



# China's Shallow Integration: Networked Production and the New Challenges for Late Industrialization

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**Summary.** — Chinese enterprises have become extensively linked with the global economy, yet in a shallow manner. They remain stuck in commodity manufacturing, undifferentiated activities for which innovation is absent. Competition then revolves around cutthroat cost cutting. This outcome stems from three factors. First, it reflects the new challenges to development posed by globally networked production. Second, it reflects tensions between the political economic imperatives of successful post-socialist transition and the institutional imperatives for upgrading in networked economies. Third, it reflects uncertainty surrounding the adjustment of traditional industrial policy to the new demands of development through participation in global supply chains.

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## 1. INTRODUCTION

By the end of 2003, some 25 years into its extraordinary process of market transition, China had emerged as the world's third largest trading and fourth largest manufacturing economy. The country's trade surplus with the United States was projected to reach \$125 billion by year's end.<sup>1</sup> At the same time, though perceived as the engines of a rising economic powerhouse, Chinese firms across a number of sectors found themselves locked in intense, cutthroat competition—a bitter struggle among one another for razor-thin margins in highly commodified, highly standardized manufacturing activities. While certain voices within the developed world may lament globalization and the rise of new industrial competitors, those new competitors from the developing world—rather than celebrating—are barely hanging on, barely clinging to temporal, let alone sustainable competitive advantage. This paper aims to explain why this situation obtains, and what it suggests about the new challenges of economic development in an era of globalized, networked production.

China's emergence is occurring in the context of a transformation in the manner by which

production is organized, a shift that makes China's rise categorically different from that of predecessors such as Germany, Japan, and South Korea. That something is truly different is underscored by a phenomenon upon which this paper will focus. As indicated by a 2001 World Bank survey of 1,500 enterprises across five major Chinese cities, Chinese firms are integrating extensively with the global economy, but they remain concentrated in primarily low-end commodity manufacturing, activities for which they have few other options but to compete on the basis of intense discounting. As suggested by Daniel Rosen, 21% of China's \$325 billion exports in 2002 may have been classified by the Chinese government as “high-tech,” but even these ostensibly higher end exports were dominated by lower end parts for information

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technology products, or at best, mature products such as DVDs and laser printers.<sup>2</sup> Either way, these are essentially standardized, nondifferentiable goods—products that command negligible margins, and as such, force suppliers to compete primarily on the basis of extensive discounting. As Rosen points out, the high value-added elements of these products generally need to be imported by China. In higher technology sectors, Chinese firms are churning out goods roughly 80% of whose value is created elsewhere.<sup>3</sup> In global economic terms, China is integrating extensively, but, as the following paper argues, “shallowly.”

This paper makes three main arguments. First, the combination of extensive but shallow integration can be understood only as a byproduct of a new mode of industrial organization, globally-networked production. This manner of organization presents unique challenges to even the most successful developing countries such as China. Second, China's pattern of integration, especially with respect to some of the difficulties faced by firms in industrial upgrading, has stemmed from contradictions between the political economic imperatives for effective post-socialist transition and the institutional imperatives for upgrading within the context of globally networked production. The policy approaches that permitted China's successful climb out of socialist command planning are in some respects now impeding efforts by Chinese firms to build global competitiveness. Third, the shallow integration of Chinese firms also stems from the difficulties faced by policy makers in fitting an older model of development, namely the industrial policy focus of Japan and South Korea, into the newer and more ambiguous demands of networked production.

## 2. THE SHIFTING ARCHITECTURE OF GLOBAL PRODUCTION

Technological change, particularly digitization, has dramatically altered the architecture of production processes globally. By facilitating the management and transmission of vast amounts of information, digitization has allowed the codification of highly sophisticated manufacturing processes. Once codified, processes can be split into discrete steps—modules, in effect—and standards to ensure their connectivity can be established.<sup>4</sup> Modularization, in turn, has permitted activities that once had

to be co-located geographically and managed organizationally within the confines of a single firm to be spread out across great geographic and organizational expanses.<sup>5</sup>

The issue is not that any activity can be done anywhere, or that all manufacturing has been completely modularized, but rather that new options now exist for structuring activities.<sup>6</sup> For some manufacturing processes, individual steps have become completely modularized such that the rules of connectivity between upstream and downstream steps are fully codified and stable. At the other extreme are processes whose component steps cannot easily be codified and disaggregated. They may be separated geographically and organizationally, but their integration into a final product requires extensive coordination and communication among the producing parties. This sort of “integral” production architecture may be pursued as a matter of choice by a lead firm (i.e., a vertically-integrated organization), but also may be dictated by the state of technology.<sup>7</sup>

From an analytical perspective, the focus on modularity signifies a departure from traditional ways of conceptualizing manufacturing and distinctions across industrial sectors. Traditionally, industries have been categorized by the nature of the final material good produced: the product's physical attributes, its complexity, the amount of capital needed to produce it, and the organizational complexity of the firm needed to manage that production. Hence, what counted was whether we were talking about steel, autos, aerospace, or—at the ostensibly less-sophisticated end—textiles, toys, or apparel. That information can be digitized, and that (at least some) extremely complex activities can be made modular necessitates our thinking along new dimensions, namely along the lines of the different ways in which production processes and their constituent steps can be structured. We are forced to consider the nature of the information transmitted across particular steps in the production process, and encouraged to categorize activities according to whether and to what extent that information can be codified and standardized.<sup>8</sup>

In this sense, whether for aerospace or apparel, we can conceive of some activities within their respective industry supply chains that are standardized and commodified, and other activities that are highly proprietary, as yet utterly uncodifiable, and highly lucrative. We can also see that as different firms occupy different parts of the supply chain—whether in high-tech

industries or low, capital intensive or nonintensive—some of those firms will occupy high-value activities for which knowledge is embedded and sustainable competitive advantage is possible, while other firms will not, instead relegated to standardized activities for which competition is intense, churning significant, and returns decidedly low. Therefore, across a range of enterprises, we may witness extensive participation in supply chains, but some types of participation can be characterized as deep and integral, while others may be quite commodified and shallow.

