4

Running a Productive Plant

The biggest problem in China is 50 years of socialism; who cares about doing a good job after that? In Russia it's worse; here [in China] at least there are people who were already living the last time productivity mattered.

Chairman of an American corporation's China holding company, Beijing

There's a pattern: we try to do something our old way; we fail. We give the job to locals so that they can do it for us, "the Chinese way"; that fails. Finally, we roll up our sleeves and learn how to do it ourselves, our way, but a new way suitable to the situation in China. Either learn to do that or get out of China.

Chief counsel for an American firm's operations in China, based in Hong Kong

Introduction

After the goals are set out, the contracts negotiated, and the venture staffed, it is time to run the business: for most foreign-invested enterprises (FIEs), that means running a production process—a plant. The second half of the job is *ex-factory*—distribution, marketing, and so on—addressed in chapter 5. This chapter examines the experiences of expatriates managing production in China. In particular, it is concerned with the impediments they face to raising *productivity* (defined later). Although it focuses on the problems that continue to require consideration by policymakers and students of China's reforms, remarkable progress has been made during the reform period. China is moving toward an economy better able to allocate resources productively and toward the modernity that distinguishes FIE operations.

Foreign investors have much to offer to the Chinese economy, demonstrated by their placement of over $45 billion in foreign investment in 1997. Foreign investors are refurbishing, recapitalizing, and reorganizing existing ventures, as well as creating new enterprises from greenfield sites. They are contributing to China's ability to produce goods and services for domestic consumption and for export. They are building new markets and developing old ones, both directly and indirectly—by the force of competition they bring to bear on a still-sluggish business culture. They are diversifying both the production base and financial risk allocation.

The chapter begins with a brief discussion of productivity, both in general and in China in particular.[1] The problems examined later are then grouped according to the "factors" that determine productivity and thus ultimately profitability: labor (human resources), intermediate goods, and capital. Also considered are institutional factors, such as corruption, that transcend these categories and provide the background against which productivity is examined. While FIE productivity is generally superior to that of indigenous competitors and partners, achieving productivity growth remains a major trial. Some impediments to that growth can be attributed to Chinese policy, whose possible implications for China's trading partners are therefore sketched.

Productivity

What Is Productivity?

Business professionals use the term *productivity* broadly. They mean a measure of the firm's ability to create or add value to their product. It makes no difference whether that product is petroleum, telephones, or candy (or legal services, for that matter). Porter (1990, 6) provides a definition with which the typical expatriate would agree: "Productivity is the value of output produced by a unit of labor or capital. It depends on both the quality and features of products (which determine the prices they can command) and the efficiency with which they are produced."

Economists rely on a definition that is a bit sharper, but essentially the same. The productivity charted by the US Bureau of Economic Analysis refers specifically to *labor productivity*, the amount of output gained per unit of labor. Economists are also interested in *capital productivity*—the marginal output achieved per unit of capital devoted to an enterprise (i.e., the rate of return on capital)—and the *intermediate goods* that go into

1. Some observers are hostile to the very idea of reducing human endeavor to a quantitative calculus of productivity. But this is merely a tool to determine whether work habits can be sustained or whether adjustments might be needed to protect an enterprise from extinction.

the production process.[2] These factors may fail to fully explain an increase (or decrease) in output, leaving a residual element referred to as "total factor productivity" (TFP). TFP is explained either by an improvement in the use of the given mix of capital, goods, and labor (a dimension referred to as "x-efficiency") or by an evolutionary improvement in the level of technology.

A monopolistic market structure such as existed in China until recently (and that persists in some sectors) leads to "x-*in*efficiency" (see, e.g., Scherer and Ross 1990, 668–70). For example, excessive portions of capital resources earned as monopoly rents by protected firms might go to executive salaries, instead of to reinvestment or to shareholders, because there exists little competitive threat to motivate such thriftiness. Although the firm could achieve its level of performance with fewer capital inputs, it does not. With each such unnecessary application of resources, the firm lags further behind its possible achievements. Even if the firm behaves "ethically," under monopoly or oligopoly conditions managers misjudge what is necessary and what inessential. Thus firms misallocate resources and productivity suffers.[3] As the plant-related issues that expatriates deal with in China are explored, it will become clear that many of them are x-efficiency issues.

The second factor influencing productivity enhancement (and hence profitability, leisure, or whatever else the gains are directed toward) is technological progress. As technology changes, it enables an enterprise to be more productive at a given level of input than it was before. In the long term, technology is the more important determinant of productivity, because it continues to advance after the slack in x-efficiency is taken up. Unless underlying productivity (TFP) improves, the only means to increase output is to provide more input, whether of labor, capital, or intermediate goods.[4]

What is most productive can be a complex and sometimes controversial question, with different long-term and short-term answers. For example,

2. "Intermediates" could instead be termed "previously utilized capital and labor"; but it is more useful for us to treat them as a third type of input.

3. X-efficiency is endogenous to the firm: it does not hinge on the matter of price signals. Even if price signals are dead wrong, the firm can be said to maximize productivity under those circumstances.

4. Economist Paul Krugman caused a stir in 1994 by arguing that Asia's economic gains resulted mostly from increased investment into the economies, not underlying productivity growth (see, e.g., Krugman 1994). The distinction is important, as over time wages rise as productivity increases. This insight might defuse the charge that wages alone lure American jobs to Malaysia or Mexico, because lower productivity translates into a need for more workers, capital, or inputs to achieve the same output. Hsieh (1998), with considerable econometric effort, argued that TFP growth was at work, at least in the cases of wealthier Asian states such as Singapore.

Table 4.1 Total factor productivity growth in China's state and collective industries, 1980-92 (annual percentage increase)

	State	Collective	
		Initial	Revised[a]
1980-84	2.24	3.29	2.80
1984-88	3.68	8.73	4.52
1988-92	1.58	9.44	2.98
1980-92	2.50	7.15	3.43

a. The revision stems from the authors' concern that poor price and output data for the collective enterprises were swelling. The adjusted results apply the price index for the SOEs to the COEs, reducing the margin in performance dramatically.

Source: Jefferson, Rawski, and Zheng (1996, 155).

short-run productivity may not take into account the need for research and development, while these activities are inherent in the long term. Environmental impacts are also often omitted. Although environmentalists insist that pollution "externalities" must be internalized in order to accurately measure productivity, the proper long-term value of many environmental harms is uncertain (because of methodological problems with measurement and prediction, and also because the values attached to environmental assets differ and change with per capita income) because the criteria of the productivity balance sheet is debated (see Grossman and Krueger 1993).

Third, in a marketplace as quickly changing as China's is, adaptability may be as important a question as productivity. While productive enterprises might be expected to be better able to change with commercial conditions—in both cases quality management is a major factor—this is not necessarily the case.

The Chinese Context

Much energy has been spent debating China's productivity growth performance during the reform period, but no consensus has been reached. The best guess is that state- and collective-sector productivity have improved modestly over the past two decades, slowing somewhat in the early 1990s. Table 4.1 summarizes TFP estimates for the state and collective sectors prepared by several economists who have extensively researched productivity in China (Jefferson, Rawski, and Zheng 1996).

This table suggests several points. First, the famed Chinese lack of reliable data has a major impact on the productivity conclusions, as seen in the difference between the initial and revised calculations of collective-sector TFP growth. Not only do they yield different paces of growth but the *sign* of the change reverses as well: recent collective-sector performance either climbs or falls by nearly half, depending on the adjustments made. So while these data offer fascinating grist for the mills of forensic statisticians, they fail to give an unambiguous picture of the Chinese economy under reform. Jefferson, Rawski, and Zheng do, however, feel that the state-owned enterprises (SOEs) show robust performance, even if the numbers for collective enterprises are contentious.[5]

Second, regardless of revisions, the table shows a pattern of accelerating TFP improvement in the early 1980s and decelerating, or more likely reversing, TFP growth more recently. One might posit that the easy steps for increasing productivity have been made, and future progress will be slower.

Third, different sectors of the economy have performed quite differently over the reform period, with collective enterprises consistently outperforming state enterprises in productivity growth (albeit to a questionable extent—3.5 percent annually to 2.5 in the adjusted calculations).

Important questions about the validity of these results and the causes of the differences observed in productivity growth remain. For example, Sachs and Woo (1997) challenge the usefulness of the data underlying these calculations. In particular, input prices and output values are shaky. Bai, Li, and Wang (1997) ask whether productivity is the best indicator of gain for China's SOEs, in that the firms may be maximizing *production* rather than *profit*. That is, if a firm produces goods that nobody wants (because it is geared toward not profit but maintaining employment)—say, statues of Vladimir Lenin—then productivity could rise, with more inputs consumed and greater amounts of output produced, but all to the detriment of the economy. Both of these critiques involve the critical signaling mechanism of a market economy: prices. But a plant can operate "productively" given a set of prices, even if those prices are wrong—provided that sufficient subsidies insulate the microeconomic choices of the firm from the "wrongness" of the prices in the marketplace. This has widely been the case in China under state planning, and the price-distorting effects of subsidies to state-sector enterprises remain significant. Not only are direct monetary subsidies employed, but protection barriers to competition of all sorts provide an implicit subsidy to SOEs and collective enterprises, as well as to private firms. Even FIEs are in effect "subsidized" by tariffs that foreclose import competition to their operations in China.

The trend in the national data offers little insight into differences in productivity performance at individual firms, and hence little direction for those wishing to fine-tune policy. Jefferson, Rawski, and Zheng (1996,

5. Collective enterprises, which include township and village enterprises, are firms for which responsibility has been shifted to local authorities. Unable (in principle) to rely on national subsidies, they ostensibly work in a more competitive operating environment.

