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FDI and Joint-Venture Requirements

The ostensible rationale for giving preference to or requiring joint ventures is to try to capture more of the benefits that foreign investors have to offer. In particular, host countries want to achieve greater "technology transfer," expanded access to external markets, and more robust backward linkages to the domestic economy than would take place without preferences/requirements for joint ventures. Broader issues—including building an indigenous business class, promoting self-reliance, and enhancing national defense—are treated in chapter 8.

How do preferences/requirements for joint ventures contribute to these objectives? For many kinds of operations, the joint-venture relationship offers benefits to all parties. Survey research shows that local partners can be particularly valuable in providing location-specific knowledge regarding host-country markets, local tastes, local business practices, local labor practices, local suppliers, and local business-government relations.

Beamish (1988) and Raveed and Renforth (1983) find that when choosing joint-venture partners, international investors look for help with entry into the local market, insights into local business practices, access to indigenous general managers, assistance with local financing, advice on board decisions, and provision of general knowledge of the local economy, politics, and culture. When these needs predominate, host authorities need not impose any kind of requirements or offer any kind of incentives to stimulate foreign investors to adopt the joint-venture form of operation.

At the same time, however, international firms weigh the revenue-enhancing and cost-reducing opportunities of using local partners against the strategic risks, principal-agent conflicts, and transaction costs they encounter when they enter into joint-venture arrangements.

For those activities for which parent firms consider dilution of control to be a primary concern, the parents are unlikely to form a joint venture at all, or, if they accept a requirement to do so, they record a high degree of dissatisfaction with the local partner and the joint ventures suffer a high rate of dissolution.

Parent firms place the highest value on "unambiguous control" (Stopford and Wells 1972) for those investor activities that involve rapid technological innovation, a large degree of brand recognition and product differentiation, and large economies of scale in production.

Drawing on the Harvard Business School database of 187 US multinationals, Stopford and Wells (1972) found that high research and development expenditures as a percentage of sales, high advertising as a percentage of sales, and an organizational proxy used to represent international rationalization of production were all clearly associated with a preference for wholly owned subsidiaries and an avoidance of the joint-venture format. Subsequent research by Fagre and Wells (1982) showed that the greater the technological intensity, advertising intensity, and export intensity of an investor's operations in the developing countries, the more likely the parent was to insist upon, and receive, wholly owned status for its affiliates. Reuber (1973) found that joint ventures had smaller scale, narrower product lines, and less input of parent technology than did wholly owned ventures.

Japanese firms demonstrated a greater propensity than did US or European firms to form joint ventures (Beamish and Delios 1997), but the data surveyed earlier from Encarnation (1992) shows that they are less likely to integrate offshore subsidiaries into global sourcing patterns, less likely to export in general, and more likely to focus on producing for the local market where the subsidiary is located.

Tsurumi (1976) has suggested that Japanese investors seek local expertise and political cover for historical and cultural reasons, but that after they had settled in, the Japanese parents often took full control of their subsidiaries. Makino and Delios (1996) record that as the Japanese parents of 558 joint ventures gained more than 10 years experience in East and Southeast Asian markets, the initially favorable impact of the local partner on the joint venture declined to the point where the presence of the partner was likely to be considered detrimental to the affiliate's performance.[1]

What happens when joint ventures are not a product of spontaneous choice, when international firms form joint ventures under host-country pressure, despite their preference for "unambiguous control"? This cat-

1. Makino and Delios (1996) did not control for the extent to which the subsidiary might be engaged in exports as opposed to purely domestic-oriented production. Beamish and Delios (1997) find that the propensity to form corporate alliances of all types has been declining since 1986.

egory of cases is not rare. In a survey of 66 joint ventures located in 27 less-developed countries, Beamish (1988) found that while 43 percent were created because the parent needed the local partner's skills, assets, or other attributes, a sizable majority (57 percent) resulted purely from host-government pressure or legislation. Dissatisfaction was widespread. While Beamish did not separate responses according to the voluntary or required nature of the union, 61 percent of the firms in this sample, overall, gave an "unsatisfactory" rating to the performance of the joint venture.

Within this same sample, there was an instability rate of 45 percent after three years of existence (in a separate study Reynolds [1984] found an instability rate of 50 percent). For joint ventures involving government partners, the instability rate was an even higher 56 to 58 percent.

