter is also likely to be contract research, financed by multinationals or other financiers in more advanced countries. The calculations of multinational investors to minimize their costs of research and development globally may not always coincide with that of individual countries seeking to enhance their technological capabilities.

The capabilities to manufacture drugs under contract are capabilities that were themselves developed over the medium term in most cases. Other even lower cost countries are likely to enter over the next decade, and Indian pharmaceutical companies may themselves be induced to relocate some of the assembly operations to cheaper locations. Unless the higher end capability development is proceeding at an equivalent pace, growth within India in this sector may eventually be squeezed.

While the pharmaceutical sector is a relatively advanced one in India, its experience demonstrates very general problems facing catching up in developing countries. The emergence of an appropriate financing instrument was critical for the acceleration of

capability development in the sector. Equally, the clawing back of technology rents by global multinationals under TRIPS has had equally serious implications for long-term capability development. Moreover, the pharmaceutical sector is not just a sector that is of interest for its export earnings potential. In a poor country it can potentially play an important role in human development if it acquires the capability to develop cheap high quality drugs required by the poor. The constraints set on the development of technological capabilities in the pharmaceutical industry in countries like India is therefore of even broader relevance. Both the auto and the pharmaceutical sector demonstrate very clearly the vital role played by the capability development strategies of the past. In both cases additional and sector-specific support strategies operated in the 1980s, creating additional financing for learning. In both cases the incentives and compulsions associated with these additional financing instruments were fortuitously just right for inducing very high levels of effort in absorbing technologies and building capabilities. Describing these successes simply as the results of liberalization does not capture very significant aspects of the historical reality. Nor does it provide policy-makers with the understanding to locate and address the most significant market failures that constrain broad based capability development in India.

9. Key Conclusions

The focus of our analysis has been on the processes of capability development. India's growth has been driven by capability development to a large extent and it has achieved significant successes in its capability development strategies both in the 'planning' period between 1947 and the late-1970s and in the more open economy that emerged in the period after 1980. The contribution of our analysis has been to demonstrate that the liberal analytical frame that distinguishes these periods in terms of 'planning' and 'liberalization' misses some of the most important processes driving capability development in the two periods and also misses the critical role of political economy in explaining the implementation and enforcement of different policy instruments in the two periods. The analytical frame of political settlements provides an alternative for looking at these processes and shows that both periods contributed to capability development in different ways.

In particular, our analysis deepens the insight that the success of the second period, concentrated as it was on particular sectors and regions, cannot be understood and would not have happened, without the capability development that happened in the first. It also provides an analytical framework and case study evidence to show that even the successes of the second, more liberal period, were based on strong business-government relationships and implicit financing of different types that allowed a further stage of capability development. Sectors close to the frontier used either alpha or beta-strategies to reach the competitive frontier in the vicinity of their already existing capabilities. However, this strategy of capability development, focusing only on sectors close to the frontier, had implications in terms of job creation, spreading the benefits of growth to new population segments and across regions.

We also referred to a significant emergent problem with the new political settlement as it has developed in India. The break-up of the inclusive dominant party system by the late-1970s resulted in the strengthening of new ad hoc business-politics links, linking particular businesses and political leaders. This allowed the creation of specific support instruments for particular sectors. In a context where a number of

Indian manufacturing and technology sectors were close to the global frontier, as they were in the late-1970s and 1980s, the possibility of using business-government links to reach the frontier and generate large revenues created strong incentives for politics to be used to support upgrading strategies. The rewards from this were large enough given the closeness to the frontier in some areas for both businesses and politicians to see the benefits of supporting learning in this way. The rewards were relatively quick and significant alpha and beta-strategies emerged as a result.

A number of things have changed since then, making business-politics links more problematic. First, the international institutional structure has dramatically changed. The emergence of the WTO, for instance, precludes domestic content requirements being specified by governments. Foreign investors cannot any more be offered rents contingent on their willingness to transfer know-how to local producers. The emergence of TRIPS-compliance as part of the international trading architecture also makes the types of rent-capture strategies that drove growth in India's pharmaceutical industry impossible. Both the types of support that can be offered and the conditions that can be set have therefore become more constrained. Secondly, the very success of the sectors that were close to the frontier means that there are no longer a large number of sectors that are close to the frontier. Business-politics links in this context become much more problematic. As these alliances no longer have any easy technology acquisition strategies to exploit there is a tendency to move into unproductive rent capture. It is not surprising that we see a growing phenomenon of unproductive rent creation and rent-sharing strategies emerging between big business and their political allies. Politicians still need significant off-budget financing, but they are increasingly generated in deals that are unproductive in terms of adding to net social benefit. Examples of such deals in recent Indian media reports include price fixing deals for gas and other natural resources, land acquisition deals, deals allocating coal and other mining rights or allowing illegal mining to take place, or deals that allocate the telecommunications spectrum in non-transparent ways. These types of scams have raised political questions and concerned the Indian media in the 2010s. The result has been a growing restiveness in the broader population and demands for more redistribution to the poor. Anna Hazare's anti-corruption movement is a direct result of these trends. India's political establishment does not yet appear to have a developmental strategy that meets the twin requirements of economic development and political acceptability. The analysis of political settlements and economic capability development provides a methodology for conducting a broader discussion of these issues from a policy perspective.

The growth acceleration of the 1980s was the fortunate result of a number of Indian economic sectors being close to the frontier and benefiting from additional sector-specific political support to achieve competitiveness. India was fortunate in that the emergence of competitive clientelism and the abandonment of formal industrial policy happened at a time when there were at least some sectors that had the political power and the economic incentive to organize support for capability development. The specific forms in which the Indian political settlement developed allowed three decades of rapid growth. This analysis identifies a number of challenges and vulnerabilities. Formal and informal processes creating new capabilities in sectors and regions far from the competitiveness frontier are now much weaker. Moreover, even for high-capability economic organizations, productive rent-using opportunities to develop new sectors are running out. In a context where the demand for rent creation

and rent sharing within political organizations remains important, this increases the chances that businesses will use their political connections to generate unproductive rents for themselves and their political allies. The demand for greater formal redistribution to the poor is also increasing and may have constraining effects on the profitability of emerging productive sectors unless strategies of accelerating capability development emerge. A better understanding of how capabilities actually developed in India's successful growth sectors in the context of its evolving political settlement is important for identifying these challenges and discussing the policy options.

10. References

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