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VALUE DESTRUCTION IN JOINT VENTURES?

Why U.S. JVs Abroad Are Less Profitable than Wholly-Owned Ventures

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VALUE DESTRUCTION IN JOINT VENTURES? Why US Joint Ventures Abroad Are Less Profitable than Wholly-Owned Ventures

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Abstract

This paper explores a striking empirical pattern that has gone unnoticed in the literature: U.S. multinationals' joint ventures abroad are substantially and systematically less profitable than their wholly-owned ventures. On average in BEA data, majority-owned affiliates in manufacturing earned a 6.4% return on assets in the years studied, compared to 4.4% for minority-owned affiliates. This pattern is found across many industries and regions, though the size of the profitability gap is not uniform.

To explain these patterns, we develop a new framework that views both the ownership structure and the profitability of a foreign venture as functions of the value created by the ownership-specific capabilities that the multinational company brings to the host country. Where these capabilities are strong, the multinational is likely to choose whole ownership; its profits are also likely to be highest in these activities. Where the firm's capabilities are weak, it is likely to seek additional capabilities from local firms through a joint venture; these investments are also likely to yield lower profits.

With few alterations, this same framework can be extended to explain "value destruction" among firms that go abroad or diversify into new industries. Conversely, we use the arguments of these studies to suggest that firms may suffer the same kind of value destruction in forming joint ventures. More broadly, we argue for a return to the micro-economic foundations of MNC theory.

Key words: Joint ventures, FDI theory, profitability, diversification

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1. Introduction

This research explores a striking empirical pattern that has gone unnoticed in the literature: The joint ventures abroad by U.S. multinational companies (MNCs) are substantially and systematically less profitable than the wholly-owned ventures of these firms. The paper reports our empirical work to date on identifying and attempting to explain this pattern using data from the U.S. Commerce Department. It presents summary tables, comparative graphs, and statistical analyses that show this pattern across industries and countries.

Several previous studies have examined the determinants of profits of MNCs' foreign affiliates [e.g., Leftwich (1974), Lupo et al. (1978), Connor and Mueller (1982), Lecraw (1984), Fairchild and Sosin (1986), Landefeld et al. (1992), Kumar (1991) and (1994)]. None of these studies discovered the empirical pattern we study.

We test several obvious hypotheses that might explain the pattern, including possible effects of (1) subsidiary size, (2) subsidiary age, (3) host-country tax rates, and (4) non-dividend payments. None of these factors explains the pattern.

We develop a simple framework using well-known elements of the theory of foreign direct investment

(FDI), the economics of project finance, and the resource-based view of the firm. This framework is simple, but powerful. It even helps explain other puzzles in the fields of international business and strategy, such as why expansion abroad seems to lead to “value destruction” (Click and Harrison, 2000).

Our framework views both the ownership structure and the profitability of a foreign venture as functions of the value created by the ownership-specific capabilities that the multinational company brings to the host country. In sum, we begin by assuming that firms will invest in a new project as long as the rate of return on that project exceeds their cost of capital. Second, we use elements of FDI theory to argue that the return to a foreign firm doing a project in a host country is higher than that of a local firm undertaking the same project. But this excess return may vary: MNCs investing in “core” areas of their business can be expected to have strong resources that exceed those of local firms; MNCs investing in more “peripheral” areas of their business are less likely to have less dominant resources.

Based on these fundamental assumptions, the crux of our explanation is as follows. MNCs investing in peripheral areas of their business will be more likely to share ownership with a local firm in a joint venture, in an effort to shore up their resources with local resources. At the same time, the MNC can naturally expect to earn lower returns on these resources than on investments in its core business. As a result, the projects elected for joint ownership are likely to have lower profitability than those in which the MNC preferred to keep whole ownership.

An alternative formulation of this framework is that the joint ventures we see are not by the same MNCs that invest in the wholly-owned ventures, but instead are by smaller or less-capable rivals that by necessity take on partners to match the strategies of their more-capable rivals. In this view, the joint

ventures are not peripheral projects inside the same *firms*, but instead are subsidiaries of firms that themselves are in some sense peripheral in the *industry*. This formulation of the argument can explain the same aggregate patterns that we see, and we have as yet no way of distinguishing between the two formulations.

The paper begins with an exposition of the empirical patterns in Section 2 that follows; we will use graphical presentations extensively, because the profitability measures of interest vary subtly across industries, regions, and time. Unfortunately, we do not have raw data that is detailed enough to take account of these variations in econometric analysis; but the graphical patterns are striking and, we believe, sufficiently clear to support our arguments. Following the exposition of patterns, we examine a series of more-or-less traditional explanations in Section 3; none of these explain the patterns we see. Section 4 then develops a full model to explain these patterns, again using a graphical method. Extensions of this model to related topics are in Section 5.

2. Patterns of Profitability and Affiliate Ownership

2.1. Measuring Profitability and Ownership. The measures of profitability we employ are calculated from the Annual and Benchmark Surveys of U.S. Foreign Direct Investment Abroad published by the Bureau of Economic Analysis (BEA).¹ The BEA data groups all foreign affiliates into two broad categories: “All” affiliates and “Majority-Owned” affiliates. Majority-owned affiliates are those in which the U.S. voting ownership is higher than 50%, including wholly-owned subsidiaries. The bulk of the affiliates that fall into the majority-owned category are in fact wholly-owned subsidiaries;² in our model,

¹ The Bureau of Economic Analysis (BEA), a subdivision of the U.S. Department of Commerce collects detailed operating and financial data of the entire universe of U.S. foreign affiliates every five years approximately. These data are published in the so called Benchmark Surveys. In addition, the BEA collects a data for a sample of the universe every year and publishes the results in the so called Annual Surveys. Under U.S. law every person or company having more than 10% of voting ownership in a foreign business, has to fill the BEA surveys. Only data for non-bank affiliates of non-bank parents are used in this paper.