171) note "the importance of performance differences among enterprises bearing the *same* ownership labels" (i.e., within the state-owned category). They go on:

> If ownership categories conceal important heterogeneity, we need micro-level studies to identify specific institutional innovations that enable some firms to succeed in harnessing their productive potential while others fail. To appreciate these differences and possibilities, we need a new generation of research that investigates the distribution of performance outcomes and their determinants rather than debating trends and averages based on the standard statistical aggregates.

These authors are concerned with Chinese enterprises and especially with those parts of the economy most affected by government reform policies, hoping to aid in achieving greater productivity gains through a better understanding of the forces shaping China's economic productivity development.

The microlevel "institutional innovations" employed by wholly owned foreign enterprises (WOFEs) and by Sino-foreign joint ventures (JVs) are also important to understanding the forces at work in the Chinese economy. FIEs are providing much of the trend-shaping competition that affects state- and collective-sector performance. The necessity of meeting their challenge is proving to be the mother of invention, especially as the compartments that Chinese planners first employed to separate FIEs from the domestic marketplace erode. Part of the domestic productivity story (i.e., diminishing TFP growth) has resulted from the best of the SOEs leaving that category to form joint ventures with foreign firms. As they depart, the *average* fitness plummets among those left behind. Finally, productivity increases in the domestic economy are fueled by the spillover of business know-how and the transfer of hard technology from foreign enterprises.

Thus foreign investors have an impact on domestic productivity in a variety of ways beyond their own firms' output. While the natural complementarity of high-productivity FIEs helps to explain the rapid flow of FDI into China, it also helps to explain the Chinese government's apprehension about allowing FIEs unfettered entrance: they are perceived to have the potential to dominate the market.

The Foreign Experience

The productivity issues facing FIEs have become more numerous and complex over the reform period. Many early ventures were mere assembly sites, so-called "screwdriver operations" that pieced together parts made elsewhere, thereby adding little value to products. In 1983 and 1984, for example, contractual joint ventures (CJVs), which tended to be assembly operations, and "joint explorations," also involving practically no

Table 4.2 China's imports, first quarter 1998: SOEs vs. FIEs

Imports	Amount (billions of dollars)	Growth rate (percentage)
Total	29.57	2.6
SOEs	12.22	–2.0
FIEs	16.52	6.0

Notes: Growth rates are the changes from first quarter 1997. The average total growth in imports in 1997 was 2.5 percent

Source: China General Administration of Customs, as reproduced in *China News Digest*, 13 April 1998.

value added, together represented over 80 percent of foreign investments by number. By 1994 their share had fallen to 23 percent, with more ambitious equity joint ventures (EJVs) and WOFEs constituting the remaining 77 percent (recall tables 2.4 and 2.6).[6] In the early 1980s the "total knockdown" or "TKD kits" in the auto sector, such as American Motors devised for its Beijing Jeeps, epitomized foreign industrial facilities (Mann 1997). In more recent years FIEs have expanded into service, distribution, and operations outside the coastal enclaves.

This is not to say that foreign-run facilities are above using lower-cost Chinese labor to add modest value to more sophisticated intermediates crafted elsewhere. The continued dominance of FIEs in precipitating China's imports (see table 4.2) largely reflects their use of material to be processed (and presumably reexported, given that FIEs are still limited in their ability to distribute these imports domestically); indeed, the still relatively small foreign-invested community generates a surprising share of total Chinese exports (see table 4.3). But increasingly FIEs are using the materials they obtain to produce locally for the domestic Chinese market as well, relying on a web of local and foreign partners.

This chapter focuses on making goods; distribution and selling are discussed in chapter 5. But there are unavoidable overlaps: production efficiency is often a matter of reaching economies of scale, which may require that business scope include distribution and selling functions. So in talking about productivity, FIE managers often refer to sales and distribution functions. This would probably not have been the case 15 years ago, when the vast majority of FIEs were still focused on exporting and those with domestic sales were largely following the script that they were handed by Chinese partners or authorities.

6. CJV vs. EJV does not correspond exactly to low- vs. high-value-added operations, but it will suffice here. Pearson (1991, 84–85) notes that CJVs were characterized by lower levels of technology.

Table 4.3 Exports of FIEs, 1985-96

	Millions of dollars	Share of total exports
1985	297	1.1
1986	582	1.9
1987	1,208	3.1
1988	2,456	5.2
1989	4,913	9.4
1990	7,814	12.6
1991	12,047	16.8
1992	17,356	20.4
1993	25,237	27.5
1994	34,713	28.7
1995	46,876	31.5
1996	58,531	40.9
1997	59,720	32.6

Note: Exports are inclusive of those produced by equity joint ventures, contractual joint ventures, and wholly foreign-owned firms.

Sources: Australia Department of Foreign Affairs and Trade (1997a); US-China Business Council, http://www.uschina.org/bas/economy.html (30 April 1998).

The themes treated later fall into four categories of components that make up productivity.

- Labor factors:
  - human resource availability,
  - training,
  - deployment and management of staff, and
  - overstaffing.
- Goods factors:
  - intermediate goods inputs,
  - availability of local content,
  - trade policy,
  - technology application, and
  - scale and capacity.
- Capital factors:
  - financial efficiency within the organization and
  - cost control within the plant.

- Institutional factors:
  - existing culture and "resistance to change,"
  - corruption and graft,
  - conflicting organizational structures, and
  - scope of marketplace participation.

Labor Factors

Human Resources Availability

Labor is a key input to the production process. China is well known as a center of abundant *unskilled* labor, and many of China's strongest export sectors are highly labor-intensive (see table 4.4). The supply of available *skilled* labor is limited because of strong demand among foreign and domestic enterprises for local hires with specific expertise, language abilities, and management capabilities. Interviewees described the challenge of dealing with inadequate local human resources. The relative scarcity of these resources has pressured firms in many places to increase salaries and benefits. In addition to creating these added expenses, the tight labor market has meant high staff turnover, which strains organizational cohesion and culture. It can also incline some firms to hold back from optimally training their employees, fearing that these workers (taking the knowledge invested in them) might jump ship.

Consider the case of a Shanghai JV producing agricultural chemicals. The manager of this venture (#18) said that finding and stabilizing staff resources and costs are his *biggest* productivity challenges. In 1993 employee turnover was 17 percent: that is, nearly one in five employees was in the process of being trained at any given time, at a high cost to the operation. Turnover was lowered to 3 percent in 1996–97, improving productivity significantly. However, labor costs skyrocketed during this period. Of 121 permanent employees (the venture had about 50 contractors, too), over 70 percent had some postsecondary education by early 1997, and their higher qualifications contributed to annual wage bill increases well in excess of inflation. Nonsalary costs amounted to 65 percent of wages—but because most of these nonwage expenditures do not accrue directly to employees, they cannot be used as incentives. This US firm, which is giving top-level workers (nonmanagerial staff) 250,000 RMB interest-free housing loans in order to keep them at the factory, is still having trouble staving off poachers. The manager of the venture summed up by saying that FIEs like his had to either boost productivity rapidly or be prepared to move out of Shanghai to some location with lower wage costs, such as in China's interior (where practically no expatriate would be willing to now live). Meanwhile, he condemned newcomers to the Shanghai market, such as General Motors, for indiscriminately hiring em-

Table 4.4 China's trade: comparative advantage

	DRP[a] ratio 1995	Ranking	Change in DRP ranking, 1987-95	NEPR[b]	Ranking	Change in NEPR ranking, 1987-95
Coal	1.76	1	0	1.784	2	+1
Processed food	1.47	2	+4	0.933	3	+5
Animal husbandry	1.42	3	–1	0.727	5	–3
Textiles and clothing	1.40	4	–1	3.945	1	0
Building materials	1.36	5	0	0.921	4	+5
Wood	1.29	6	+5	–2.926	14	–3
Crops	1.16	7	–3	–0.357	10	–4
Paper	1.05	8	–1	0.652	6	–1
Machinery	0.94	9	+4	–1.843	13	0
Miscellaneous manufactures	0.83	10	–1	–0.246	9	+1
Chemicals	0.67	11	+3	–1.568	12	0
Refined petroleum	0.54	12	–2	–0.187	8	–1
Crude petroleum	0.46	13	–5	0.242	7	–3
Metallurgy	0.40	14	–2	–0.551	11	+3

a. DRP = domestic resource productivity. A DRP of greater than 1.0 means that China earns more than one dollar of foreign exchange for each dollar's worth of domestic resources used in producing exports in that sector.

b. NEPR = net export performance ratio. A positive NEPR means that China is a net exporter of the particular commodity; a negative NEPR means it is a net importer.

Sources: Zhang (1996); Australia Department of Foreign Affairs and Trade (1997a, 151).

ployees from existing FIEs at extravagant salaries in order to get their new operations up and running quickly.

The director of a large logistics company operating in China (#21), a service-sector enterprise, likewise identified human resources and training as the biggest impediments to increasing productivity. (The next two on his list were organizing a profitable financial structure and improving interaction with the licensing bureaucracy). On both the manufacturing and services sides of the FIE situation in China, therefore, availability of human resources can be the determining factor in raising productivity.