What are the sources of conflict? Beamish (1988), like Rugman (1985) and Parry (1985), suggests that "opportunism" of the indigenous partner is at fault. In particular, he points to leakage of technology and appropriation of knowledge gained within the joint-venture arrangement as the primary reasons for dissatisfaction and failure (see also Miller et al. 1996).

Kogut (1988) finds that conflict among the partners and joint-venture termination increased as a function of the degree of coordination that the parents desire between the subsidiary and other corporate operations. Gomes-Casseres (1989) traces conflicts to differences of perspective between the foreign and domestic joint-venture partners on quality standards, exports, and the pricing of goods and services when either the parent or the local partner buys from or sells to the joint venture.

Overall, Caves (1982, 93) has observed that "joint ventures are shunned by the multinational enterprise that cherishes a secret intangible asset or extensively transfers components among its subsidiaries. Where a joint venture is forced on an unwilling multinational enterprise, the firm is likely to adapt by cutting back on the resources it commits to the business."

With this background, it is not surprising that the direct evidence is not promising on the use of joint ventures to try to enhance technology transfer, penetrate international markets, or even expand and strengthen backward linkages to the domestic economy.

Joint-Venture Requirements and Technology Transfer

Technology flows between nations are dominated by transfers among multinational corporate affiliates. From 1970-85, more than 80 percent of the payments made to the United States for the sale of technology came from external units of US firms (Grosse 1989). For Japan and Germany, between 60 and 90 percent of all technology payments from developing

countries originated in the foreign affiliates of their own firms (United Nations Centre on Transnational Corporations 1988).

In measuring the speed of introduction of new technologies, Mansfield and Romero (1980) found that parent firms transferred technology to wholly owned subsidiaries in developing countries one-third faster, on average, than to joint ventures or licensees. In a sample of 31 firms and 65 technologies, they found that the mean age of the technology at the time of the first transfer to subsidiaries in developed countries was 5.8 years, to wholly owned subsidiaries in developing countries was 9.8 years, and to joint ventures and license holders was 13.1 years.

In the same vein, Vernon and Davidson (1979) traced the ownership pattern via which "innovations" in the US market came to be produced outside of the United States and measured the period between the first introduction of a new product in the United States by a US-based multinational firm and the first foreign production of that product. With regard to ownership pattern, over the first three decades of the post-World War II period 71.5 percent of the foreign production of goods that were recent innovations occurred within subsidiaries of the parent firm; 28.5 percent represented transfers via licensees. Even for "imitations" (products that closely resemble the innovations of other firms, although "new" for the introducing firm), the spread of overseas production via subsidiaries surpassed the spread via licensees by more than two to one. With regard to speed of technology transfer, more than 80 percent of the foreign production of new goods that occurred within three years of initial introduction in the home market were limited to subsidiaries; less than 20 percent took place via licensing. While licensing gained in importance for products that were more than 4 or 5 years old, it still accounted for less than a third of all production of new goods 10 years after the products had first been introduced in the home market. Although Vernon and Davidson did not subdivide their sample of subsidiaries into wholly owned, majority owned, and minority owned in their study, they were working with a data set in which research and development expenditures by the parents in the home market were highly correlated with the use of wholly owned subsidiaries abroad.

In a detailed case study of a single industry in a single country, Grieco (1984) found that as India moved away from mandatory shared ownership in the computer industry, abandoned attempts to create a national champion, and allowed international companies to engage in partnering and alliance relationships on their own, the country's technological lag (the difference in years between a system's introduction in the advanced countries and its adoption in India) decreased. The cost of technology acquisition—measured by Grieco as the price per bit of main memory—also declined.

In the automotive sector, China's joint ventures have utilized technology and manufacturing methods that have been a decade or more old

when introduced (Uncertain Terrain: In China, GM Bets Billions on a Market Strewn With Casualties, *The Wall Street Journal*, 11 February 1998). Malaysia's effort to develop a "national champion" car firm, Proton, as a joint venture with Mitsubishi suffered from similar problems of technology lag, as documented in the case study in box 8.1 (Doner 1995b; Institute of Developing Economies 1995).

Reuber (1973) found fewer inputs of foreign-investor technology into joint ventures than into wholly owned subsidiaries.