² According to Mataloni and Fahim-Nader (1996), 90% of the majority-owned affiliates in the BEA Surveys are

we term these cases *wholly-owned ventures*. Those affiliates which are not classified as majority-owned by the BEA, we will usually call “minority-owned” in this paper, even though they include 50-50 joint ventures.³ In our model, we refer to these cases as *jointly-owned ventures*. Financial and operating data for these joint venture affiliates is calculated as the difference between the All Affiliates and Majority-owned Affiliates in the BEA data.

We use return on assets (ROA) as the primary measure of profitability; it is calculated as net income over book assets. It is important to note that this return is measured at the level of the affiliate – it is not the return that is repatriated to the MNC, but the actual ratio of net income to assets for the subsidiary’s business. Even so, the use of accounting profit ratios to assess performance of companies has been criticized by, for example Schmalensee (1989) and Bresnahan (1989). According to these critics, accounting measures may not adequately reflect real economic returns. The discrepancy comes from the fact that accounting measures are generally not adjusted for inflation, and that costs such as depreciation, research and development, and personnel training are accounted for as period expenses (in order to minimize tax liabilities), and therefore total assets may not reflect the real economic value of a firm's investment at a particular point in time. In general these practices tend to overstate steady-state accounting rates of return. Unfortunately, adjusting accounting data for these potential biases requires detailed firm-level data, which is very seldom available. Since the BEA data we use below do not provide any firm specific information,⁴ for the rest of the paper we are forced to assume that most of these biases do not affect asymmetrically majority and minority-owned foreign affiliates.⁵

The industrial organization literature has also addressed the question of which profit measure is a better

wholly-owned subsidiaries (88% and 85% if measured by assets and sales, respectively).

³ Within our joint venture category, 54% of the affiliates are 50-50 joint ventures (40% and 44% if measured by assets and sales, respectively), according to Mataloni and Fahim-Nader (1996).

⁴ Under U.S. law, the BEA cannot publish any information that permits the identification of specific firms or persons.

⁵ There is evidence that indicates that these biases are in fact important in BEA data. For example, when affiliate assets valued at historical costs are adjusted to current cost or market value, rates of return change considerably (see Howenstine and Lawson (1991)). However, there is no reason to believe that they effect differently majority and minority-owned subsidiaries.

indicator of investor's profitability, e.g., return on equity, return on assets, or price-cost (sales) margins.

In general, return on assets is preferred over return on equity since it gives an indication of profitability regardless of capital structure (Schmalensee, 1989). Return on assets is also preferred over sales margins because the latter one ignores the investment necessary to generate a dollar of net profit (Salamon, 1985). However, sales margins are less prone to suffer from inflation biases than return on assets.⁶ Hence, in the empirical part of the paper we use return on assets (ROA); in tests not shown here we also used sales margins as alternative measures of profitability of foreign affiliates.⁷

2.2 Profitability Gaps Across Industries. The ratio of net income to total assets (ROA) for majority-owned and minority-owned affiliates in several broad industry sectors⁸ is shown in Figure 1. In the graph for All Industries, majority-owned affiliates are more profitable than minority-owned affiliates by about 2 percentage points in most years. But this "profitability gap" is not the same for all sectors or time periods. In the Petroleum and Mining sectors, majority and minority-owned affiliates show similar returns over assets. The pattern in Manufacturing is more consistent with that for All Industries, as could be expected because the bulk of U.S. foreign subsidiaries are in manufacturing. Services shows a mixed pattern, starting of with a negligible gap, which then grows to a wide positive gap.⁹

The gap for All Industries narrows markedly over time, due mostly to the influence of non-manufacturing sectors. While there is some narrowing over time in the manufacturing sector, the most striking patterns there relate to industry segments within the sector. The following table ranks industries by the average size of the gap in ROA between majority and minority affiliates over the period 1977-1998. Two

⁶ In fact, if sales margins are calculated as earnings before depreciation and taxes over sales, the resulting measure is free of inflation biases (see Lupo et al. (1978)).

⁷ Since these ratios are calculated as total net income over total assets of all affiliates, they can be seen as weighted averages (weighted by assets) of the individual rates of return of all the firms in the industry. Since sales margins (i.e., income after taxes/sales) showed very similar patterns, we include here only the figures for the returns over assets. Some statistical tests used results for both return on assets and sales margins.

⁸ These sectors are at the 1-digit level in the BEA's industry classification, which corresponds roughly to the 1-digit categories in the Standard Industrial Classification (SIC).

⁹ Because the gap is always defined as the excess of majority ROA over minority ROA, use the terms "positive" and "negative" to indicate the direction of the gap.

measures of this gap are shown – the percentage point difference in ROA levels and the size of this difference as a share of the ROA for majority-owned affiliates in the industry. The second measure is useful to confirm that the percentage-point gap is not due to higher overall levels of ROA. On average, majority-owned affiliates earned a return on assets of 6.4% in these years, while minority-owned affiliates earned 4.4%. These ratios yield the gap of 2.0 percentage points shown in the last line of the table, which is 27% of the 6.4% return to majority affiliates.