Training

Training can enhance the use of labor inputs going into a production process. That is, it can improve x-efficiency and thus get a plant closer to its optimal productivity. For example, increased labor productivity may mean more output per worker, fewer defects, and thus lower average costs. This is one reason why those US workers who are highly productive are not at risk from lower-productivity workers in developing countries. Training is also an essential prerequisite for introducing new technologies that enhance productivity. A worker with a powerful, appropriate machine stands to be far more productive than a pool of low-skill workers without such technology, but using technology may require a higher level of education and specialized training. Even if new technology is easy to use, someone must be trained to maintain and repair it. For both of these reasons, training has become a major part of the FIEs' hunt for higher productivity.

The process of training is not always smooth, because of a combination of haste, cultural miscommunication, and the magnitude of the task. A Beijing country operations manager put it this way: "Foreigners assume they know everything, and that it is obvious; usually when there is a problem [in running the plant] it is because we haven't trained [the workers] properly. They don't understand many processes; they need to be taught" (#22). A Shanghai-based manager amplified the point, emphasizing that there are limits to how quickly staff can be trained. Foreign ventures so anxious to get into the market that they fail to think through establishment issues are likewise inclined to push through training too quickly (#33). A Guangzhou manager concurred: "This is a very high-specification operation compared to what Chinese are accustomed to, and so it takes a lot of training to get people up to the job" (#38).

Who is hardest to move up the curve toward greater x-efficiency? A large number of interviewees made the same remark: grab the young, let go of the old. Age bias was clear everywhere in China when questions arose of what makes for an efficient plant and what staff will be easiest to train. "No experience is better than bad experience," says Frank Chang, manager of Wuhan Grand Motors, a joint venture producing minivans under difficult circumstances (*Business China*, 31 March 1997, 4). His staffing rules: new hires with a high school diploma should be no older than 20, those with a college degree no older than 25. Chang trained 220 inexperienced, handpicked staff from scratch with the help of only one other expatriate. Managers in Shanghai, where FIEs are very close to the market, felt the same as their inland compatriots. They saw two Chinas: one was poisoned by traumatic experiences in the Cultural Revolution and the preceding famines, stymied by socialist work habits and ingrained conservatism; the other was under 30 years of age, dynamic, open-minded, ambitious, and even easier to train than union employees back in Bordeaux or Ohio.[7]

Deployment and Management of Staff

Interviewees identified impediments to deploying staff geographically and other management control issues as productivity problems. Restrictions on the ability of the firm to reorganize its labor hamper productivity at the plant, an x-efficiency issue. To the extent that dilution of management control makes FIEs reluctant to share appropriate, productivity-enhancing technologies, the technological determinant of TFP growth is affected as well.

As noted in chapter 3, there are implicit and explicit restraints on the firm's ability to move employees around. The existing social insurance system disinclines municipalities from granting the residential permits needed in order to transfer staff, because they are fearful of having to assume ballooning welfare obligations (however, temporary *hukou* holding companies are emerging to help). Some expatriates report needing permission from local overseeing authorities before moving staff among jurisdictions; others claim that they can operate freely in moving senior people. Even when policy does not stop an FIE from moving staff, individual Chinese employees may still be wary of relocation for fear of losing local benefits, especially subsidized housing received by a spouse that might be sacrificed for the sake of a short-term assignment in another city. In early 1998 authorities announced plans to dismantle the system of state-subsidized housing; removal of such entitlements will encourage mobility over time.[8]

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7. A number of interviewees bemoaned the lack of "initiative taking" by local employees both in management and on the factory floor. They tend to avoid taking full responsibility for decisions, a form of risk aversion also manifest in legal affairs. Exploring this complex sociological tendency lies beyond the scope of the present study; however, respondents believed that younger personnel were as capable of taking initiative as anyone else in the world. So perhaps the long-standing stereotype of responsibility-shy Chinese will disappear as institutional factors change.

8. See "Zhao Chen on Housing Reform," Xinhua News Agency, 29 April 1998.

Other managers saw restructuring management as most important for increasing labor productivity. It was noted that many FIEs have horizontal management structures, while Chinese are more accustomed to those that are vertical and hierarchical (#33). Another institutional impediment may arise when a foreign manager must share decision-making power. Shared management may diminish the FIE manager's most potent tool: providing incentives to JV staff. Until recently, compensation based on performance was infrequent in China, and in many JVs today resentment about pay differentials still remains. Therefore, increasing productivity by better organizing and motivating human resources is hindered by pressures to make foreign investors share management control, by cultural differences, and by the legacy of communist-era industrial organization.

One final factor has been clumsiness and insensitivity on the part of foreign managers. Interviewees admitted FIE missteps in building local organizations and trust. It is clear that some expatriates are unable to understand the psychology and motivations of local staff (and what has shaped them). This is not surprising—given language barriers, a sometimes insular and alien Chinese culture, and wide gaps in material wealth—but it can have disastrous consequences. One interviewee explained what went wrong with a major negotiation over a joint venture arrangement that would have positioned an American firm enviably in the petrochemicals market near Shanghai: "Well, one problem was that the head of our negotiating team hated Chinese people" (#12).

Overstaffing

Overstaffing has attracted much attention in the business literature and mainstream press. There is considerable evidence that FIEs are pressured to take on more staff than needed, and it is a sign of the consuming preoccupation of Chinese leaders with the nexus of unemployment and social instability. As noted in chapter 3, coercion can occur when investors seek approval for establishment, at which time the labor contract must be reviewed by appropriate labor authorities. However, use of incentives—such as debt forgiveness—as an alternative to arm-twisting becomes more common with time. Foreign investors might accept overstaffing for a number of reasons, most of which ("the workers are cheap anyway," or "we will need them in the future as we grow," or "this will build our local credentials") reflect an implicit bet on rapid productivity gains.

As noted in chapter 3, however, FIEs are becoming more realistic about staff size and finding new ways to avoid these obligations. They seem to be succeeding to a degree: managers interviewed for this study rarely identified overstaffing as a first-order concern. Nonetheless, the issue is clearly genuine, the more so the more that a sector is dominated by the state; and it will probably get worse during the accelerated reform of the SOE sector trumpeted at the 15th People's Congress.

Goods Factors

The second input that affects the FIE's productivity in China is goods. First, there are intermediate goods that FIEs use to produce their finished products, whose supply can be difficult to manage. Expatriates must make arrangements with local suppliers (sometimes having to identify sources of local content to meet establishment contract obligations), transport intermediates from afar on a timely basis across a highly uncertain distribution system, obtain these goods undamaged and undiminished by pilferage, and take into account the trade policy variables that can interrupt supply.

Second, choices concerning the plant and equipment to be installed can affect productivity. What is the appropriate technology?—that is, what is readily usable and maintainable in China's industrial environment, given parts shortages, power outages, poor-quality supplies of industrial water, and the like? For example, facilities using coal-fired boilers have had to anticipate residual blasting materials in the coal supply exploding in their firing chambers; it is thus reasonable to use a somewhat sturdier boiler than might be employed elsewhere. There are also pressing questions about protecting the chosen technology, given China's widespread problems related to the piracy of intellectual property.

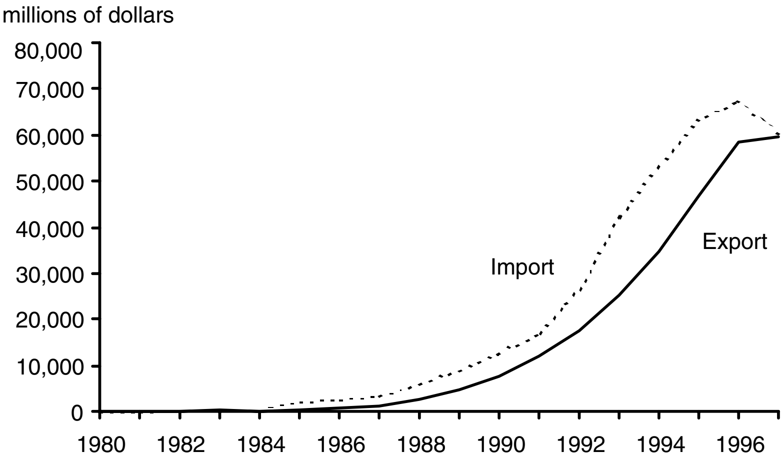
Third, the FIE's decisions about the scale and capacity of its operation affect the productivity of the venture. Because they are related to the plant and equipment, scale and capacity are also treated in this section.

Intermediate Goods Inputs

Numerous interviewees addressed the importance of creating "value chains" for their Chinese operations, a key to forming secure relationships with local suppliers. A technology firm thus has cajoled its US providers of architectural services and office furniture to open up branches in Beijing, because local substitutes lacked sufficient quality and import duties made using overseas suppliers prohibitively expensive (#31).[9] The firm believes that creating these networks in China is crucial if it is to focus on its core competencies. Another firm included in this study (near Guangzhou) opened a factory with almost the sole purpose of providing in-country product to McDonald's (#38). As a worldwide supplier to McDonald's, this firm had to set up production in China to spare their customer the challenge of—in this case—locating sufficient quantities of honey-mustard sauce. Forming relationships up and down the value

9. In fact, even their Feng Shui consultant had to be brought from the United States, since none in China was sensitive enough to their high-tech needs. (Feng Shui, the ancient Chinese belief system used to properly orient artificial structures—such as factories—to energy sources in nature is making a comeback in modern China. Regardless of their own beliefs, expatriates often follow these practices to demonstrate a sensitivity to local tastes.)

Figure 4.1 FIEs in China's trade, 1980-96



Source: Australia Department of Foreign Affairs and Trade (1997a).

chain lowers costs, outsources comparative disadvantages, and improves supply dependability. It thus frees management to focus on improving productivity in other ways.