A number of scholars have explored the nature of distinctions between these activities, their implications for competitiveness within the firm, and their implications for strategic control over the broader supply chain external to the firm.<sup>9</sup> To date, while we still lack fine-toothed metrics for precisely measuring depth of supply chain integration, we can draw important, albeit broad-brushed, distinctions. Simply thinking in terms of activities and the nature of the information surrounding them represents an advance. While we may not be able to make conclusive statements about the long-term competitiveness of Vietnamese or Mexican commodity producers versus the Chinese, we can say something new about the nature of the challenge faced by all of these developing world competitors *vis-à-vis* dominant developed world players in their respective supply chains. More broadly, we can say something about the new distinctions and gaps that have arisen between developing world and developed world firms. Whereas in previous decades, the entrance of Mexican or Chinese firms into the steel, automotive, or machine-building sectors would have itself been understood as signifying upgrading—simply by virtue of entrance into ostensibly higher-tech, knowledge-intensive, and more capital, intensive industry—our focus today on particular activities, and the ability to distinguish those that are modular from those that are integral in any supply chain, forces us to think more precisely about exactly which activities really do constitute upgrading and which do not, which activities accord sustainable competitive advantage and growth, and which do not. Even in the broadest sense distinguishing relatively shallow from relatively deep integration represents analytical progress, a step toward more fully adjusting our notions about economic development to the new technological and organizational conditions of 21st century production.

Certainly relative to leading firms in global supply chains—those commanding substantial power and revenue by virtue of their command over product definition, design, and branding—Chinese enterprises can be understood as “shallowly” integrated. Undoubtedly, Chinese firms have skillfully exploited the opportunities of modularization, aggressively upgrading their manufacturing skills so as to meet outsourcing demands by leading global players. In some cases, Chinese firms have autonomously pushed the replacement of traditional integral architectures of production with more modularized, open forms, thus forcing the commodification—and outsourcing to China—of certain activities, regardless of the preferences of overseas lead firms.

Yet, while modularization affords new opportunities, it also creates major vulnerabilities for later entrants such as Chinese. Fully modularized, open-production architectures virtually by definition entail the manufacturing of standardized, nondifferentiated products. Firms focusing on such activities have little choice but to compete on the basis of low-cost and high-volume. Moreover, they continually run the risk of being unseated by the next low cost entrant, especially since fully modularized products are easily substitutable from the consumer's perspective. That Chinese firms have mastered modularized production accounts for China's emergence as worldwide shop floor. It also accounts for the fact that Chinese firms across a variety of sectors today find themselves locked in mutually-destructive price competition.

Once new entrants commence modularized production, they rapidly face pressures to upgrade, not so much in terms of the complexity of their manufacturing activities, but rather in terms of the source of their competitiveness. Several options exist. The modularized producer can attempt to control the supply chain by actively setting rather than passively accepting rules of connectivity in the upstream and downstream directions. Alternatively, the producer might elect to shift away from modularization, and instead move back toward more integral processes, ones that must be coordinated and co-designed with upstream and downstream partners in the network. Finally, as is done by many leading global players, the firm may compete by providing key services—overall product definition, branding, and marketing—that shape the entire supply chain and command the bulk of final product's value.

As this paper argues, Chinese producers in a general sense have to date proven unable to exercise any of these options. It is in that sense that their integration into supply chains is extensive, but shallow. Within the overall process architecture of manufacturing, their activities tend to be those that are most easily duplicable and substitutable across firms—in essence, the activities least contingent upon firm-specific skills, knowledge, and know-how.

Embarking on the various paths to upgrading—the various paths to a deeper, more sustainable competitive position within global production chains—requires innovation, a daunting challenge for even the most sophisticated commodity manufacturers. Again, there exist both opportunities and major hurdles in this area. To the extent a modular manufacturer is engaged in multiple supply chains—i.e., by producing a stand alone component that can be plugged into a variety of downstream products—the manufacturer's fate ends up tied to no single final product. Thus, the manufacturer is free to innovate in ways that not only incrementally improve existing downstream products ("sustaining" innovation), but also in ways that unseat such products by facilitating new substitutes ("disruptive" innovation).<sup>10</sup> Similarly, open, modularized supply chains permit the rule makers—those determining the rules of connectivity—to shift the standards, and thus force the rule takers to scramble in compliance.<sup>11</sup> Such freedom undoubtedly contributes to the extremely rapid product cycles and dizzying pace of innovation characteristic of high-tech industry today.<sup>12</sup> Yet, it also creates major vulnerabilities for the rule takers, the commodity producers, and all the rest of the supply chain participants that must respond to innovative lead firms. Networked modular production may create opportunities for the few players that actually can innovate, but for the vast majority who cannot—whether for reasons of inadequate resources, knowledge, or supporting institutions—the terms of competition become brutal.

### 3. CONTEMPORARY CHINA: PRICE WARS AND CORPORATE STRUCTURE

Much of Chinese industry today consists of small-scale firms competing intensely on the basis of discounting. In theory, this could be understood as a prelude to industry-wide shakeouts that would eliminate smaller firms

and consolidate activities into a few larger producers, presumably the sort that might engage in industrial upgrading. Evidence of such progression, however, remains sparse. Instead, a pattern of corporate organization has persisted that sets Chinese firms apart from many of their global counterparts, and certainly from the lead firms in global supply chains.<sup>13</sup>

First, and not surprisingly given China's relatively recent marketization and ongoing status as a developing country, Chinese firms tend to operate at a smaller scale than global leaders in their respective industries. As Nolan has extensively argued, even China's largest firms, though they may employ upward of 100,000 people in a single location, frequently constitute a small core business and a vast array of even smaller scale ancillary subsidiaries, subsidiaries that bear no logical industrial connection to the core.<sup>14</sup> Whether in terms of annual sales, total fixed assets, market capitalization, research & development (R&D) budgets, and virtually every other important measure save for total number of employees, Chinese firms substantially lag global leaders.<sup>15</sup> As Southerland suggests, the average assets and sales of China's top 500 firms in 1998 amounted to only 0.88% and 1.74% respectively of the average assets and sales of the top 500 global companies.<sup>15</sup> The International Finance Corporation's recent study of Chinese private firms, based on a 1999 survey of 628 domestic enterprises, paints a similar picture of generally small-scale, financially-strapped organizations, firms that are growth-constrained relative to counterparts in other countries.<sup>16</sup>

Second, Chinese firms, though their output often ends up either in foreign hands or overseas markets, tend to be extremely localized in terms of their actual operations. In a 2001 World Bank survey, 41% of the manufacturing firms in the sample reported producing to specifications set by foreign firms, 21% reported directly producing parts for foreign firms, and 25% reported producing final products for such customers.<sup>17</sup> Despite foreign interaction, however, the firms' upstream supply network and downstream customer base tended to be confined geographically. The 2001 survey suggested that on average, over 50% of upstream suppliers were located in the respondents' own respective cities.<sup>18</sup> Approximately 75% of the supply network on average was located within China. Downstream, for the average Chinese firm, approximately half of the customer base was located within the firm's own municipality.