Table 1

Ranking of Industries by ROA Gap (3-digit BEA manufacturing sectors)	Average ROA			Gap as % of Maj ROA
	For Majority owned	For Minority owned	%-point Gap	
Office and computing machines (see also Fig. 3)	10.2%	-0.7%	10.9%	107%
Beverages	11.5%	5.0%	6.5%	56%
Electronic components and accessories	7.9%	2.6%	5.4%	68%
Agricultural chemicals	7.4%	2.5%	4.9%	66%
Drugs (see also Fig. 3)	11.0%	6.8%	4.3%	39%
Motor vehicles and equipment (see also Fig. 3)	4.8%	0.6%	4.1%	87%
Instruments and related products	7.2%	3.3%	4.0%	55%
Radio, television, and communication equipment	6.7%	3.5%	3.2%	48%
Rubber products	6.2%	3.4%	2.8%	46%
Grain mill and bakery products	7.0%	4.7%	2.3%	33%
Fabricated metal products	5.9%	4.0%	1.9%	32%
Construction, mining, and materials handling mach.	2.5%	0.7%	1.8%	70%
Printing and publishing	6.6%	4.9%	1.7%	26%
Stone, clay, and other nonmetallic mineral products	5.7%	4.0%	1.7%	29%
Glass products	6.1%	4.8%	1.4%	22%
Industrial chemicals and synthetics	6.1%	4.9%	1.1%	19%
Lumber, wood, furniture, and fixtures	3.8%	3.8%	0.1%	1%
Paper and allied products	4.9%	5.0%	0.0%	0%
Ferrous	4.4%	4.6%	-0.2%	-4%
Nonferrous	2.5%	2.8%	-0.2%	-9%
Textile products and apparel (see also Fig. 3)	4.8%	5.1%	-0.3%	-6%
Household appliances (see also Fig. 3)	4.2%	4.5%	-0.3%	-7%
Miscellaneous plastics products	6.6%	7.2%	-0.6%	-9%
Tobacco products	10.0%	11.4%	-1.3%	-13%
Soap, cleaners, and toilet goods (see also Fig. 3)	6.8%	11.8%	-5.0%	-74%
Average for these industries	6.4%	4.4%	2.0%	27%

Note: The average gap is a simple average of the gaps in different years. Data were not available for all years. The calculations include 1977 plus annual data for 1982-1998.

The industry ranking in Table 1 begins to suggest where to look for underlying causes of this pattern. The ranking by ROA gap appears to correspond to some well-known patterns of investment of US MNCs – the industries at the top of the table are those that we traditionally associate with high firm-specific advantages for US MNCs and those at the bottom are those that we traditionally associate with lack of such advantages. We will pursue this point further in explanation below. For now, however, it is important to realize that the ROA gaps do not reflect the average profitability of US MNC investment,

as might be suggested by a simple application of the traditional FDI model. (On the overall profitability of FDI, see Connor and Mueller, 1982; and Kumar, 1991 and 1994.)

In most industries, the size of the ROA gap tends to vary over time, as shown by Figures 2 and 3. The sectors shown in Figure 3 were chosen to illustrate patterns in industries with high positive or negative gaps in Table 1. The pattern in foods, chemicals, transportation, and motor vehicles appears to be fairly stable over time. But the gap in computers, non-electrical machinery, and drugs starts wide and narrows to zero; in soaps and toiletries the gap turns negative for much of the period, i.e. with minority ROA exceeding majority ROA.

2.3. Profitability Gaps across Countries. An obvious problem that arises when comparing profitability at the country level is that we are not able to control for industry characteristics that may influence affiliate profitability.¹⁰ In an effort to control partially for these differences, and to check the robustness of results in the last section regarding manufacturing affiliates, we restrict our attention to manufacturing affiliates in the cross-country analysis.¹¹ Selected country patterns are shown in Figures 4 and 5.

Patterns in different countries and regions are again suggestive. The ROA gap in Western Europe and Japan appeared to close gradually over the period, while the gap for Asia-Pacific widened; the gaps in Latin America, Africa, and the Middle East remained roughly constant at close to zero. In no case did minority affiliates earn consistently higher ROAs than majority affiliates.

¹⁰ Since published BEA data contains industry observations (3-digit level) for some countries and regions, it may be possible to control for industry characteristics there. However, many observations in these tabulations are not available because of confidentiality reasons. In the future we intend to incorporate the analysis of profit measures at this level of detail if possible.

¹¹ As argued before, inter-industry differences within manufacturing seem to be less important for subsidiary profitability than U.S. ownership, but even if they were not, the analysis at the country level would still be warranted if the industry distribution of investment within a particular country is not too dissimilar for majority and minority-owned affiliates.

2.4. The Stylized Patterns. In short, the analysis of profitability patterns at the country level tends to confirm the basic results at the industry level. The BEA data appears to present the following stylized facts, which we will begin to explain in the rest of this paper:

1. *The overall profitability of wholly-owned ventures is higher than those of joint ventures in most industries; we call this the profitability gap. Profitability is measured here as a return on assets for the venture as a whole, not as the repatriated return to equity invested by the MNC.*
2. *This profitability gap is especially pronounced in those industries in which US MNCs have strong firm-specific advantages. For example, wholly-owned ventures in pharmaceuticals and autos are much more profitable than joint ventures in those sectors; the reverse is true in textiles and soaps.*
3. *The profitability gaps vary over time, notably narrowing in some industries and regions. For example, the gaps in Western Europe and in office equipment and drugs have narrowed.*

3. Possible Explanations for the Profitability Gap

We examined a number of possible explanations for these patterns using variables that previous researchers have found were important to MNC profitability. Due to the lack of detailed firm-level data, we have to limit our analysis to the effects of affiliate size, age, the foreign income tax rate, and non-dividend payments.