As noted in chapter 2, most FIEs are increasing local content because it makes good business sense. Foreign enterprises are still net importers to China, although the gap is closing (see figure 4.1). By finding local sources of supply, they cut delivery times and reduce uncertainty. They may or may not cut cost; but figuring in China's poor distribution system and high transport costs, one would expect local producers of many kinds of moderately sophisticated goods to be able to compete. Subsidies make some local materials less expensive; yet many subsidized domestic intermediates are of such poor quality that despite their low price and the high cost of imports, FIEs still prefer to import key items. This circumstance will change over time as more local producers develop inexpensive, quality merchandise to compete with the by-and-large premium FIE-produced imports. The alacrity with which some local Chinese firms accomplished this feat is the biggest surprise to FIEs in 1998 according to some sources (#60).

As shown in chapter 2, expatriate managers spend less time trying to increase local content for the sake of complying with formal requirements than for other reasons. Content requirements are enforced with less passion than they are negotiated. There are large economies of scale to be exploited in the Chinese market, which should help to generate reliable suppliers of many inputs (in many countries with small local markets lacking a sufficient scale, only enforcement of performance requirements would guarantee local production).

The unpredictability of the overburdened and inefficient distribution system gives these efforts to secure trusted suppliers particular urgency.[10] Seasonal variables (harvests, holiday times) invariably disrupt transport; corruption both petty and grand delays and diverts shipments (the army, with its own set of commercial imperatives, still controls the rail system); and the capricious state of trade finance and of insurance infrastructure impedes the flow of intermediates into and through the Chinese economy. Depending on how sensitive the FIE plant's productivity is to volatility in the supply of intermediates, these distribution-related problems can range from annoying to bankrupting.

Trade policy variables affect the availability of intermediate inputs as well. The biggest concern in this regard is the customs regime. Duty rates for many inputs can change unexpectedly, sometimes because of sudden reclassification. FIEs have had to hire full-time staff to do nothing but sit at customs departments—making friends, looking for traps for the unwary, and getting goods cleared for import. More generally, FIEs have been concerned with preserving the capital goods import duty abatement—long an investment incentive standby—that permitted them to bring in plant and equipment at reduced or zero-duty rates in order to spur manufacturing and job creation. This policy has wavered since 1995, though it now appears to be secure for "high-technology" capital goods (a term subject to interpretation). Finally, internal trade barriers between provinces or even towns have been a problem throughout China since reform began, and in many instances they persist (Wedeman 1995). These too can make a mess of FIE productivity by interrupting intermediate supplies.

Technology Application

As noted, technological choices can affect productivity in profound ways, influencing both the static x-efficiency of plant operations and longer-term outward growth in the venture's potential to generate a higher level of output per unit of input. Some of the technology injected into a venture is what expatriates refer to as "soft technology": management know-how and human resources innovation. Much is the hard technology that goes into the production process, especially the plant and equipment used. Foreign firms seeking to achieve greater productivity in Chinese operations boil this technology input question down to two sets of issues. First, local staff may have trouble with new equipment and methods; second, new technologies may not mesh with existing Chinese standards (Guo and Akroyd 1996, 40). These technology input questions take place against a background of concerns about China's protection of intellectual property rights.

10. Sheard (1997, 524) notes: "Conceptually . . . it is more useful to think of distribution as being another kind of input that the seller uses in producing its output."

So that local staff will use materials more efficiently or to introduce a higher level of technology altogether, managers rework the industrial process at the venture. Expatriate managers have had to draw on not just management science but also cultural insights. An engineer running a manufacturing plant in Shenzhen put it this way:

> This is a dynamic, young, not yet institutionalized organization. It has not absorbed corporate culture yet; [that is why the firm] assigned an expatriate [me] to bring the culture, discipline, and standards that [the firm] runs on. This staff has *unconscious incompetence*—they do not yet know what questions to ask; getting them to *conscious incompetence,* that is the first step. (#19)

The "conscious incompetence" that this manager is trying to instill is a matter of soft technology. His approach has been "managing by metrics": that is, getting workers at every level of the production process to identify a quantitative indicator of their performance, so they can gauge movement beyond that benchmark on a regular basis.[11] His parent company has allowed him the luxury of not worrying about profitability for the time being, so he can instruct his staff "not to worry about market share, just learn to control what you can control: costs in the plant." In the past workers would spread a two-hour task out over the day if demand were slack; now they are instructed to work as efficiently as they can, utilize the machines to the maximum, and to be pleased to finish early. To maximize productivity from the technology on hand, they have had to change their psychology.

Interviewees' remarks about transferring tangible technology mirrored those about the intangible know-how: the two go together. The manager of a Guangdong joint venture making food products described getting the factory staff to increase throughput on the line:

> There is an American narrow-mindedness about how to transfer technology effectively. Our [expatriate engineers] say, "Why can't these people do it this way, what is wrong with them?" But they are always looking for "the commie behind the bushes." You have to take a hands-on approach, and mentor them, because of the gap between our way and their traditional way; [you cannot just do] demonstrations instead. I refuse to give expatriates any line responsibilities; I saw that they did not know how to manage Chinese workers. . . . Finally we were able to do a sister program with [a US] plant, but when they come here now they are really only observers. (#38)

Foreign firms will find it difficult to increase productivity if they do not select technologies appropriate for the Chinese marketplace. That is, their

11. Similar efforts to introduce "management information systems" were reported by a Western banker (#8) recently tasked with taking over the management of a Chinese family's textile firm based in Hong Kong. Traditional hostility to such metrics was strong among the existing upper management, who talked of preferring to manage "by touch," but rapidly eroding profits had prompted the owners to experiment with this novel approach.

facilities must take into account the level of economic development prevailing in China, the special challenges of operating in a developing market (e.g., electricity interruptions), and maintenance needs (e.g., spare parts). Chinese negotiators routinely encourage foreign investors to introduce technologies to China that are beyond the ability of local partners to absorb. Numerous interviewees reported friction over the level of technological sophistication to be used in their China operations. They recognized that technology transfer would be the trade-off for some amount of market access, but they worried that overshooting the local ability to support a technology would lead to unproductive enterprises. And, of course, high-technology installations give rise to concerns about protection of intellectual property rights (IPR).

Judicious technology application is a key means of raising economic productivity. The case studies for this study, however, made clear that firms hold back on transferring technology because they lack confidence in Chinese IPR protection regimes. The irony may be that China is large enough and dynamic enough to attract a higher level of technology transfer than the typical emerging economy. As inflows of FDI to China decelerate in the late 1990s, Chinese authorities will have to make the climate for technology transfers more inviting if they hope to keep open this critical avenue of TFP enhancement.

Scale and Capacity

"Scale economies," a powerful source of productivity in many manufacturing industries, exist when "relatively large producers [can] manufacture and market their products at lower average cost per unit than relatively small producers" (Scherer and Ross 1990, 97). For example, the amount of setup time needed for a process is the same no matter how many units are being produced. Therefore, as the number of units produced increases, the per-unit costs sunk into setup correspondingly decrease, and thus average costs come down. Economies of scale can occur for other reasons as well.

Interviewees identified several impediments to these benefits of scale (and thereby improved productivity) in China. First, larger scale means larger fixed start-up costs. As discussed in chapter 2, many foreign investors insist on entering the Chinese market in a phased manner, in order to avoid the sort of obsolescing bargain situation in which they find they have no leverage to stave off new demands from local authorities. The logic of phasing may conflict with the logic of scale economies. FIEs often operate shy of proper scale, even taking a loss for protracted periods, in order to test the Chinese market before committing themselves fully.

In many cases foreign investments under $30 million in value are permitted without approval from the central government, an extremely important consideration for firms wishing to set up quickly or to locate in an

Table 4.5 DCAC: one year's forecast vs. actual demand, 1996 (units)

	Forecast	Actual
January	300	300
February	1,672	1,372
March	1,372	800
April	1,056	528
May	1,184	0
June	1,520	648
July	784	600
August	480	480
September	552	600
October	2,162	480
November	1,728	288
December	2,304	624

Note: Units of a major automotive component to be supplied to DCAC by a major foreign subcontractor. Original forecast is 18,000 per year. DCAC 96 forecast is 14,500 per year.

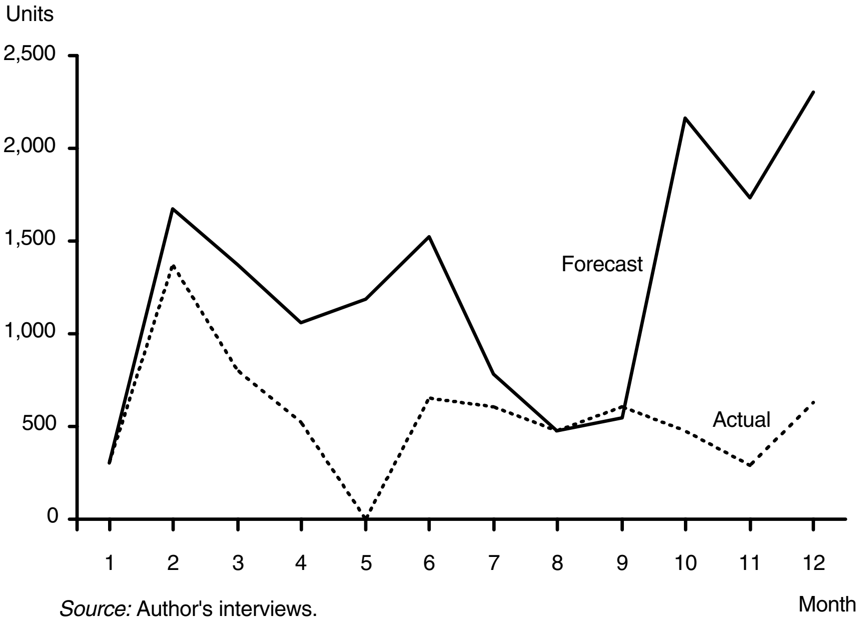
Source: Author's interviews.

area not clearly favored by the central Guidelines but in which local officials will welcome the FIE (i.e., provide generous incentives). Some FIEs may acquiesce in subscale operations in order to remain under this approval ceiling. Some firms have set up one phase of operations valued under $30 million with the plan to add another phase separately and thus avoid national-level scrutiny. They have been disappointed to find that local officials promised too much if they endorsed this approach: the central government is taking a hard line on such tactics. Many firms must then choose between subscale operations and a disapproving central bureaucracy.