Approximately 15% of the customer base on average was reported to be overseas. Whether for upstream or downstream interactions, rather traditional means prevailed—communication was conducted primarily by phone and fax, while goods themselves moved primarily via surface transportation.<sup>19</sup>

The localized nature of Chinese commercial networks leads to a third point, the degree to which Chinese firms, though integrated into global supply chains, remain focused on non-differentiable production activities. Despite high-levels of foreign ownership, only 15% of the manufacturing firms surveyed by the World Bank in 2001 reported engaging in any design efforts for foreign customers, a sign that the respondents are essentially “rule takers” in open, modularized production processes. Only 7% reported providing customers R&D or other specialized services. The figures are noteworthy given that the sample specifically targeted higher-tech sectors, the very ones in which we should expect high degrees of innovation, networking, and development of firm-specific proprietary knowledge. Overall, the figures are consistent with Rosen’s observations at the macro-level regarding China’s continued dependence on high-tech imports to fuel its low value-added manufacturing activities.

The firms were failing not only to design for downstream customers, but also to develop deep relationships of any kind with such cus-

tomers—again, a sign of open, modularized production. Sixty-nine percent of the survey respondents reported using trading companies to handle interactions with the broader customer base, thus suggesting essentially arms-length rather than deeply enmeshed customer relations.

In terms of identifying factors inhibiting greater exports, respondents focused on the difficulties and costs of meeting foreign product standards, and particularly the intense cost competition they face (Table 1), a focus consistent with the pattern of cutthroat discounting found across numerous Chinese manufacturing sectors. Managers preferred to produce for export markets, and few claimed that targeting the domestic market offered better financial gains, but managers perceived that their firms lacked the capabilities needed to meet foreign standards in a cost-effective manner. At the same time, they perceived themselves to be in an intensely cost-competitive environment, with pressures bearing down from both domestic and foreign counterparts.

That leads to a fourth and final point regarding innovative capacity. Chinese enterprises today face great pressure to upgrade their technological capabilities, and managers—as they did in the 2001 survey—routinely report high levels of what they at least perceive to be innovative activity. The pressures are understandable. Modern production, whether for

Table 1. *Main inhibitors of export growth (data from 2001 World Bank Survey)*

	All firms	Beijing	Shanghai	Tianjin	Guangzhou	Chendu
Shipping and transport costs	9%	6%	8%	7%	15%	8%
Cost of meeting foreign legal and product standards	15%	13%	11%	13%	18%	16%
Inability to produce to clients’ standards, specifications, and schedule	15%	15%	12%	13%	19%	13%
Inability to match prices of domestic competitors who export	11%	13%	10%	14%	8%	9%
Inability to match prices of foreign competitors	12%	11%	17%	11%	4%	9%
Inability to meet demands by foreign clients for product upgrades and changes in specifications	6%	4%	7%	9%	7%	5%
Difficulty of recovering payments from abroad	3%	4%	2%	5%	4%	2%
Supplying the domestic market is relatively more profitable	7%	7%	8%	6%	4%	8%
Costs of establishing a foreign distribution network too high	17%	16%	18%	12%	13%	22%
Domestic content requirements	4%	11%	7%	9%	8%	8%

ostensibly low-end goods such as textiles or high-end goods such as semiconductors, virtually by definition entails the management of complex processes, complex machinery, high quality expectations on the part of customers, and rapid turn-around times.

That Chinese firms are so extensively involved in production for overseas markets represents a major achievement, indicating extremely impressive degrees of learning on their part. It would be incorrect, however, to assume that such learning actually constitutes—or necessarily leads to—“innovation.” It is not at all clear that these firms are developing intellectual assets, production skills, modes of serving customers, or actual products that can be understood as in any way proprietary—things that cannot be duplicated by hundreds or thousands of other firms in their immediate environment. In the 2001 survey, nearly half of all firms reported innovations in shop floor production processes, and another 46% reported innovations in managerial techniques, all measures that allow for the cutting of costs. What few if any of the firms reported were innovations that allowed the firm to charge a higher margin rather than a lower one—in other words, innovations that would encourage customers to pay a premium. Moreover, given the prevalence of product “wars” and cutthroat discounting among the proliferation of small producers in China, it appears that nobody has discovered the sort of proprietary cost-cutting solutions that afford competitive advantage over a reasonable period of time.

The response to this dilemma often entails another activity that survey respondents term “innovation,” the introduction of new products or entirely new lines of business.<sup>20</sup> Commodity producers end up chasing one surplus market after another, a pattern true even for China’s more advanced branded companies. Even the most established firms cope with increasing competition by aggressively discounting and expanding sales volume on existing products, entering new product areas in which they can compete again only on the basis of discounting and razor-thin margins, or finally, by trying to export their way out of trouble by pursuing overseas markets. In essence, firms focus on activities with low barriers to entry. Once the cost pressures become too intense, rather than moving upward into higher end activities or taking the time to develop proprietary skills, the firms diversify into other low entry barrier markets.

#### 4. REFORM STYLE, GOVERNMENTAL CAPACITY, AND INDUSTRIAL POLICY

The pattern described above stems in part from the interaction between three factors: governmental reform style, state capacity, and industrial policy. This interaction has at once permitted the integration of Chinese firms into the global economy, and substantially constrained the depth of that integration.

##### (a) *Reform style*

Since the dawn of reform, China’s approach to market transition has been characterized by informality, experimentation, and decentralization.<sup>21</sup> Central leaders have set the overall policy aim (economic growth) and the basic constraint (the maintenance, in the vaguest terms, of “socialism”). Local officials, then, have been granted broad leeway to engage in policy experiments, virtually all of which have involved elements of market economics. “Socialism” is maintained simply to the extent that the experiments remain informal. When experiments prove successful, the center encourages their implementation—again on informal terms—nationally. If success continues, the experiments stand to be adopted *post-hoc* as official government policy. Finally, in some cases, the center formalizes the outcomes with new institutional rules, many of which directly challenge the initial condition of “maintaining socialism.” Thus, that which began as an experimental alternative to socialism (and hence its explicitly informal status) gets legitimized as socialism itself, albeit socialism “with Chinese characteristics.”

The approach has proven brilliant in many respects. Without it, China’s transition to what much of the world terms capitalism could never have proceeded smoothly.<sup>22</sup> It also explains how private enterprise—anathema just 20 years ago in China—now constitutes the predominant ownership form in Chinese industry.