3.1. Possible Effects of Affiliate Size . One explanation for the profitability gap may be that majority-owned affiliates are larger than minority-owned ones and benefit from economies of scale. But our tests

using affiliate assets as well as sales as measures of size, indicate that majority-owned affiliates in fact are not systematically larger than minority-owned affiliates; on the contrary, the latter seem on average slightly larger than the former. The average size of assets of a majority-owned affiliate in manufacturing in 1989 was \$59 million compared to \$98 million for a minority-owned affiliate; the story for size of sales is similar, and the differences for both measures of size are sustained over time.

To test the significance of this finding across industries, we performed a test for the difference in mean size across all 32 manufacturing industries (3 digit level) for which we have data. In all the cases, the null hypothesis of majority-owned and minority owned-affiliates having similar sizes cannot be rejected (tests not shown in this paper).¹² We performed similar tests for data aggregated at the country level and obtained fundamentally the same results (i.e., that minority-owned affiliates are not systematically smaller than majority-owned ones). Because of space considerations we do not report the results here.

We also ran a regression of the difference in profitability on differences in size of foreign affiliates in manufacturing industries (not shown in this paper). Here too, differences in size do not explain differences in profitability. In all the regressions, the coefficient of the size variable is either insignificant or has the wrong sign. The overall explanatory power of the regressions is also very poor. (Regressions using country-level data gave very similar results.) Overall, these results lead us to conclude that the positive relationship between U.S. ownership and profitability cannot be explained by differences in affiliate sizes.

3.2. Possible Effects of Affiliate Age. Another explanation for the profitability gap may be that majority-owned affiliates are older than minority-owned ones, and so benefit from economies of experience or depreciated assets. Since we do not have access to information regarding the average age

¹² A caution note is in order here. Using industry averages to compare firm sizes is not ideal since it is well known that distributions of firm sizes are highly skewed (Schmalensee (1989)). Thus, by using industry averages to compute our tests, we are implicitly assuming that the distribution of firm sizes within a particular industry is not too dissimilar for majority and minority-owned affiliates.

of affiliates, we again cannot test directly whether the difference in profitability is caused by differences in age. However, based on an examination of how assets and sales of both affiliate types have grown over time, we believe that this explanation is highly unlikely.

Since the second half of the 1980s, investment in majority-owned affiliates has grown much faster than investment in minority-owned affiliates, suggesting that the average age of assets in majority-owned affiliates should be lower. Thus, if age and profitability are positive correlated, as some researchers have suggested, the univariate tests for differences in mean returns that we performed earlier are probably biased towards acceptance of the null hypothesis of equal means. In fact this constitutes a plausible explanation for the reduction in the statistical significance of our mean tests during the 1990s. In short, we do not believe that the positive relationship between U.S. ownership and affiliate profitability is caused by differences in the age of the subsidiaries.

3.3. Possible Effects of Foreign Tax Rates. A third possible explanation for the profitability gap may be that regulations in host countries may influence accounting practices for foreign subsidiaries and so the accounting measures of profitability that we use. In particular, one can expect profits from majority-owned subsidiaries to be more easily shifted to locations with lower tax rates, which would then show higher profitability than otherwise. (Here it is important to remember that most of majority-owned affiliates in BEA data are in fact wholly-owned subsidiaries.)

To test for such effects, we plotted the profitability gap against the effective foreign tax rate of host countries in 1989 (from Desai and Hines, 1996). There appeared to be a tendency for the difference in profitability to decline as the foreign tax rate increases. To further test this apparent relationship, we ran a regression of the profitability gap on the foreign tax rate (not shown in this paper). The coefficients of the tax variable are negative significantly different from zero, indicating that the profitability gap was smaller in countries with relatively higher tax rates. That is what one would expect if MNCs were able to shift profits of wholly-owned ventures from high- to low-rate countries.

However, this relationship needs to be corroborated for other years and for more countries (we have tax rates for about 33 out of the 50 or so countries for which we have return data). In particular, we suspect that high-rate countries also share other characteristics that may influence FDI ownership policies, as discussed later. And, regardless of this possibility of excluded country factors, we do not find that the tax rate effect is large enough to explain all the difference in profitability between majority and minority-owned affiliates.

3.4. Possible Effects of Non-dividend Payments. A fourth possible explanation for the profitability gap is that MNC receive returns in different forms from majority- and minority-owned ventures. In particular, they use transfer pricing, royalties, fees, and debt charges more extensively in minority-owned ventures; these costs would then depress the profitability of the ventures as compared to majority affiliates. While an MNC would have an incentive to extract profits in this way in minority-owned ventures, it may not always be able to do so, because of limited voting rights in the venture. On balance, therefore, it is an empirical matter whether we observe more non-dividend payments in minority ventures than in majority ones.

The BEA data used here do not show detail of dividend and non-dividend payments. But in another data series, the BEA publishes data on the U.S. direct investment position and balance of payments by ownership (i.e., all affiliates and majority-owned affiliates). The direct investment position is equal to the U.S. parent share in equity plus any net outstanding loans at the end of each year; it intends to be a measure of the total funds committed by the U.S. parent to their foreign affiliates. From the balance of payments statistics BEA derives direct investment income (which includes the U.S. share in earnings and net interest payments from affiliates), investment royalties and license fees, and other investment services (which includes management and other fees). By adding all these sources of U.S. parent income and dividing by their investment position, we can calculate an alternative measure of total return over total

funds committed abroad according to U.S. ownership. The results of tests with these data were mixed.

We first tested the significance of the difference in mean returns for both types of affiliates.