Reaching effective scale requires that a firm not only tool up to produce at an efficient level but also gain access to buyers: the goods must be moved out of inventory. As a Shenzhen manager pointed out, "You can't produce if there's no demand; drastic fluctuations in the market can be a determining factor on productivity" (#19). Of course factory managers cannot manage the demand for their goods in China. But they can actively anticipate the problem.

Enterprises must first of all estimate accurately the demand for their goods before setting up shop, and then take steps to ensure that they can produce at the scale that makes them competitive. Foreign investors have made errors of judgment in this regard. In their haste to establish, they have insufficiently studied demand patterns or else made overly rosy assumptions. For example, a foreign firm subcontracted with the Dongfang China Automotive Corporation (DCAC) to supply a major car component: table 4.5 and figure 4.2 show the gap between units forecast for 1996 and the actual number ordered (#26). Having built capacity to fabricate

Figure 4.2 DCAC: One year's forecast vs. actual demand, 1996



Source: Author's interviews.

2,000 or more units by the end of that year, the JV found itself at a production level averaging one-quarter of that projected, with devastating results for its productivity (and profitability). In fairness, accurate information (as discussed in chapter 2) in the Chinese market, like all emerging markets, is harder to come by than in mature markets. Yet even some FIEs cognizant of these problems have mistaken the demand picture.

In another case, a Shanghai telecommunications JV was held back from full-scale production by its Chinese parent, because older partners in another city were loath to see their operations become less dominant (#33). Similarly, Shanghai's prodigious efforts to protect local car manufacturers through nontariff barriers have made it difficult for other producers to enjoy potential economies of scale (#46). And as a senior managing director of a telecommunications venture noted (#20), it is hard to get up to scale when units of the investor's foreign parent company compete with the local operations by also selling in China, diminishing the total available market.

Others interviewed made points contrary to these. The president of a large technology FIE in China (#36) stressed that his firm accepted an initial low quota to produce for the local market, because he "had confidence in our partner's wisdom" and believed that they would allow the venture to get to scale over time. A combination of robust domestic demand and an activist local partner (a government entity) did lead to an expanded quota for this firm. The plant manager who said, "Productivity first, profits later," is not unusual. Many firms claim to accept overcapacity now and hope to get scale right later. Jost-HY, a trucking supply joint venture set up outside Wuhan, is reported to be taking the same position: improve quality at 25 percent capacity now, and aim at maximizing use of the plant by 2003 (*Business China*, 31 March 1997, 2). The Guangdong telecommunications joint venture included in this study is willing to "bleed for a while" in order to reserve a space in a rich market, should the economy boom in the future (#20).

FIEs must deal not only with national-level restrictions on distribution (and on other operations essential for better achieving scale efficiencies) but with troublesome local policies. In a normally functioning market with 10 undersized plants producing similar goods, a process of consolidation would take place until a smaller number of larger plants was left. Concentration in the industry would increase, but as long as barriers to entry and exit were low, the reduction in competitors would be accompanied by enhanced productivity at the remaining plants and consumers would benefit. In many markets in China, however, local authorities use protectionism and subsidies to maintain employment and forestall enterprise failure, thereby preventing consolidation and decreasing productivity growth (and, ironically, long-term growth in employment quantity and quality). Welfare gains (i.e., greater aggregate economic growth) after consolidation would surpass the employment benefits of artificially keeping plants afloat, but fear of social unrest drains the will to accept the transition. As a result, some FIEs capable of offering value by operating at greater scale find that they cannot grow normally due to the authorities' management of their market shares. This overcrowding is shockingly evident in table 4.6, which shows the host of auto producers in China, some planning to produce a mere 1,000 cars a year—an absurdly low number in this industry. Indeed, hundreds more vehicle enterprises produce in the hundreds or tens of trucks or buses a year (#46).

Absent from this discussion so far has been the flip side of scaling up toward efficient production volumes: overcapacity. This is widely considered a serious problem in many sectors in China today, inducing deflation, eviscerating profit margins, and fueling some of the clumsy efforts at local protectionism. Lardy (1998) cites Chinese surveys indicating capacity utilization of below 60 percent for over 900 major industrial products manufactured by Chinese entities. He blames this phenomenon—little or no rational exit by money-losing firms—largely on soft-money loans by state banks, without which they could not survive. These in turn are intended to hold back the flood of unemployment that would follow consolidation. FIEs, including many interviewed for this study that reported equally low or lower capacity utilization ratios, survive not because they receive state loans but because they are able to absorb losses while anticipating a more rationally structured market to come.

The case of Pilkington Glass has been widely reported. Pilkington established operations in China early (in 1983), forming Shanghai Yaohua

Table 4.6 Overcapacity? The case of the auto sector in 1996

	Production volume (thousands of vehicles per year)	**Production capacity** (thousands of vehicles per year)	**Excess capacity** (percentage)
Santana	200	300	33
Cherokee	26	50	48
Daihatsu	88	150	41
Peugeot	2	20	90
Audi (SRF)	15	30	50
Jetta	27	165	84
Citroen	9	60	85
Alto (Suzuki)	16	50	68
Yunque (Chinese)	1	14	93
Total	385	839	54

Note: Several GM vehicles (Buick models) are scheduled to begin production in 1998.

Sources: Author's interviews and calculations.

Pilkington (SYP) to make float glass. Its success and profitability (gross margins of 59 percent were reported for 1995) attracted competition. Since then, three major rivals have added 450,000 tons per year capacity to SYP's 300,000, with a further 300,000 tons capacity expected in early 1998. For SYP, this means 1998 profits were 20 percent of what they were three years previously, as prices fall and market share crumbles (Overcapacity Hits Pilkington's Chinese Adventure, *Financial Times*, 16 January 1997, A1). Discussions with Pilkington managers (#58) confirmed that the pain of overcapacity was being felt at interior operations as well, where capacity was higher than needed and demand was below expectations. Chinese SOEs that consume intermediates often have not met their original projections, making it impossible for their FIE suppliers—like Pilkington—to reach productivity goals in turn.

Overcapacity is not a problem for everybody. Some FIEs are in uncrowded industries; others have unique holdings (e.g., ARCO, which hit a major gas field in the South China Sea) or technologies (e.g., Motorola, whose early pager product dominated the market, or Boeing). With major investment in place, and scale economies at work already, these firms can afford to develop demand through product innovation and marketing. For many other FIEs, the winning strategy is to start small and keep production offshore until it is clear how large and lasting domestic demand really is (#40). Many firms have mistaken the filling up of supply chains for strong growth in consumption, only to learn that the demand was not there and that they had expanded capacity prematurely.

Whatever the reason for their predicament, managers now looking at serious overcapacity must decide what to do. Having conceded much to Chinese partners and authorities in the negotiations establishing the joint ventures, investors cannot just downsize. Even when FIEs have retained authority to adjust their labor force, there are strong pressures not to lay off workers, pressures that must be respected if the firm has long-term interests in China. Meanwhile, as even more capacity comes on line, firms are increasingly tempted to try to move their product by providing generous credit terms, which in turn has led to problems with accounts receivable.

As with other key problems faced by FIEs, one can assign responsibility for the current overcapacity on both sides of the Sino-foreign divide. On the one hand, the haste with which some foreign firms rushed into China, neglecting to carry out thoughtful market analysis, is partly to blame. Bad data and intentional distortion by expatriate managers eager to lure headquarters staff back to China after the Tiananmen incident also contributed, as did failure to recognize the serious inadequacies of distribution channels.

On the other hand, Chinese policy crowds firms together. Central planners retain a strong role in industrial policy; the "encouraged" and "restricted" categories of the Guidelines for foreign investment distort the pattern of new industrial investment. Restrictions on the reporting of economic news undercut market analysis.[12] At the same time that hurdles in the way of market access keep some FIEs from reaching efficient scale, formal and informal impediments to downsizing prevent efficiency gains for others. Size matters, especially in sectors formerly nestled under the state's wing.

Capital Factors

Like the other factors, capital can affect productivity one of three ways: an increase in absolute amount (normally a useful thing, though too easy terms can lead to inefficiency), more efficient allocation of what exists, or technological evolution in its use. Enhanced allocation (x-efficiency) may result from reducing wasteful spending on nonproductive activities (such as graft). A recent *Economist* essay on Asian banking crises noted: "Bankers failed to examine the financial risks they were undertaking: a lunch or a round of golf would do more to inform their credit decisions than spreadsheets of financial data. This 'Asian Way' of vetting borrowers has proved costly indeed" ("How Far is Down," 15 November 1997, 20). An example of technological innovation is the introduction of computerized scenario planning to identify promising investment opportunities. Interviewees discussed a number of ways in which improving FIE productivity through better capital practices was key. The main themes were keeping costs in line within the factory and improving management of capital within the broader organization.