There are, however, negative ramifications. Entrepreneurial firms can thrive and engage in international commerce under such conditions, but their property rights tend to remain either undefined or, to the extent they tuck themselves under the auspices of a governmental bureau or state-owned firm, inaccurately defined. Without clear property or formal title to assets, these firms face limited financing options. Borrowing from a bank becomes virtually out of the question. Instead, they have little choice but

to self-finance, a situation that may ensure hard budgets, but one that also tends to limit enterprise growth.<sup>23</sup>

In a pattern consistent with that of virtually all firms in China save for larger SOEs, enterprises in the World Bank's 2001 sample reported relying primarily on retained earnings as their main source of financing (Table 2). Bank loans amounted to 19% of total financing on average, though the figures were somewhat lower in Tianjin (15%) and somewhat higher in Chengdu (24.8%). Equity financing, not surprisingly given governmental quota restrictions on stock market listings, was low across the board (averaging 0.6% across the sample). Personal loans from family and friends constituted an important source of financing, averaging 8.6% of total financing for firms in the sample.

Limited financing options lead to tight liquidity constraints. The enterprise response often involves operating on a cash basis, but that then leads to the forgoing of transactions that in more formalized systems allow for greater enterprise expansion.<sup>24</sup> Furthermore, rather than investing in existing business lines and developing specialized skills, cash-starved firms jump to alternative businesses simply to maintain cash flow. Such diversification addresses liquidity issues, but it does not encourage the development of firm-specific proprietary assets or skills. Instead, firms remain stuck in low entry barrier activities.

Informality, to the extent it dilutes the firm's legal status, also limits the firm's geographical reach. Without legal standing, the firm must engage predominantly in trust-based transactions. The surest way to ensure trust is to stay local, essentially by buying from known local suppliers (or better yet, backward integrating to ensure reliable supplies) and selling to reliable local customers (so as to ensure payment). When dealing with international markets, the main option becomes to sell to a local trading company.

For foreign companies dealing with such informal organizations, the optimal strategy often entails either buying from a more formalized state trading company or actually taking equity in the local producer itself. Indeed, foreign direct investment (FDI), to the extent that it places the recipient into the special regulatory category of "foreign owned," constitutes a formalization mechanism, one that benefits provider and recipient alike. In some cases,

Chinese firms sell their assets to foreign firms at a discount, but in so doing achieve a degree of formality that permits access to credit and insulation from arbitrary governmental policy.<sup>25</sup>

Like informality, governmental decentralization leaves a mark on entrepreneurial organizations. Many local governments in the reform period have eagerly promoted economic development, and as part of that goal, have frequently promoted local entrepreneurship.<sup>26</sup> They have been less eager, however, to facilitate development that benefits areas beyond the locality. Early in the reform era, this reluctance manifested itself in regional trade wars and overt barriers to interprovincial trade. More recently in the 1990s, given central crack downs on overt protectionism, localities have used more subtle methods: selective enforcement of product standards, more rigorous registration and licensing requirements for outsiders, and prejudicial application of health codes, just to name a few.<sup>27</sup>

Similar issues impact sectoral and geographic rationalization in industry. Whereas rational mergers and acquisitions are frequently blocked through administrative interventions, commercially *irrational* mergers are often imposed by local administrative fiat. Particularly in the state sector, financially-sound firms have been forced, often under duress, to assume ownership of insolvent organizations simply to stave off bankruptcies. That the acquiring firm is sometimes accorded preferential policy treatment as a sort of *quid pro quo* only further distorts budget constraints and incentives for productive growth.

More generally, when firms are forced to merge with failing local neighbors or to source only from local counterparts, they are indirectly prevented from interacting with the best, most advanced suppliers. Administratively-imposed restrictions on such linkages, particularly restrictions that confine the linkages to a given municipality, prevent Chinese firms from accessing not only the best global suppliers, but even the best national ones. Deprived of high-quality components and important learning opportunities, many Chinese firms are pushed only further down the road of low-end manufacturing and cost-based competition. Moreover, when localities try to keep the firm local, the firm's problems of small scale and limited financial resources simply deepen.<sup>28</sup>

Table 2. *Sources of enterprise financing (data from 2001 World Bank Survey)*

	Observations	All firms	Beijing	Shanghai	Tianjin	Guangzhou	Chengdu
<i>Channels of financing by percentage</i>							
Capital from retained earnings/internal funds	1,486	51.5% (39.84)	51.7% (40.09)	51.2% (40.68)	49.2% (42.92)	50.1% (39.60)	55.1% (35.57)
Capital from letter of credit	1,486	0.8% (5.50)	1.1% (9.2)	0.6% (3.91)	0.7% (5.21)	0.4% (2.55)	1.0% (4.12)
Capital from supplier credit	1,486	3.3% (11.21)	3.1% (10.71)	4.2% (13.20)	3.0% (11.04)	4.0% (12.62)	2.8% (7.70)
Capital from bank loans	1,486	18.9% (27.94)	17.0% (25.98)	19.3% (28.21)	14.9% (27.77)	18.7% (28.73)	24.8% (28.14)
Capital from other financial institutions	1,486	1.6% (8.34)	1.2% (7.40)	2.0% (10.62)	1.1% (6.98)	0.7% (4.75)	3.1% (10.33)
Capital from a parent or partner company	1,486	8.4% (24.63)	7.6% (24.16)	11.9% (28.96)	8.6% (25.73)	8.9% (25.74)	5.1% (16.61)
Capital from equity finance	1,486	0.6% (5.89)	0.1% (0.65)	1.1% (8.53)	1.0% (9.41)	0.1% (1.17)	0.6% (3.17)
Capital from personal, family and friends	1,486	8.6% (24.94)	7.8% (23.89)	3.2% (15.45)	17.2% (35.08)	8.6% (24.88)	6.2% (18.44)
Capital from other sources	1,486	6.3% (21.45)	10.3% (26.38)	6.6% (21.53)	4.4% (19.07)	8.5% (25.22)	1.9% (10.33)



(b) *State capacity*

By the later 1990s, the architects of Chinese reform began to tackle many of the problems discussed above, and efforts across a variety of areas to formalize China's market system have risen to the top of the policy agenda. The problem, however, is that these imperatives have collided with the reality of limited state capacity in China.