Unfortunately, we only had access to Position and Balance of Payments data for the Benchmark Surveys of 1977, 1982, and 1989. Furthermore, even for these years many of the observations (especially for industry data) were not available. There were also a fair number of outlying data points that skewed the results. As a result, a simple test of means was inconclusive – we could not reject the hypothesis that majority and minority ventures earned the same average return.

We then used a Wilcoxon Rank Test to evaluate the difference between majority or minority returns. In all but one of the tests majority-owned affiliates' returns ranked higher than minority-owned. The difference in ranks was significant at the 10% level in five of twelve cases. This suggests that, even after considering non-dividend income streams, majority-owned affiliates remain relatively more profitable than minority-owned ventures.

4. A Model of Affiliate Profitability

We develop below a model of FDI investment that we believe can explain the empirical patterns discussed so far. Unfortunately, we do not yet have the firm-level data to test the details of the model, or help us distinguish between variants of the model. Our argument will be presented using the illustrations in Figures 6 through 10. Our explanation combines elements from three strands of the literature that have developed separately: (1) the economics of project investment; (2) the theory of foreign direct investment (FDI); (3) and the resource-based view of the firm.

4.1. Economics of Project Investment. We begin by assuming that at any time a firm has a choice among many investment projects and that it will choose to invest in those projects that yield a return

higher than its cost of capital. If these projects are arranged in descending order of return, they will determine the marginal return to capital (MRC) for the firm, as shown in Figure 6.¹³ To the left of where this curve crosses the cost of capital curve, the firm will invest; to the right it will not. These assumptions are consistent with traditional project finance and do not reflect any special conditions in FDI.

4.2. Marginal Returns in FDI. There is no reason why this simple project-finance model would not also hold for investments across borders. In other words, a firm will face multiple investment projects in a given host country that, if arranged by descending order of return, will determine its MRC in that host country. Whether or not these foreign returns are higher or lower than returns in the home country is not material to our argument. The theory of FDI does not require that foreign returns be lower or higher than home returns, though it is often informally assumed that returns abroad are lower than in the home market.

The theory of FDI *does* require that the returns to the MNC be higher than the returns to local firms, because the former must overcome the “liability of foreignness.”¹⁴ In other words, the bare returns on the project in the host location must be higher for an MNC-project than for a project undertaken by a local firm, because the MNC has added costs of transferring technology, communicating at a distance, and overcoming lack of knowledge and contacts in the host economy.

As a result, FDI theory predicts that if we see an investment by a foreign firm, it must be because that firm has some sort of competitive advantage over local firms. In our framework, we can illustrate this in by allowing the MRC curve for the MNC to be higher than that for the local firm, as shown in Figure 7. The spread between these two curves indicates the extent of the competitive advantage of the foreign

¹³ We use return on investment here without distinguishing between assets and equity. In tests not shown here we found that the profitability gap pattern is not sensitive to how profitability is measured and is independent of financial structure of subsidiaries. For the sake of this argument, therefore, we simply assume that all projects are financed from equity and that return on investment is the same as return on assets.

¹⁴ The earliest discussion of this liability is in Hymer (1966) and Caves (1972); the point is well established in the literature; see a recent review in the special issue of *Journal of International Management* (2002).

firm – when the MNC has great advantages, its MRC will be higher, relative to the local firm's, than when its advantages are thin.¹⁵

A corollary argument is that the MNC must have firm-specific resources that produce advantages over the local firm. Traditionally, the FDI literature has identified resources like proprietary technology, brand-name, management skills, access to export markets, and such as the kind of firm-specific resources that could grant an MNC advantages over local firms.¹⁶ In our model, the MNC can be said to have firm-specific advantages that are transferable to the host country through ownership and that will yield then in that environment a return higher than what local firms could earn on their own resources.

4.3. Marginal Returns and Ownership Structures. The discussion so far has assumed implicitly that the foreign firm and local firm exploit their competitive advantages through wholly-owned ventures. But the model also allows us to see when a joint venture between the two firms would be attractive. This is shown in Figure 8.

The MRC curves for MNC and local firm are shown in separate panels in Figure 8; the directions of the horizontal axes are reversed in the two panels. The lettered locations represent projects that rely on specific bundles of resources of the each firm. Projects A, B, and C are all above the MNC's cost of capital and so can be done solo by the foreign firm. Projects A and B, especially, can be said to draw on the firm's "core" capabilities – they provide the highest returns to the proprietary advantages of the firm. Projects D and E are below the cost of capital and so would not be done, at least not solo; these

¹⁵ We are assuming implicitly that the cost of capital to MNCs and local firms are the same. This is usually not the case, but there is no need to complicate the model with such differentials. One can think of this assumption as stemming from an efficient market for international financial capital – by no means a reality, but an assumption that focuses attention on firm-specific factors that are even less likely to be transferred across borders through perfect markets.

¹⁶ In Dunning's eclectic framework (1977), these are "ownership advantages." For now, we leave aside his "internalization advantages," which refer to the factors that lead the firm to internalize the transfer of these ownership advantages rather than exploit them through contracts. Since we do not have evidence on contractual transfers, we are in effect assuming that the firm-specific advantages in our model require internalization if they are to yield competitive advantage abroad.

projects are more “peripheral” to the firm – they may draw only marginally on its key proprietary advantages.