12. Hazelbarth (1997, 13) notes: "Although the trend in China clearly is toward greater media autonomy and diversity and away from government control and intimidation, cross-currents of resistance persist. Powerful domestic institutions still constrain efforts by the media to become more autonomous and politically diverse."

Cost Control within the Plant

Even small capital expenditures shape the culture and organization of an enterprise. Because labor-intensive activities can be inexpensive in China, there is a temptation not to take seriously the task of keeping them in line with productivity objectives. Factory managers stressed the importance of these costs to overall productivity. If excessive numbers of drivers, guards, foremen, cooks, and janitors are lounging around a facility, even if the wage cost of maintaining them is minuscule (which increasingly it is not), it is difficult to focus on productivity among semiskilled and managerial employees. Costs treated as insignificant by Western managers may be seen as major by local employees, and a dismissive attitude toward them can have a deleterious effect on performance.

Likewise, small costs to buy off rent seekers such as petty officials can create a bad working environment. One plant manager (#26) identified "keeping overhead costs down" (wage bills, "consulting fees," electricity assessments, etc.) as the number one challenge to productivity at his facility in interior China. They threatened to consume all capital resources before they could be used for reinvestment.

Capital performance metrics recognizable to modern managers are being applied for the first time in many enterprises in which foreigners are involved. Such "scientific" approaches to allocating capital resources still appear quite radical in many parts of China. Before one can manage capital use in such a way, there must be professionals in place who have the right skills. This is why FIEs are scrambling so fiercely to attract or train financial professionals, as described in chapter 3.

The challenge of this particular aspect of productivity rests largely with the FIEs and the expatriates themselves, although the transitional nature of the Chinese marketplace and its widespread graft complicate the task. True, the pressure placed on the foreign investor during establishment to give up management control over the joint venture has the potential to stymie efforts at cost cutting. Preventing the release of surplus workers to cut costs is a prominent example. Further, Chinese partners against whom cost cutting might be directed may be either quasi-governmental organizations or else closely associated with policymakers. But investors have increasing choice nowadays of when and with whom to enter into a partnership, and no policy exists to prevent them from finding allies who agree with the imperatives of enhancing capital productivity at the plant—though that effort may delay their entrance into the market.

Financial Efficiency within the Organization

A significant number of managers involved in operations in China were concerned by restrictions on the ability of FIEs to manage financial flows *across* units. Unlike the use of capital at the plant level, the movement of money within the larger organizational structure is shaped by policy. Capital cannot be managed on a unitary basis for various FIE joint ventures organized under a holding company, one method of supporting operations efficiently. Foreign investors are lobbying for holding companies to be granted such rights or else for them to be transformed into "captive finance companies" that could accomplish the same end. This would improve administrative efficiency, foster innovation, and permit resources to be shifted from less productive to more productive endeavors.

Many Chinese partners involved in JVs are reported to have very short time horizons for profitability. While foreign investors accustomed to mature financial plans aim at making ventures profitable within perhaps three to five years (the average in China for profitable ventures, according to surveys by the Economist Intelligence Unit 1995, 1997), Chinese partners often expect dividend payments after a year or two. Perhaps they have less confidence in the long-term behavior of markets, or are suffering short-term cash crunches because they are overextended, or desire liquidity to go after new and unrelated business opportunities. In any case, many (not all) expatriate managers reported having difficulty convincing Chinese partners to defer capital withdrawal until the business was well established. Their focus on the short term has made it possible for some FIEs to buy out shares of their JVs and increase control. Many foreign investors take this opportunity when it arises. But weighing against this creeping shift to foreign control are overseeing authorities that must approve ownership changes (their general practice appears to be to discourage such buyouts, which nevertheless are believed to have become widespread). The conflict reflects China's fundamental ownership problem: it remains unclear (in practice, if not in law) who has ownership rights sufficient to take remedial, productivity-enhancing measures that conflict with social or mercantile imperatives trumpeted by governmental agencies.

This problem is complicated. Intrafirm transfers of capital can be tantamount to providing financial services, an area still heavily restricted from foreign participation. Foreign investors have created Byzantine ownership structures among JVs and holding companies to get around restrictions on services (along with those on distribution). The central authorities have permitted some FIEs to experiment with new structures, as is their habit while pondering whether to legitimate those practices; so far, they are holding the line much more firmly on the use of such arrangements to do finance.

Institutional Factors

Business professionals often talk about "cultural factors" when considering how to raise productivity in China. These points are discussed here along with other phenomena of an "institutional" nature.

Existing Culture and "Resistance to Change"

An Economist Intelligence Unit survey of foreign enterprises (EIU 1997) asked managers to rank the factors they felt most hampered the productivity of their operations. The second and fourth respectively were "language/culture" and "resistance to change." The responses collected for this study gave these problems similar importance. They are "soft" factors, difficult to quantify. Yet the majority of foreign businessmen in China mention these concerns repeatedly and believe that dealing with them is critical to raising productivity at their operations.

To read the literature on joint ventures in China from the early through the late 1980s, one would think that working with Chinese labor and management partners was next to impossible. The most popular work—*Beijing Jeep*, by Jim Mann of the *Los Angeles Times* (1997)[13]—paints a picture of intransigence, complete with deception, manipulation, arrogance, ignorance, and incompetence (not to mention the errors of the Western side of the partnership). Expatriates understand the motivations of their Chinese partners far better now than in the 1980s when that story unfolded.

But that understanding does not necessarily spell sympathy. The head of a major American conglomerate's China company observes (quoted as the epigraph to this chapter), "The biggest problem in China is 50 years of socialism; who cares anything about doing a good job after that?" (#22). He is not alone in his views; many interviewees knew China's commercial history in this century, and while they had learned why things are they did not accept excuses for why they cannot be changed.

The cultural factors in China are not unique. The executive not only perceived Russia as in worse straits but he considered the culture of Washington to be a bigger impediment to his work than that of Beijing (as US foreign policy toward China in the mid-1990s lurched from moralistic to militarist for a time). He and a number of other expatriates perceived less resistance to change in China than in other emerging economies (notably Indonesia).

For each foolish complaint such as "They can't speak English," there was an observation that cultural frustrations resulted from the poor training of both local employees and expatriates. FIE managers focused at length on their efforts to urge regular maintenance at the plant. While this at first sounds paternalistic, teaching repair and neatness seems indeed essential to improving productivity in China. It is widely felt that productivity suffers in China because of a systematic bias against investment in such intangibles. Without adequate maintenance and repair, x-inefficiency grows as excessive downtime is required to do unscheduled maintenance. In the past, performance measures did not include quality of output, time-

13. *Beijing Jeep* was first published in 1989.

liness, or downtime; only recently have objective standards to optimize these factors been employed in China to a significant extent. Many plant managers at FIEs fight a daily battle to change negligent maintenance habits.

Corruption and Graft

All expatriates interviewed who were involved in managing factories or field offices noted petty extortion of various sorts as a distraction for managers, and potentially a drain on resources. If managers are spending all their time dealing with shakedowns, they are going to have less time to focus on running a business or a plant. Rent seeking can take the form of requests for preferential supply deals, pilferage, cost padding, plain bribery, and the like, and it affects both productivity and profitability. As Kimberly Elliott notes in the introduction to a comprehensive 1997 collection of essays on corruption, the phenomenon is truly global, present in rich and poor countries alike (Elliott 1997); China presents an excellent example of how productivity can suffer as a result.

Most of those whom the interviewees described as rent seeking were related to the civil service in one way or another. They told of fire inspectors insisting that absurd numbers of lightning rods be purchased from them for a small facility, and police requiring special fees to validate the residence permits of expatriate managers, to guarantee adequate protection for the factory, or simply to not cause trouble. Most pernicious appear to be tax authorities who find "irregularities" that portend serious fines and penalties unless the FIE agrees to use specific "tax consultancies" to assess the situation, at a fee—sometimes petty, sometimes hefty. Such consultancies, usually consisting of little more than a retired local government official, are today a very common means of extracting payoffs.

However, while all factory managers reported corruption (including facilities in Tianjin, Shanghai, Wuhan, Guangzhou, and Shenzhen), local governments do not endorse such practices. Many local investment authorities are trying to reduce these practices (interviewee #55, the director of the Wuhan Foreign Investment Office, was a good case in point). Several interviewees maintained that expatriates (through their comprador agents) propose bribes more often than Chinese officials seek them. Some argued that many charges of bribery reflect misunderstandings of a gift-giving culture. Another faction of respondents stressed the *virtues* of corruption, arguing that petty graft has been the fuel propelling China out of the Stone Age to its present level of high growth and promise. They maintain that the totalitarian grip of the bureaucracy would not otherwise have permitted development.

Without debating the merits of this perspective (which seem to have some validity in a bureaucrat's playground like China), it is clear that the present level and breadth of corrupt practices are very likely to diminish growth in the future, even if they helped to facilitate it in the past.[14] Corruption can distort productivity growth by diverting capital, labor, and goods from their best use, by acting as a discriminatory tax and open-ended risk that requires hedging, and by compromising quality control. Some empirical analyses suggest the "corruption tax on FIEs in places like China can exceed 20 percent" (S.-J. Wei 1997). It is obvious why expatriate managers saw these problems as a threat to productivity.