Looking at technology performance requirements more generally, Kokko and Blomstrom (1995) found that the imposition of host-country mandates on the behavior of foreign affiliates was negatively associated with technology inflows into the host country. The strongest stimulus to increase technology imports to foreign affiliates, in contrast, came from increasing competitive pressures within the industries in which the multinational firms were located.[2] First documented in an examination of behavior in the Mexican manufacturing industry (Blomstrom, Kokko, and Zejan 1992), the power of local-market rivalry in forcing foreign affiliates to adopt more advanced technology was confirmed in a study of technology imports of US subsidiaries in 33 host countries, including 14 developing countries (Kokko and Blomstrom 1995).

Joint-Venture Requirements and Export Performance

Mandatory shared ownership does not brighten the prospects for penetrating international markets. Wholly owned affiliates are much more likely to be eligible to participate in the global/regional sourcing network of international firms. And, as a byproduct of such participation, there is evidence that they also better help suppliers to become exporters to other subsidiaries of the same parent and to independent external buyers.

Stopford and Wells (1972) found a negative correlation between subsidiaries' participation in the regional/global sourcing strategies of the parent and participation in joint ventures. Only 9 manufacturing firms of a sample of 55 that had regional/global patterns of production were jointly owned. And where joint ventures did exist, there were frequent reports of conflicts with partners over transfer prices, market allocation, and rationalization of production.

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2. The performance requirements that Kokko and Blomstrom (1995) examined included mandates to use the most advanced technology available, perform research and development locally, have access to the parent's patents, or transfer skills to local personnel. The authors were not able to analyze the impact of joint-venture requirements directly.

Fagre and Wells (1982) found that of 54 foreign affiliates in Latin America that exported half or more of their output, 51 were wholly owned subsidiaries. In no instance was the parent corporation in one of the export-intensive operations a minority partner.

Overall, the evidence on joint ventures indicates that the requirement for a local partner weakens export performance in comparison to wholly owned foreign subsidiaries. As noted earlier, the technology employed is not as current as in the wholly owned foreign counterpart (to some extent out of fear of having the technology misappropriated), concerns about quality control inhibit integration of local production into the parent's global network, and the survivability of such joint ventures is quite precarious.

Once wholly owned subsidiaries undertake export operations, however, they often act as catalysts that stimulate the export performance of domestic firms. The sectoral studies in chapter 5 showed fully owned affiliates, under the "unambiguous control" of the parent (Stopford and Wells 1972), helping indigenous supplier firms to break into external markets, directly and indirectly.

In both the automotive and electronics/computer sectors, in both Latin America and Southeast Asia, foreign investors provided information, training, and network contacts that helped their suppliers to become exporters. Eight years after the parent auto firms began their own export drive from Mexico, six of the ten largest auto parts exporters (excluding engines) were wholly owned Mexican firms. All nine (of a sample of nine) local machine-tool firms that grew up serving foreign electronics investors in Malaysia became exporters, seven to affiliates of the subsidiaries they supplied at home and two to independent purchasers; the export composition of all local firms grew from less than 1 percent of output in 1984 to 32 percent of output in 1990.

Other research documents the same outcome, that the activities of foreign-owned exporters act as an export catalyst for local firms. The effect results from a spillover or externality from the mere presence of the former. Rhee and Belot (1989) offer 11 detailed case studies in which foreign investors opened export channels to local firms by providing inputs (contacts, quality control, management know-how, and knowledge about export markets) not available in the host country and not totally internalized by the foreign firms themselves.

Aitken, Hanson, and Harrison (1997) found, in a study of 2,104 Mexican manufacturing plants, that the probability that any given domestic-owned plant exported was positively correlated with proximity to foreign-owned plants. Their data contained the surprising discovery that the export activity of domestic-owned plants was uncorrelated with the local concentration of exporters overall. The link between exports on the part of domestic firms and proximity to foreign investors was robust when they controlled for overall industrial activity in a region, for proximity to

the capital city, and for proximity to border regions. They concluded that the observed export spillover sprang directly from the presence of foreign investors.

The goal of enhancing the export potential of indigenous firms would best be served, therefore, by policies that maximize the presence of foreign plants engaged in exporting from the host country. This can be accomplished by encouraging wholly owned subsidiaries and eliminating joint-venture requirements.