Even so, when combined in joint ventures with resources that the local firm would use for projects F and G, the firm’s peripheral bundles D and E would yield returns DF and EG. Of these, DF lies above the firm’s cost of capital, and so it would pay to devote D to that project (D otherwise would have earned a lower return). The key to this argument is, of course, the concave form of the dotted line indicating the joint ventures’ returns. In our framework, these curves must be concave if a firm is *ever* going to do a joint venture. Put differently, if a joint venture promises returns that are below the return to each firm’s private use of the resources it contributes to the venture, then the firm would not do the joint venture. This concave form represents the “value creation” or “synergy” of the joint venture. (Note that the solid-line horizontal scales in these figures apply to the wholly-owned projects shown; the JV projects fall on a different scale, shown here with a dashed line.)

4.4. Varying Advantages of MNC and Local Firms. The situation in Figure 8, in which the MNC has competitive advantages over the local firm, would lead to investment in three projects, i.e. A, B, and C would be wholly-owned by the MNC and DF would be a joint venture. It should be evident how this leads to the empirical patterns we saw earlier: the average return on A, B, and C (all wholly-owned projects) are higher in this situation than the return to DF (a joint venture project). Furthermore, the profitability gap between the wholly-owned and jointly-owned ventures increases with the relative advantage of the foreign firm – precisely what we saw in the data, most strikingly in the ranking in Table 1. As the relative advantage of the foreign firm increases, the MNC’s MRC curve will rise higher on the left, so that the distance between A and B and DF will increase.

It is also easy to see from this graphic model when the profitability gap might be reversed, that is, when the average return on wholly-owned projects would be lower than on joint ventures. That situation is shown in Figure 9. In this illustration, the local firm has competitive advantages over the foreign firm –

not the usual assumption in the FDI literature, but one logically consistent with our model. In this situation, it will again pay for the foreign firm to invest in some wholly-owned projects (such as A), but the returns on a joint venture that draws on strong local capabilities (BF) may in fact be higher than the return to the solo venture. Why would the local firm be willing to form this joint venture? Again, only because of the concave form of the dotted line – the local firm will get a higher return in BF than if it used its F resources solo.

When might a situation like this arise? Two conditions must apply. First, the local firm does have all the resources needed to compete successfully and could keep the foreign firm out of the market, particularly considering the liability of foreignness. But the foreign firm might have some resources that, by themselves, might not be sufficient to sustain a wholly-owned investment but that could add value to a local venture. Examples might be the very industries in which we saw “negative” profitability gaps – soap, toiletries, textiles, and so on. The local firm might be able to do fine by itself, but an MNC might bring value with a brand-name or chemical formula.

By varying the relative positions of the MRC curves, therefore, we can generate the full range of profitability gaps shown in the data. Large positive gaps stem from strong MNC advantages; negligible gaps suggest parity; and large negative gaps stem from weak MNC advantages. We do not observe the extreme situation in which local firms so dominate foreign firms that there is no FDI at all, for obvious reasons.

The full range of possibilities for a given MNC is shown in Figure 10, which represents a modified MRC curve that takes into account the possibility of joint ventures with another firm with varying capabilities. The MNC can invest solo along the line AB; below B, it will not invest. But when offered the option of forming a joint venture with another firm, it may find projects to the right of the vertical line that are above its cost of capital. When the potential partner has only mildly attractive capabilities, these joint ventures can only achieve returns along CD; in this case, the average return of the wholly-owned

ventures will exceed that of the joint ventures. When the firms are at parity, the return to joint ventures should be equal to returns on wholly-owned ventures.¹⁷ Finally, when the potential partner has capabilities that far exceed the MNC's, then the joint-venture returns in GH will on average exceed the solo returns.

4.5. Profitability Gaps as an Indicator of Relative Advantages. If this model reflects reality, then one can interpret the profitability gap in a particular industry and country as the “revealed” competitive advantage of U.S. firms compared to local firms. The data discussed above correspond roughly with such an interpretation. For example, as noted already, it is reasonable to argue that the competitive advantage of U.S. firms is strongest in computers and pharmaceuticals, lowest in soaps and textiles, and moderate in such sectors as machinery.

In addition, we saw that the profitability gap widened and narrowed over time in some industries and countries. These trends might indicate changes in the revealed advantages of U.S. firms compared to local firms. The narrowing profitability gap in Western Europe and Japan might reflect this. On the other hand, the gap in Asia-Pacific was seen to be stable over time; this would seem to contradict the fact that capabilities of local firms in such countries as Taiwan and South Korea have increased since the 1970s. One explanation for the observed pattern may be the level of aggregation of the data – the Asia-Pacific region also includes an increasing share of FDI into countries that have yet to develop strong local industries; as FDI into such countries grows, the average profitability gap for the region will increase. More disaggregated country and industry data would be needed to test this explanation.

4.6. Profitability Gaps and Host Government Policies. The argument that profitability gaps reflect revealed competitive advantage does assume that the firm is free to invest in whatever projects it wishes.

¹⁷ Of course, each firm only gets a share of these returns, but they also contribute only a corresponding share of the assets. One way to visualize this case of parity is to think about the two firms as identical – mixing and matching each other's resources then does not yield more, or less, than using one's own resources.

What if there are restrictions on foreign investment, especially ownership restrictions?¹⁸ In such cases, the firm in Figure 8 may simply not be allowed to invest in A, B, and C, or at least will have such restrictions placed on it that these investments will yield lower returns. On the other hand, the firm will be encouraged to invest in DF, and indeed may receive incentives that will increase the return to that joint venture. It is easy to see that the result will then be a smaller profitability gap than without host-government restrictions, even in situations when the foreign firm enjoys competitive advantages.