But many businesspeople derided such talk of "threats" as lacking rigor and in any case lacking relevance in high-growth Asia: Asia prior to the financial turmoil of 1997, that is. The different conditions in Thailand, Indonesia, Malaysia, Korea, and other Asian economies make unitary explanations for the financial trouncings suffered across the region impossible. But as the dust settled, one common thread did emerge: crony capitalism, or the making of noncommercial investment decisions guided not by productivity but by connections. While not explaining the whole of the Asian crisis, this does point to factors contributing to economic fragility in all of these countries, and most certainly in China as well.

Crude financial firewalls (particularly the use of a closed capital account) in the Chinese economy have provided a little more time before the rot of corruption-oriented decision making on investments leads to a productivity failure and subsequent crisis (Rosen, Liu, and Dwight 1998). But evidence supporting the weak position of the portfolios of financial intermediaries in China—public and private—is overwhelming (Lardy 1998). To date, repeated efforts in China to strike hard at corruption have failed. Short of clearly vesting citizens and stockholders with property rights, and then empowering courts to uphold those rights, it is unlikely that the logic of productivity will have sufficient standing to deal cronyism a deathblow.

Discordant Organizational Structures

Interviewees described institutional problems inside FIEs as a challenge to improving productivity. Not surprisingly, such critiques were more likely to be heard the further one moved from the headquarters operation in the home country and the nearer one came to the plant level in China.[15]

14. Those who argue that the case for bribery's positive effects has no merit (e.g., Rose-Ackerman 1997, 33) generally note either that in the cases in which high growth and high corruption have gone together the future might nonetheless be grim (a point with which no one could take issue) or that there is more to life than growth—there is equity, too. This second argument ignores cases in which high growth, high corruption, and broad-based economic gains have all gone together: most notably, that of China.

15. Prior to interviews with expatriates in China, there were background interviews with US headquarters personnel of many of the firms examined in these case studies. Only a handful of home-country interviewees acknowledged problems of discord, whether out of ignorance or reluctance to admit them. By contrast, managers in the field focused considerable time on these issues in their remarks.

Similarly, those interviewees further removed from the plant level in China were more likely to try to fit the China operations into the firm's global framework, and thus were less likely to have insights into the important reasons for and implications of incongruities in structure among units in China.

The manager of a Shanghai FIE identified a typical problem (#33). His manufacturing JV is aligned with a partner that is subsidiary to a local government ministry, while his parent firm has a longtime previous alliance with officials in another municipality. For important product lines produced both in Shanghai and at the preexisting facility, this Shanghai manager has the capacity and the orders to expand production to serve the local market and achieve better scale economies. Fearful of stepping on the feet of partners from the other municipality, however, the venture's American parent restrains this plant and lets its older partnership serve the market at higher cost.

This manager was extremely frustrated, having set up a state-of-the-art manufacturing center in record time (about a year). He is aware that the relationships nurturing the firm's fortunes must be respected, but displeased to do it at the expense of productivity. The director of a sales JV in Shanghai (#24) is in a similar situation. The operation's manufacturing JV parent in Tianjin refuses to cede the Shanghai market: it requires all sales in Shanghai to be logged in Tianjin, along with a brokerage fee, and continues to sell spare parts to Shanghai clients directly, undermining the business's Shanghai office (set up with considerable effort). "We screwed up and negotiated neither majority control over decisions with [the Tianjin partner], nor a nonexclusivity arrangement so that [the Shanghai office] could sell directly without going through Tianjin," he explained. Without independence from Tianjin, his office will not be able to operate productively. "We need a nationwide corporate perspective," he lamented.

This American FIE has a sister firm under the same corporate umbrella, a sister that is also established in China (#25). It would make sense for them to consolidate some functions to boost productivity, but that is unlikely: one unit's Shanghai ministry partner is also the partner of the other unit's archcompetitor. This sort of tangled organizational web is pervasive in China today.

The manager of a venture in Wuhan (#26) echoed these sentiments. His suggestion: avoid intrafirm discord and give expatriates the chance to manage the FIE without micromanagement from abroad. This point is China-specific: because they are less standardized with global practice than other overseas operations, ventures in China cannot be fit easily into a worldwide corporate model. He underscored that both expatriates *and* local staff must take the initiative. For example, through his Chinese deputy, this manager entered into a supply arrangement that guaranteed him both on-time delivery and a politically useful relationship with local authorities. Home-country supply managers, however, were seeking economy of scale by sourcing this particular part globally and using it worldwide. But in China, that move would be far more costly: the outside managers took into account neither the value of the relationships earned by using a local supplier nor this FIE's need, as a joint venture, to seek consensus with its Chinese partners to break off a good local relationship. A different calculus applies in China, especially during these years of transition, and bickering within firms is disruptive.[16]

An interesting case of organizations at cross-purposes involves a joint venture that manufactures telecommunications switching equipment near Guangzhou, in Guangdong Province (#20). Aggressive Chinese start-up factories are competing with this JV, producing a product that looks remarkably similar on the outside. In fact, they gained access to the technical details through the "research institute" associated with the JV's overseeing authorities—essentially, they pirated the firm's switch technology. This in itself is an intellectual property problem and came as no surprise to the FIE's general manager—indeed, he expected it. But the story is more complicated.

While the design of the switch can be replicated by Chinese competitors, the result can hardly compete with the JV's product because it lacks the specialized high-technology chip that runs the switch. However, the Western unit of the parent company fabricating these chips is selling them into the Chinese market: the FIE's domestic competitors promptly buy them, plug them into the pirated architecture, and undercut the JV on price. The JV's parent firm appears to be deliberately hobbling its Chinese operation. Headquarters seems to have taken in-country management's recommendation to accept slow market-share growth as a sign that the enterprise is pie-in-the-sky, so it has decided to make a quick profit where it can. On the other side of the organizational structure, the Chinese partner to the venture has taken to informing potential customers of marketing plans and thereby encouraging them to hold out for discount prices.

Scope of Participation

It has already been noted that bottlenecks in supply and distribution channels can disrupt FIE operations and that FIEs face policy restrictions on distribution that domestic firms do not. The Guidelines treat distribution and services as restricted or prohibited sectors. These proscriptions potentially deny FIEs "economies of scope." Less often discussed than economies of scale, these refer to "the impact on total costs, plant-specific and product-specific, attributable to production of more than one product" (Scherer and Ross 1990, 100). Additional products can include intermediate services such as distribution and marketing, as well as final

16. This does not necessarily mean that the parent company in this case was wrong for trying to force China in line with its global practice. Indeed, every firm must balance the costs and benefits of such decisions. Rather, it is meant only to illuminate the locus of intrafirm tensions.

Table 4.7 Expanding service operations of a joint venture in Tianjin, 1994-97

	1994	1995	1996	1997
Sole branches	33	50	70	80
Cooperative branches	3	0	0	0
Service offices	14	25	23	26
Sales offices	0	35	83	140
Total	50	110	176	246

Source: Author's interviews.

services such as warranty, repair, and maintenance. These are especially important in China where many basic business services are scarce or underdeveloped (especially outside big cities).

Therefore some FIEs have rushed to create holding companies, joint trading companies, branch offices, joint sales offices, and ever new structures in an attempt to get goods to market, solidify relationships with customers, and respond to logjams before they cause the plant to shut down and productivity curves to crash.[17] Table 4.7 presents the growth in service offices of a Sino-American JV based in Tianjin that has been able to expand beyond manufacturing through its partnership with a well-established Chinese enterprise. These sales and service networks can only support the units that this JV manufactures in China, not the many other models that the firm's US parent manufacturers elsewhere. In addition, important sales subsidiaries are finding it very difficult to operate in other provinces where they do not have manufacturing facilities.

For many firms to achieve a high level of manufacturing productivity, it is important that attendant services grow with sales. Some services the FIE needs to conduct for itself, including finance among units, advertising, marketing, and debt collection; others it provides as a business line to clients alongside the goods it makes—for example, a maintenance contract on an elevator. In some cases, the services at issue may be the firm's primary product, which is sold to other firms. However, foreign firms' ability to participate in China's service sectors is limited, and interviewees identified these scope prohibitions as important barriers to enhancing productivity.

Environment and Productivity: A Note

Environmental externalities underscore the difficulty of measuring productivity. A facility's efficiency depends partly on whether the negative

17. Whether absence of scope will directly affect productivity depends on factors such as the customer base (domestic or export) and the industry (pagers are easier to handle than frozen food).

pollution externalities of the production process are "internalized" when a facility's performance is assessed. In an unregulated marketplace, if the pollution streams of a firm were simply ignored, then operating the facility without any environmental controls would maximize productivity. However, if the costs associated with those pollution streams—for example, medical expenses due to coal smoke in the air and mercury in a local lake—are billed to the firm generating them, then a different appraisal of productivity would be necessary.

Currently, foreign enterprise managers (especially Western ones) are looking beyond China's lax enforcement of environmental law and applying a productivity calculus that takes greater account of environmental harms than what is strictly required. Some foreign firms are even leading the way by creating a "positive externality" by raising local awareness of pollution control and demonstrating cost-effective remedial steps. However, there are other foreign operations in China that make little effort to operate a clean plant. (Although adequate rules have been created, enforcement is the problem; in early 1998 China's Environmental Protection Agency was finally given ministerial status, which may be an indication that stricter enforcement will follow.)

Although a company can be the trailblazer, China's central government must take the full initiative to produce the economywide steps necessary (including investment and training) to address the country's looming environmental crisis.