Joint-Venture Requirements and Backward Linkages to the Domestic Industrial Base

With regard to backward linkages and the strengthening of domestic producers of goods and services, the survey evidence of Beamish (1988) introduced earlier indicates that foreign investors choose to enter into joint ventures so that they can utilize their partners' special managerial skills, local marketing skills, and access to local finance.

One would therefore expect to find that joint ventures have more extensive ties to the local economy and rely more on local suppliers than do wholly owned subsidiaries. Wholly owned subsidiaries, in contrast, are more likely to pull subsidiaries of other foreign companies into the local economy to act as suppliers to their own operations.[3]

Which of these patterns contributes more to the competitiveness of the local economy? More specifically, to what extent do foreign firms upgrade the capabilities and improve the productivity of local operations in which they are engaged as joint-venture partners in comparison to operations in which they are sole owners? And what is the likelihood of spillovers and externalities to the domestic economy from joint-venture operations in comparison to wholly owned operations?

There are detailed studies showing that foreign investors exhibit higher levels of total factor productivity than do their local counterparts (Haddad and Harrison 1993; Harrison 1996; see also Kokko and Blomstrom 1995), that sectors with a larger foreign presence exhibit higher levels of total factor productivity than do sectors with a lower foreign presence (Blomstrom and Persson 1983),[4] and that sectors with a higher foreign presence have a lower dispersion of productivity among all firms than do sectors with a lower foreign presence (suggesting a spillover from the foreign presence that moves domestic firms closer to the efficiency frontier)

3. Both contentions are consistent with observed differences in behavior between domestic and foreign firms (O'Brien 1993). O'Brien did not separate the behavior of wholly owned subsidiaries and joint ventures among the foreign firms.

4. Borenzstein, de Gregorio, and Lee (1995) find that FDI has a larger impact on growth than does domestic investment.

(Haddad and Harrison 1993).[5] However, there is remarkably little control in this research for differences between wholly owned and jointly owned ventures.[6]

A notable exception that attempted to establish a relationship between extent of ownership and productivity found a positive correlation. Using panel data following more than 4,000 firms in Venezuela from 1976 through 1989, Aitken and Harrison (1997) showed that a 10 percent increase in foreign ownership was associated with a 1.35 percent increase in output. Plants with 100 percent foreign ownership had output levels on average 13.6 percent higher than domestically owned plants. Because Aitken and Harrison controlled for differences in inputs, this increment in output represents a pure productivity gain.

Besides upgrading the productivity of the specific industries in which they are located, foreign wholly owned subsidiaries seem to exhibit dynamic patterns of backward integration to indigenous suppliers in the same or other industries.

The study of the automobile sector in chapter 5 showed that within 5 years of the foreign auto firms' decision to source from Mexico, there were more than 300 domestic producers of parts and accessories whose ranks included more than 100 Mexican firms with annual sales exceeding $1 million. Within 10 years of the foreign auto firms' decision to source from Thailand, there were 150 local firms qualified as OEM suppliers, and 250 qualified as REM suppliers.

In the electronics/computer sectoral studies in chapter 5, suppliers to semiconductor investors in Malaysia moved from simple machining and stamping to high precision tooling and sophisticated parts fabrication. O'Brien (1993) reports that domestic purchases of equipment and services by foreign investors in Malaysia's free trade zones have been on the increase. Lim and Fong (1977, 1982, 1991) trace an expansion of vertical linkages between multinational investors and local firms in the electronics industry over a five-year period in Singapore, Malaysia, and Thailand.

Combining the evidence here about backward linkages with the earlier indications of more rapid introduction of technology into the host economy and greater penetration of international markets from host production sites leads to the following point: the greater the activity of wholly owned subsidiaries in a given economy the more likely the prospects for spillovers and externalities to domestic firms.

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5. Haddad and Harrison (1993) offer the caveat that this seems to represent a one-time increase in domestic firm efficiency and not an ongoing process.

6. Given, on the one hand, the strong relationship between speed and extent of transfer of technology and best management practices on the part of parent corporations and, on the other hand, their use of wholly owned subsidiaries abroad—as documented by several studies in this chapter—attempts to measure total factor productivity of foreign investors without controlling for ownership structure would appear to be seriously limited.