This argument may explain the negative gaps in Petroleum and Mining in Figure 1; these are industries in which many host governments have long restricted wholly-owned investments or have found ways to extract profits from wholly-owned affiliates. As a result, they may have equalized the returns to wholly-owned and jointly-owned ventures, to the extent that MNCs in these industries have become indifferent between these entry modes. Finally, the reversal over time of the profitability gap in Services (Figure 1) is intriguing – it suggests that before the 1990s U.S. firms were either barred from wholly-owned investments in such fields or did not enjoy much advantage; later this changed.

4.7. An Alternative Formulation of the Model. Our model describes project choices by a single firm. From this perspective, projects along the MRC curve in Figure 6 represent successively less attractive ways of using the firm's proprietary advantages. The MRC is then the investment frontier for a given firm and the resulting wholly-owned and jointly-owned ventures are then different projects in the firm's portfolio.

A different formulation of the model would see the MRC curve as representing the investment frontier for an industry or collection of firms; the projects underlying this curve might then be investments by rivals in the industry. In this view, the leading firms would have the highest returns on their assets in a given industry, followed by second-tier rivals with lower returns.

¹⁸ The investment calculus in countries with host-government restrictions is systematically different from that in countries without such restrictions, as explained in Gomes-Casseres (1990).

In this interpretation of Figure 8, it would be the second-tier firms that would form joint ventures and the leading firms that form wholly-owned ventures in the industry. Indeed, there is some evidence that small firms in an industry are often compelled by competition to follow their larger rivals abroad and that they then often need joint ventures to enter markets in which they could not succeed alone (Gomes-Casseres, 1989).

The aggregate data and stylized facts discussed above are consistent with this formulation too, and we have as yet no way to discriminate between the explanations. Because the data we have are at the industry level (or country level), we do not observe single firms and cannot disentangle average returns for the industry from average returns for firms in the industry. One implication of the industry-MRC model may be that the steepness of the MRC curve depends on industrial organization variables, such as the distribution of firms in the industry.

5. Implications of the Research

5.1. Extensions: Diversification and Multinationality. Our model has one more attractive feature that makes it compelling. With minor revisions, it can be used to explain two other types of empirically-observed profitability gaps, one of which has long been a puzzle in the strategy literature.

There is a long literature on the “diversification discount,” by which is meant the empirical observation that firms that diversify outside their core business tend to have a relative lower market value, all else equal, than those which don’t diversify. Usually, this discount is measured by Tobin’s Q, which is roughly the difference between the market capitalization of a firm and the total book value of its assets.

Our framework is readily modified to explain this puzzle. Firms that invest in projects outside their core

will receive a lower return on those projects than on their core projects. As they do that, their average return on assets will decline, leading to a lower market capitalization, holding constant the value of assets. Indeed, the business-level data in a study of conglomerates by Maksimovic and Phillips (2002) seems consistent with this approach.

A more recent observation in the finance literature is the “multinationality discount,” also measured by Tobin’s Q. The pattern here is that the value of the firm (again relative to its book assets) declines as it invests in more countries. This observation seemed to fly in the face of claims about the positive role of global strategies. Among the first papers to explore this was Click and Harrison (2000); in Denis, Denis, and Yost (2002) the multinationality discount is explicitly compared to the diversification discount and found to be of roughly equal magnitude. Curiously, neither of these papers finds a satisfactory explanation for their strong empirical results. Denis, Denis, and Yost (2002) even conclude that the costs of globalization outweigh the benefits.

Our framework would suggest otherwise. First, it should be easy to see how the model applies to investment outside the home country. The same liability of foreignness discussed above would mean that, all else equal, projects outside the home country would carry a lower return than projects that use the same firm capabilities inside the home country. An additional reason for lower returns abroad might be that the firm’s home-grown capabilities may, in fact, not be fully appropriate to the foreign environment. In either case, the average return to projects abroad would be lower than the average return to domestic projects. As a result, for a given level of assets, the net income of the firm would be lower, leading to a lower market capitalization.

But this does *not* mean that it is destructive for the firm to invest abroad (or, indeed, for firms to diversify, in the preceding puzzle). Even in the foreign investments, the return to investment exceeds the firm’s cost of capital – the price that shareholders and debtors ask for their money. As a result, the firm is still *creating value for these investors*, even if it is reducing its excess of market over book value.

5.2. Value Destruction in JVs? We do not have data to test whether Tobin's Q would rise or fall as firms invest in relatively more joint ventures. But we bet it would fall. The data suggest strongly that average profitability of a firm's assets would decline the more it invests in joint ventures; as argued above, this would lead to a decline in the excess of market over book value. But, as above, this need not be an irrational move for the firm; nor would it have to be justified by "strategic" or non-financial arguments. The rationale for such investments is the same as the rationale for diversification and for foreign investment – to exploit more fully the firm's capabilities. As long as the investments outside the core continue to yield returns over the firm's cost of capital, they create value for the firm's owners.

But, inside the firm, managers would be well-advised to apply a different yardstick to their joint ventures than they do to their wholly-owned ventures. They cannot expect the same average return across these organizational forms, much like they would not expect the same return for a foreign investment and a project in the firm's home base. In this respect, popular reports that alliances are more profitable than wholly-owned ventures are downright misleading. Better to recognize that joint ventures and other alliances are used when the firm cannot go it alone, and that it cannot expect to get its choice returns in these cases.

The same is true for every other project that in some way extends the firm's capabilities into a new area. Here, we tackled the puzzle of profitability gaps among organizational forms; we have seen that the approach applies equally well to profitability gaps among industrial or geographic portfolios.

5.3. Profitability Models in Research. This paper is a first cut at what seems to be a pervasive and important empirical pattern. Limitations of our methods and data have already been noted along the way. Foremost among these is the lack of disaggregated data from the BEA and thus our inability to use multivariate tests. We intend to pursue this with the BEA, in the hope of deepening and refining this research with better data.