Analysis

The first impression that emerges from this chapter is how deeply expatriate managers are engaged in the economic life of China, shaping the culture of the work environment both directly and indirectly in their efforts to improve productivity. As the reformist clique of Chinese planners intended, foreign enterprises have brought technology both hard (machines) and soft (managerial know-how). These have powerful positive spillovers that accrue to the host country, beyond the simple economic value of the goods produced and the wages paid. Less tangible but equally important is the competitive mind-set that foreign firms have helped to introduce. When able to compete inside the borders of China, FIEs have brought virtuous competitive pressure to bear on domestic firms. Even in sectors in which authorities still limit foreign participation, such as finance, the simple presence of FIEs can force Chinese firms to change as they anticipate future competition. For example, though a major American bank had only a small initial presence in China, domestic institutions were studying it closely and imitating its product-pricing behavior (#60).

Such behavior powerfully supports the thesis that competition can be even more effective than privatization as a spur to economic development and productivity gains. In recent years, many scholars have made this argument with reference to particular sectors, such as telecommunications, whose far-reaching shifts away from statism were under debate:

> While both [competition and privatization] strategies can help liberalize[,] . . . the competition strategy lowers rates and improves quality more dependably. This is because privatized monopolies are likely to focus not only on efficient operations . . . but also on protecting their profit margins. Indeed they may raise prices and oppose new products . . . that would compete [with their existing moneymakers]. (Petrazzini 1996, 6)

Li Wei makes the same point with regard to the Chinese reform experience in general, after studying productivity trends in the state-owned sector from 1980 to 1989. Finding a strong relationship between the advent of competition and long-overdue gains in SOE performance, he notes:

> These findings have implications far beyond simply providing a better understanding of the performance of Chinese state enterprises during the reform period. They suggest that enterprise restructuring can improve enterprise performance even without formal privatization and that the marginal economic liberalization as practiced in China can improve resource allocation when barriers to the state-monopolized industries are also lowered to foster competition. (1997, 1082)

Such success has contributed to the resolve of China's leaders to push ahead with domestic reform, even in the face of increasing social anxieties and the possibility that their own authority may diminish. This competition-before-privatization model seems to offer Chinese policymakers a way to escape their current dilemma: ideologically unready to confront the task of privatizing state-owned enterprises but incapable of meeting rising expectations with sluggish productivity growth, policymakers have used competition, partly from domestic entrepreneurialism as provided by township and village enterprises and partly from FIEs, to spur domestic productivity.

As important as these innovations have been to China's reforms and to forecasting the shape of restructuring to come, our focus here is assessing the Chinese scene in terms of foreign investor compatibility. Table 4.8 summarizes the productivity-related issues, assigning them to one or more of the four categories established in chapter 1 with special attention to the policy-related factors.

Transitional and Self-Imposed Variables

Many of the impediments to productivity include a transitional element, a sign of the changes taking place both in the organization of firms in China and in the scope of foreign participation in the economy. It is

Table 4.8 Roundup of issues: productivity

Issue	Category	If policy . . . Level	Priority
Labor			
Availability	Transitional		
Training	Transitional, self-imposed		
Deployment and management	Transitional, policy	Local, central	Medium
Overstaffing	Policy, self-imposed	Local, central	Low
Goods			
Supply networks	Transitional, market structure		
Distribution problems (inputs)	Transitional, policy, market structure	Central, local	Medium
Trade policy swings	Policy	Local, provincial, central	Medium
Technology application	Transitional, self-imposed, policy	Local, provincial, central	Medium
Scale economies	Policy, market structure	Local, provincial, central	Medium
Capital			
Costs in the factory	Self-imposed, transitional		
Financing the organization	Policy	Central	High
Institutional			
"Resisting change"	Transitional, self-imposed		
Corruption and graft	Policy, transitional	Mostly local, provincial	Medium
Discordant organizations	Self-imposed, market and strategy policy	Provincial, central	High
Economies of scope	Policy	Central	High

prominent in labor issues—not surprising, given the shortages of skilled workers and the hindrances to training and deployment. The area of goods inputs, too, has transitional problems because of the evolving distribution system and the time required to build local value chains. The greatest transitional issues affecting capital inputs involve the slow process of changing attitudes toward costs at the plant level. Institutional factors, including corruption and resistance to change, are also likely to become less prominent in the long term, as the marketplace develops and workers and officials are increasingly exposed to new modes of commercial activity.

But FIEs must take responsibility for a good many self-imposed productivity problems as well. In labor, these include training failures, which contribute to the "resistance to change" that expatriates describe. In addition, many FIEs admit inadequate negotiation and planning to address the questions of intermediates and of capital. Many investors argue that the urgency of getting established in China before markets are cornered outweighs the value of making more deliberate preparations for entry. That is their choice; but some investors have avoided these pitfalls, demonstrating an alternative to heedlessly rushing in. Proper staffing levels, cost containment, and training are unglamorous microeconomic details, but the firms with the best performance take them seriously. The choice—so important to productivity—of technology level brought to the Chinese market obviously is in part under the venture's control. While in some cases FIEs made missteps because they tried to employ more sophisticated technologies than the market could accommodate, such errors move more into the realm of policy, because of China's poor record in protecting intellectual property.

Perhaps the most interesting productivity problem for which the firms bear partial responsibility is the phenomenon of conflict within their organizations, which involves policy and market structure complications as well. Foreign investors are steered toward partners in China, but they also court them enthusiastically, hoping (in many sectors) that powerful local partners will spell market control. They have learned the benefits of *guanxi* capitalism—protected or favorable access to market shares and comfortable relations with overseeing authorities—but the drawbacks come as a surprise. The investors find that expanding operations beyond the original jurisdiction, overhauling the management structure and performance goals of the venture, or placing the global profitability of a multinational enterprise ahead of the Chinese company's well-being can be difficult or impossible. The responsibility borne by FIEs for their choices of organizational partners, it appears, will be a key theme of Chinese marketplace studies in the coming years.

Policy Variables

Once cognizant of the importance of transitional and self-imposed impediments to productivity growth, one can better gauge the impact of policy problems on foreign enterprises. Policy factors are discernible in 10 of the 15 themes in this chapter. National restrictions on management control of ventures hamper deployment of labor and lead to overstaffing. Trade policies (including swings in duty rates) and technical policies (such as coerced transfers of technology) influence the availability of intermediates, the plant and equipment the FIE uses to manufacture, and the attainability of scale economies in production. Policies curtailing scope of business interfere with FIEs' efforts to manage capital productively across China-based units. Industrial policy goals force foreign investors into partnerships that often turn fractious and counterproductive. And of course varieties of graft and corruption affect the bureaucracy to a serious degree in China, as even the Communist Party admitted with the very public ouster of Beijing Party chief Chen Xitong.

Three of these matters were seen by the expatriates as high-priority concerns, while the others are mostly medium priority: serious, but somehow manageable or tolerable. The first important policy issue was the problem of organizational finance. Foreign firms want to be able to consolidate and manage money flows among their various ventures in China. Such latitude would permit not only more efficient investing and costing but also better credit management and thus market development. This affects profits as much as productivity, but it can certainly be argued that better control over profitability would also make possible more productive organizations as well (e.g., through economies of scale). For investors that have only a single operation or factory in China, this consideration will not be relevant; for the many larger multinational investors it is a first-order concern—and one attributed to policy alone.

Second was the problem of strife within the organization. To the extent that it results from China's policy aspirations of guiding FIE establishment in ways that simultaneously strengthen specific Chinese industrial giants, it deserves significant attention from China's trading partners. Such policies are neither consistent with the intent of the World Trade Organization (WTO) nor in the long-term interests of Chinese consumers, inasmuch as they act to suppress the productivity-enhancing effects of competition. However, the problem also involves self-imposed and market structure aspects. Many FIEs take the initiative in partnering with a Chinese entity in the hope of gaining a market advantage. In addition, the market structure in China is developing in such a way that fewer firms may dominate important industries such as telecommunications to the detriment of consumer gains, and thus FIEs may be forced to partner their way into the action. Rather than simply applying foreign policy pressure, encouraging the Chinese to take an active regulatory stance in favor of greater market contestability may address this problem more effectively.

Finally, policy restrictions on the scope of FIE business operations were a high-priority impediment to productivity, because operating without distribution, sales, and follow-up business functions deprives modern firms of the feedback they depend on to streamline and optimize production. This topic has figured prominently in ongoing WTO accession negotiations in 1998. Once the central-level policy restrictions are rescinded, impediments to foreign participation in the marketplace will remain, as the following chapter details, but this regulatory aspect is most important. That many FIEs already circumvent these policies by creative interpretation of existing laws is a good indicator that the central government will formalize its endorsement of those practices in the not-too-distant future.

Market Structure Variables

Market structure (competition policy) aspects come into play in the development of supply networks, the distribution problems that stall economies of scale and scope (and hence create barriers to successful competition), and the discordant organization problems that emerge because FIEs can select from among only a limited number of partners. All of these involve the input of intermediate goods into the production process and the movement of finished goods out of inventory after manufacture. The hallmark of a collusive market sector in no need of the efficiency that procompetitive policies promote is reduced productivity. Chinese authorities need look no further than their own SOEs to see the results of too much cooperation and not enough competition. The message sent by most FIEs is that they would rather compete than collude, but they will collude if that is their only option for succeeding in the Chinese economy. Nevertheless, they remain focused on productivity, which puts them a step ahead of many indigenous competitors.