The issue manifests itself in at least two respects: the ability of the center to coordinate policy across the government's administrative hierarchy, and the ability of the government as a whole to regulate commercial activity in the civil sphere. The first problem has arguably receded in recent years. The second, however, has proven more vexing. As might occur in any developing economy, the Chinese system has experienced a dramatic increase in the complexity and density of interactions between economic actors, most of which are no longer under the direct administrative control of the state. Across the board—whether in terms of financial relationships, contracts, issues of corporate control, or intellectual property rights—demand within the civil sphere has increased for both objective rules and reliable enforcement.<sup>29</sup> This demand, however, has outpaced the ability of the state to provide governance-related public goods. Courts are overwhelmed with cases, judges are often inadequately trained, and enforcement mechanisms are generally weak at best.<sup>30</sup>

It is widely recognized in China today that rule of law is essential for sustained growth, but it is far less clear how rule of law can be achieved or even exactly what rule of law entails.<sup>31</sup> Meanwhile, the absence of effective legal institutions encourages rent-seeking behavior that further erodes trust in commercial transactions and society more broadly. In the financial area, for example, we have witnessed the emergence of what some Chinese describe as a “nonpayment” economy.<sup>32</sup> Commercial buyers make purchases, and then refuse to pay. Borrowers take out loans, and then default. Banks accept deposits, and then squander them in ill-advised lending. In each case, the victim is left with little recourse.

What results is neither utter lawlessness nor an absence of growth. Instead, there exists a subtle pattern of unclear rules, low levels of trust, and frequent efforts to skirt the boundaries of legal strictures, conditions that—as indicated earlier—all impact on the organizational

structure and global competitiveness of Chinese firms. At the very least, the environment impinges on both the capacity and inclination of firms to innovate.

(c) *Industrial policy*

Lurking behind the aforementioned capacity issues is the issue of ultimate governmental aims. China throughout the 1990s has pursued institutional reforms that encouraged market deepening and a leveling of the playing field for all economic actors. That said, contemporary Chinese industrial policy retains a rather schizophrenic quality.

On one side, the government pursues what it now terms a “comparative advantage” strategy of development, one premised on the belief that development proceeds through the natural convergence of factor prices across countries.<sup>33</sup> The country's relative factor endowments at any particular time are taken as given (in China's case, surplus labor and scarce capital), and development is understood to unfold as the country specializes in the production and export of goods intensive in the use of the abundant factor. As long as external trade and internal markets are opened up, conditions that become central goals of this aspect of industrial policy, a dynamic international division of labor should ensue.

Policy makers in Beijing, at least on this particular side of industrial policy, have followed the theory's prescriptions, albeit with some modifications. Reform, since its very inception, has been promoted as a process of “opening up,” specifically to foreign trade, knowledge, and technology. China throughout the 1980s, and particularly after 1992, dramatically reduced statutory import tariff rates.<sup>34</sup> Since 1997, the government has also substantially expanded policy initiatives that exempt certain domestic firms and institutions from paying the import duties that formally do exist.<sup>35</sup> Finally, in 2001, China formally became a member of the World Trade Organization, binding itself to an accession protocol more expansive, in terms of both market access and permissible trade practices, than that faced by any other developing country in history.<sup>36</sup>

Equally important, reformers have pursued arguably the most liberal FDI policy of any Asian developing country. Here, a bit of practicality has tempered slavish devotion to textbook abstractions. Heckscher-Olin-Samuelson theories assume perfect knowledge. That is, as

long as capital and labor are allowed to flow freely, prices should equalize across countries, and productivity should equalize across firms. The actual knowledge of *how* to produce is presumed to be trivial, presumably moving like a library book from borrower to borrower.<sup>37</sup> To the extent that as long as the prices are right, the firm is presumed capable of producing, noncompetitiveness can be attributed to bad policy: government distortion of prices, excessively high wages, and illiberal trade regimes.<sup>38</sup>

Policy makers in Beijing, however, instead of waiting passively for “natural” transfers of knowledge and technology, have chosen proactively to build a vector, foreign direct investment through industrial joint ventures. In exchange for transferring technology and know-how to Chinese counterparts, outsiders have been granted privileged access to the Chinese domestic market or preferential treatment on other grounds.

Over two decades, China’s FDI policies—not to mention its liberal policies toward emigration—have led to a monumental scaling up of managerial expertise in the country.<sup>39</sup> Whether in foreign firms or domestic, an essentially world-class population of managers has been created at the highest tiers of the economy. Increasingly, this population has begun to flow back and forth between employment in foreign and domestic companies, and between employment within China and outside.

Of course, the question is whether particularly in domestic firms these managers can operate in an institutional environment conducive to enterprise success. Skilled domestic managers now exist, but can physical assets really flow? Will commercially moribund firms—legacies of the prior era for the most part—be allowed to go under, and entrepreneurial firms be permitted to rise from their ashes?

Again, at least on this side of the industrial policy ledger, major strides forward have occurred. During 1994–2000, with the government’s policy of *zhua da fang xiao* (grasping the large, and releasing the small), almost 60,000 small to medium-sized SOEs have been “restructured,” a term that generally signifies outright liquidation, privatization, or transfer to employee ownership.<sup>40</sup> At the same time, the private sector has been permitted to burgeon, and now constitutes the largest single ownership form in Chinese industry. In the past, “enterprise reform” in China meant meas-

ures to improve performance in existing state owned firms. Today, “enterprise reform” has increasingly come to mean measures for *eliminating* poor performers.

Conceptually, then, this particular guise of Chinese industrial policy—the exposure of firms to foreign competition, the encouragement of FDI and knowledge transfer, and the ruthless downsizing poor performers—can be understood as a “creative destruction” centered vision of development. Industrialization becomes the progeny of market forces, and those forces themselves are understood as the mechanism for winnowing winners from losers. The continual composition and decomposition of constellations of assets—in other words, the rise and fall of firms—is treated as a good unto itself, one that outweighs the intrinsic value of any given firm. Innovation, the driver of development, is envisioned not as the product of a steady accumulation of tacit knowledge and internal experience within long-lived corporate organizations, the sort that must be protected by governmental policy. Rather, innovation grows out of the maelstrom of intense interfirm competition, the continual overtaking of conservative incumbents by radical newcomers, and the wild dynamism of organizational destruction and recreation.

What makes Chinese industrial policy so difficult to comprehend, though, is that for all its focus on market-based approaches and comparative advantage, it also happens to have an entirely different side, one that embodies assumptions of heavily statist Japanese and South Korean models of the past. Policy makers in Beijing may be employing all the mechanisms associated with comparative advantage strategies, but the ultimate aim of such policies remains the creation of “national champion” firms in self-reliant, vertically integrated “pillar” industries.<sup>41</sup> This, after all, is what the “grasping the large” side of the *zhua da fang xiao* (grasping the large, and releasing the small) enterprise restructuring policy is all about. It is about creating exactly the type of organizations associated with the Japanese and Korean models of yore: large, vertically-integrated business groups that encompass entire industries from upstream to down, operate at the cutting edge of technology, and dominate global markets from their home base in China. Yet, this is a story that involves more than just new techniques for achieving old industrial ambitions. Rather, it is a story about a government claiming as its ultimate policy aim pre-

cisely the type of firms that its most high profile restructuring (and trade) policies militate against. In essence, the government is seeking to create the very firms that comparative advantage, not to mention global technological change, select against.

Of course, as some policy makers in Beijing are inclined to admit, China's effort to build "national champion" conglomerates must differ from earlier Japanese and South Korean efforts in a few respects. First, the Chinese economy today is much larger and more diversified than were the Japanese and South Korean systems at the height of their respective experiments with *dirigiste* industrial policy.<sup>42</sup> Simply to exert the same degree of control associated with the Korean model, Chinese policy makers would be dealing with an exponentially larger task and exponentially more complex information flows than anything experienced in 1970s Korea.

Second, the Chinese government, in no small part because of the reformist legacies of decentralization and informality, operates in a less unified manner than that of Japan or Korea decades ago. Whether by design or default, policy makers in Beijing today implement most national policy through local agents.<sup>43</sup> This has certainly proven true in the effort to build "national" pillar industries, a task that has been essentially farmed out to individual provinces and municipalities. Consequently, while China's industrial planners proclaim the need for national steel, auto, or machine building firms, what results is the duplication of such entities in virtually every province and large municipality.

Third, Japanese and South Korean developmental efforts were premised on the idea that at least in their home markets, key industrial conglomerates would be granted sweeping protection. They would be held to international standards and encouraged to compete head to head with foreign firms in foreign markets, but on the home front, they would be showered (selectively) with subsidies and sheltered from outside competition. As signified by the terms of China's WTO accession, though, the world today is not that of the 1960s and 1970s, in no small part because the world's wealthiest countries—though hardly paragons of free trade—do not tolerate the sorts of protectionism they once did with regard to Asian developers. Nor, somewhat ironically, are they inclined to tolerate the sorts of export flows previously generated by Asian "national" firms.

Whether or not the Korean-style industrial policy was effective on its own terms and in its own era is a major question, but one not immediately relevant to this paper. What is relevant, however, is the basic reality that while China may seek to build the kinds of firms associated with such models, it has at its disposal few of the policy instruments and external conditions enjoyed by industrializers decades ago.

How can Chinese policy makers then square the circle between the highly divergent conceptions represented by each of these approaches? Decision makers may presume that to the extent they get industrial policy "right," the resulting "national champion" pillar industry organizations will be globally competitive and hence sustainable after WTO-mandated market liberalization takes place.

Yet, that really begs the question of how the divergent premises of "comparative advantage" and "national champion" can be reconciled. After all, one view stresses the primacy of churning and market selection—creative destruction—as the driver of innovation and growth. The other stresses virtually the opposite, the degree to which innovation occurs through the evolution and sustenance of established incumbents, corporate repositories of knowledge and experience. One view emphasizes the market's role as a selection mechanism, a ruthless judge of winners and losers. The other emphasizes the market's role as an incentive mechanism, a treatment that when applied to preexisting organizations encourages efficiency. One view says that firm-level incentives are inseparable from, and indeed can be understood only as emanating from, the system-wide process of "creative destruction." The other suggests that market incentives, by encouraging existing firms to maximize efficiency, obviate—or at least reduce the likelihood of—such destruction. Indeed, in this latter view, if selection begins spontaneously to operate—if losers start to appear, particularly on a grand scale—then something must have interfered with the proper operation of the market, be it politicization, insufficient liberalization, or "bad policy" in any of its other guises. One view, in essence, understands the firm as a byproduct of the market. The other takes the firm, particularly the modern industrial conglomerate, as the linchpin and driver of the market.<sup>44</sup>

Policy makers could try, as is done in China, to hedge by operating on both sets of premises

simultaneously. In so doing, however, they frequently adopt policies that function at cross purposes. For example, the quest for a "national team" has led to persistent governmental distortions of financial markets.<sup>45</sup> Such distortions, though, by withholding capital from China's most dynamic, market-oriented firms—its private enterprises—limit the ability of these firms to respond to competitive pressures being induced by "comparative advantage" market liberalization measures. In essence, the distortions aimed at building the national team undercut the global (and domestic) competitiveness of a huge swath of Chinese industry.

Along similar lines, policy makers encourage the development of vertically-integrated pillar industry firms, but then pass on the actual developmental task indiscriminately to localities. What results is neither the verticality nor overall scale that traditional Korean-style industrial policy calls for. "National champion" firms end up in reality as little more than local or regional players. At the same time, the focus on verticality encourages localities to think not in terms of cluster economies, innovative communities, or crosscutting supply chains—the sorts of environments from which effective "comparative advantage" competitors are likely to emerge today—but instead in terms of self-contained industrial units, units that may coexist, but not interact. Firms end up with locally focused captive supply chains, a worst of all worlds situation even if one agrees with the goal of building integrated national conglomerates. To the extent the supply chain is held captive, it should at least be permitted to extend broadly in geographic terms (so as, hopefully, to incorporate "best in class" suppliers nationally). Keeping it local almost guarantees that the firm will fail to access the best suppliers, and hence will fail to produce world class products. At the other extreme, to the extent one believes that firms should focus on modular activities and then link into upstream and downstream activities on a global basis (in line with the "comparative advantage" approach), administratively enforced captive supply chains should disappear altogether.

More generally, by merging essentially irreconcilable visions for industrial development, policy makers end up achieving the aims of neither. Localization and geographic duplication undermine the scale and supply chain quality conditions that might, under the theory's own assumptions, produce globally competitive conglomerates. At the same time, the institutional

distortions induced to achieve national champions (local as they may be) undercut the ability of nonstate firms to compete effectively on purely market terms. The firms shielded from creative destruction remain weak, while the distortions behind that shielding leave everybody else handicapped in the face of creative destruction. That many in the latter group have survived is testament more to their fortitude than to the brilliance of industrial policy *per se*. Unfortunately, such survival, achieved primarily through commodity production and cut-throat discounting, is hardly the basis for extended success in the future, whether at the enterprise or national level.

## 5. THE ISSUE OF CATCH-UP

The preceding discussion still leaves open the question of catch up, the question of whether China's lead firms, for all their problems today, may just be in the first stages of catching and ultimately surpassing their foreign rivals. In other words, might we be witnessing today the opening stages of a situation analogous to the Japanese auto industry's rise *vis-à-vis* US auto companies in the 1970s? Is it the same story of new competitors figuring out how to produce products inexpensively, introducing those products overseas first into lowest end market segments, gradually and quietly building market share, and then finally down the road becoming dominant in high-value products?

In answering these questions, it is worth considering the conditions under which Japanese and South Korean industrial firms rose decades ago. Industries then could still in a meaningful sense be understood as separate, self-contained entities, and often self-contained in national terms. We could refer to the US steel or the French auto industry, and we could contemplate whether rising industrializers such as Korea would develop strength in a particular industrial sector. Moreover, in these relatively autonomous industries, product innovation occurred in incremental terms, and manufacturing processes tended to be integral. The various steps in the process, while perhaps understood in broad terms in these stable industries, were uncoded (and given the state of information technology at the time, probably uncoded). As such, they could not organizationally be pulled apart from one another, instead tending to be particular to each

firm or each firm's captive supply chain. Challengers then, to the extent they could amass the resources needed to enter these capital-intensive industries, could compete on the basis of process innovation, the ability to produce the same products as incumbents but at significantly lower cost.<sup>46</sup> Because manufacturing processes remained uncoded and integral within the firm, shopfloor innovations were truly proprietary. They were, in effect, a form of art or craftsmanship that neither incumbents nor other entrants could easily copy.

Chinese firms today are operating in a transformed era. First—as suggested by the extensive literature on outsourcing, production networks, and external economies—and it is not whole industries that move today across geographical boundaries, but instead activities.<sup>47</sup> In recent work, Sturgeon has extensively documented this phenomenon in the electronics industry,<sup>48</sup> while other authors have begun to explore the phenomenon in services.<sup>49</sup> Authors may differ on the significance of outsourcing for employment in developed economies,<sup>50</sup> yet few dispute the fact that many industries are deverticalizing and that activities performed previously within single firms are now being spread across enterprise boundaries and geographical expanses.

What has moved to China *en masse*, whether at the bequest of leading global companies or through pressures from Chinese firms themselves, are the manufacturing-intensive segments of particular value chains. More precisely, it is the codified, commodified, nonintegral manufacturing activities that move. Competing in these areas, while hardly trivial, often does involve mastering open processes rather than developing proprietary ones. It is for that reason in part that we see so many new entrants from China in manufacturing rather than the handful of firms that entered from Japan and South Korea in previous decades.

Second, when Japanese and South Korean competitors emerged, they were rising up against relatively stable incumbents, incumbents whose focus was still on manufacturing. As such, the incumbents were essentially stationary targets whose products could be substituted by lower cost alternatives. Today, the situation is quite different. In large part because of modularization, the incumbents—global lead firms—are hardly stationary, and in many cases have completely transformed themselves. Chinese firms such as Legend, Haier, Huawei,

and Bird may be rising on the basis of their low cost manufacturing expertise. At the same time, most lead firms—whether IBM, Electrolux, Cisco, Motorola, Dell, or many others—are moving away from manufacturing entirely. Instead, they are increasingly focusing on what may be broadly termed the “service” side of production: overall product definition, design, marketing, and supply chain management.

That then leads to a third point about the way the terms “industry” and “national industry” are understood today. In previous decades, it made sense—with a certain degree of simplification—to conceive of industries as distinct silos. Particular countries, then, could be mapped over one or more of those silos. In the current era of modularization, however, it is not just that activities within discrete industries have been split apart, but rather that these independent, highly specialized activities now cut across multiple industries. What were once distinct industry supply chains now overlap, intersect, and interact in myriad forms. As such, it becomes increasingly difficult to say exactly which “industry” a given firm or country does—or should—specialize in. Is a semiconductor foundry in the electronics industry, or, since its chips go into cell phones, in the telecommunications sector? Is the “fabless” semiconductor design house that happens to be designing chips for automobiles, along with semiconductors for a host of other applications, in the auto industry or something else?

Because the specialization associated with modularization has led to a blurring of boundaries between industries and growing interaction across them, it now may make more sense to think of matrices and webs of specialized activities rather than discrete, stand-alone industrial sectors. Among other things, such organizational change leads to the phenomenon of modularized innovation and ripple effects of such innovation across formerly unrelated industries. The “fabless” chip design house, in its efforts to design a telecommunications application, may come up with a new capability applicable to aerospace. For the chip innovator, the ultimate downstream application may be irrelevant, so long as the design gets purchased in great quantity. Yet, the downstream application certainly is not irrelevant to those who are competing in the downstream activities, particularly when the new application may lead to downstream substitutes. A firm such as Microsoft may keep churning out operating software for PCs, but

so too does it focus on enabling the sorts of products—palmtop computers, digital writing tablets, web-capable mobile phones—that may undercut or otherwise replace PCs. One can begin to see how in the modularized world specialized innovations lead to unpredictable outcomes.

One can also begin to see the challenge for contemporary industrial policy. It is not just that the pace of change is faster now than in the heyday of Japanese or South Korean industrialization. More important, the organizational mechanism of change—particularly the extent to which it is spread across ostensibly unrelated firms and “industries”—is completely new. For a country to be strong in autos, aerospace, or telecommunications, what fundamentally does it need? Software companies? Semiconductor design houses? Handset manufacturers? Steel firms? Marketing firms?

That it is hard to say underscores the risks entailed in forcing the vertical integration of industries. From a product architecture perspective, it may be impossible to determine the exact boundaries of a given industry. Yet, Chinese industrial policy, by selecting “pillar” industries does precisely this in an artificial sense. It operates under the idea that a country can, from upstream to down, “build” a steel or auto or aerospace sector. Similarly, for various institutional reasons, individual Chinese companies may themselves elect to vertically integrate their activities. Whether through institutional default or conscious policy, they end up forcing the integration—whether under a single company roof or within a single national geography—of activities that are not in any technological sense “integral.” In effect, they push together within a given organizational boundary activities that could just as easily stand alone from one another. In so doing, as such activities are held captive within single “industry” supply chains, policy makers and corporate strategists limit the extent to which modular innovation and cross-fertilization can occur. It is not surprising, therefore, that China perceives itself, probably correctly, as lagging behind India, let alone developed countries, in industries such as software. Similarly, it is not surprising that China lags in high-end semiconductor design capabilities.

In China today, many of the state capacity issues and institutional deficits that previously impaired the competitiveness of domestic firms are being rapidly addressed. At the very least, they are recognized as problems and have risen

to the top tier of the government’s policy priorities. At the same time, however, industrial policies encouraging both sharp demarcations between sectors and vertical integration within sectors persist. That they do further isolates even the best Chinese enterprises from state-of-the-art technology, further reduces the likelihood that Chinese firms will set rules of connectivity globally, and ultimately ends up increasingly facilitating specialization among foreign lead firms. What results is not so much catch up, but instead a greater division of labor, one that arguably widens the gap between overseas lead firms and Chinese follow-on producers.

## 6. CONCLUSIONS

This paper has argued that the innovative capacity of Chinese firms and the ability of those firms to upgrade within global supply chains have been impeded by legacies of Chinese reform style, bottlenecks in the institutional reform process, and most recently—of greatest concern for the future—inconsistencies in governmental industrial policy. On all three fronts, many of the as-yet-unresolved issues extend beyond the administrative and into the political. Their resolution, at least in part, depends on the willingness of the state and Party apparatus to subject itself fully, at any jurisdictional level, to the rules and regulations of the system.

At the same time, the governmental apparatus must come to terms not just with the benefits of market economics, but also the limits. The goal of building nationally autonomous industries may be justifiable on societal or national security grounds. Yet, the goal is not consistent with the sorts of corporate organizations and production architectures that in today’s world realize achieve commercial sustainability. Efforts to employ market liberalization to achieve “national industries” will, therefore, likely lead to two equally undesirable, albeit related results: the industries themselves will fail (and the resources that went into building those firms will have been wasted) or markets will get administratively distorted to ensure the industries’ “success.” Unfortunately, both outcomes are likely to inhibit the further integration and upgrading of Chinese firms in global production networks.

More broadly, however, whether for China or any other country, the organizational revo-

lution surrounding networked production has fundamentally challenged many of the basic analytical approaches so often applied to late industrialization and economic development. As this paper has argued, China today may be extensively integrated into global supply chains, yet its integration is shallow. Without question, exact determination of its shallowness relative to other low- or middle-income countries awaits the development of better, more finely-grained measures—a major and pressing task for future research. At the same time, recognizing the phenomenon of shallow integration—and the technological and organiza-

tional changes from which it derives—is critical for understanding just why it is that development and industrial upgrading, even for the most successful countries such as China, has become an arguably harder, more complex, and more confusing challenge than ever before for emerging economies and later developers. Moreover, such recognition helps us understand why so many of the traditional solutions—whether of the aggressive state intervention or aggressive market liberalization type—are today proving so frustratingly ineffectual in alleviating the challenges faced by developing country firms.

## NOTES

1. Kyngé (2003).
2. Rosen (2003, p. 20).
3. Rosen (2003, p. 23).
4. My understanding of modularity, particularly in the electronics industry, has been influenced immeasurably by the ongoing research of Charles Sodini, Tayo Akinwande, and Douglas Fuller of the Massachusetts Institute of Technology. On modularization, see also Baldwin and Clark (2000), Aoki and Takizawa (2002).
5. Sturgeon (2002).
6. For a comprehensive taxonomy, see Fujimoto (1999, 2002).
7. The term “integral” comes from Fujimoto (2002).
8. Fujimoto (2002).
9. See Sturgeon (2002), Brusoni, Prencipe, and Pavitt (2001), Aoki (2001), Aoki and Takizawa (2002), Fujimoto (2002), Baldwin and Clark (2000).
10. The distinction between “sustaining” and “disruptive” innovation (and innovators) comes from Christensen (1997). See also Aoki and Takizawa (2002).
11. Aoki and Takizawa (2002).
12. This is what Fine refers to as “clockspeed.” See Fine (1998).
13. Similar attributes are described extensively in Nolan (2001).
14. Nolan (2001, p. 92). See also Nolan and Zhang (2002).
15. Southerland (2001, p. 79).
16. Gregory, Tenev, and Wagle (2000, pp. 31–34).
17. The World Bank’s survey involved 1,500 “higher tech” firms (500 firms in each of the following cities: Beijing, Shanghai, Chengdu, Guangzhou, and Tianjin). There were 995 manufacturing firms in the sample.
18. Of the five cities surveyed (Beijing, Shanghai, Guangzhou, Chengdu, and Tianjin), Guangzhou proved to be somewhat of an exception to this point, with respondents reporting higher levels of overseas suppliers and lower levels of intracity supply network concentration.
19. Downstream, 67% of goods were moved by surface transportation, and 84% of all communications were conducted either face to face, by phone, or by fax. Upstream, 77% of goods were delivered via surface transportation, and 87% of communications were either face to face, by phone, or by fax.
20. In the 2001 survey, 36% of the respondents reported the introduction of new products within existing lines, and 21% reported new products in entirely new lines of business.
21. Gregory *et al.* (2000).

22. For a useful definition of this transformation, see Kornai (2000). See also Steinfeld (2002).
23. On the ramifications of informality, see Gregory *et al.* (2000), Desoto (2000), Mackenzie (2001).
24. Or they engage in informal channels of financial intermediation, credits that tend to be high in price and small in scale. See Tsai (2002).
25. See Huang (2003). The implication is that China has an inordinately high demand for FDI.
26. See Oi (1999).
27. Institute of Industrial Economics (1998, p. 294). Cited also in Naughton (2000, pp. 20–21).
28. Some scholars have argued that Chinese private firms, rather than innovating, spend most of their energy cultivating clientalistic ties with political patrons. See Wank (1999). Others have argued that clientalism has receded in recent years, as institutionalization has increased. See Guthrie (1999).
29. See Peerenboom (2002a).
30. See Alford (2000), Lubman (1999).
31. See Peerenboom (2002b).
32. Zhou (1999, p. 6).
33. Chen (2002).
34. Lardy (2002, p. 37).
35. Lardy (2002, p. 36).
36. Lardy (2002, pp. 63–105).
37. The point is critiqued in Amsden (2001, pp. 2–8).
38. Amsden (2001, p. 3).
39. On emigration, (see Zweig, 1997).
40. Tenev and Zhang (2002, p. 30).
41. Nolan (2001, p. 16).
42. Perkins (2001).
43. The 1994 national tax reforms and 1999 national banking reforms all attempted to move away from this approach, but with only partial success.
44. For a history of this perspective, see Chandler (1990), Chandler and Hikino (1997).
45. As evidenced by the disproportionate representation of SOEs on Chinese equity and debt markets.
46. See Amsden (1989).
47. See Sturgeon (2002), Powell (1990).
48. Sturgeon (2002). See also Sturgeon and Lee (2001).
49. See Mann (2003), Kirkegaard (2004).
50. See Drezner (2004).

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