But if the general direction of our arguments here holds true, there may be important implications for research in other areas and with other methods. Research on boundaries of the firm – including work on alliances and networks – has seldom dealt directly with the question of profitability. Transaction-cost models and market-entry models are predicated on the relative profitability of different organizational forms, but seldom have they attempted to test directly whether one form is more profitable than another and under what conditions. The same is true for resource-based models of the firm.

Our research suggests that developing an explicit model of profitability of the MNC will yield various benefits. We applied such a model here to explain one set of strategic choices faced by an MNC – the conditions under which the firm will invest in wholly-owned and in jointly-owned ventures. Related models can no doubt be used to explain other strategic choices, including exporting, market entry, diversification, and mergers.

Our model also highlights the need for research in areas that we would have thought were already well known. Chief among these is the definition and measurement of an MNC's firm-specific advantage compared to local firms. We used this well-known construct to explain the higher profitability of wholly-owned projects in certain industries. But we have no good way to test the argument because we have no independent measure of this advantage. It may sound tautological to say that the profitability gap itself is an indicator of this relative advantage, but this gap may indeed be useful as an indicator in other research. At any rate, we would encourage such research that returns to the basic micro-economic foundations of MNC theory.

Figure 1
Return over Assets by US Ownership in Broad Industry Sectors
 (1977-1998, 1 digit level; minority includes 50-50 JVs)

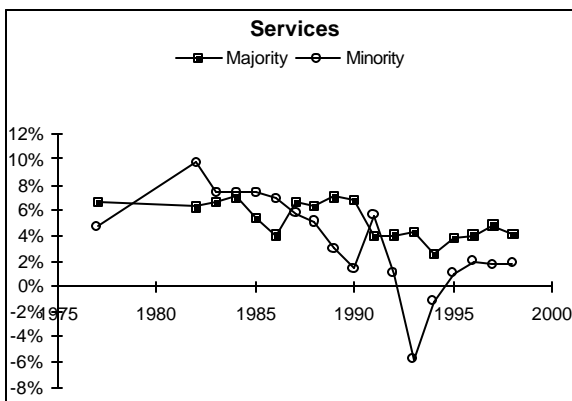
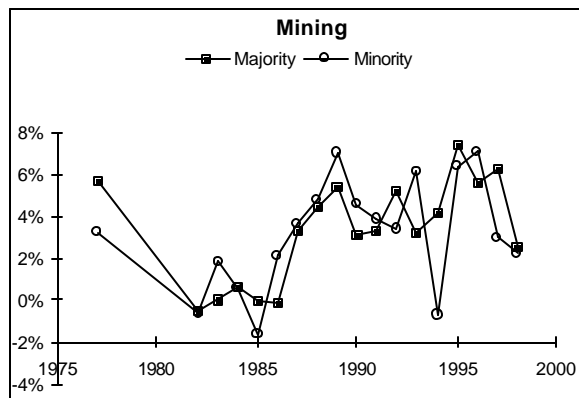
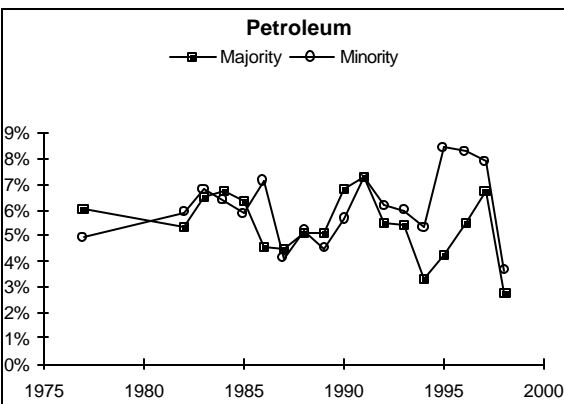
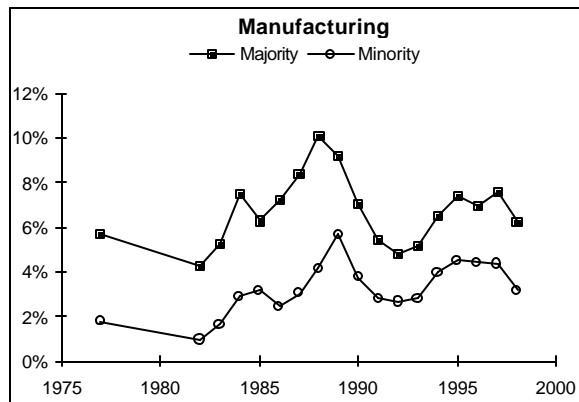
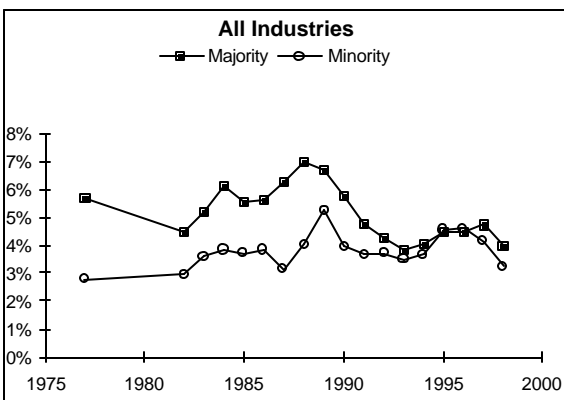


Figure 2
Return over Assets by US Ownership in Selected 2-digit Manufacturing Sectors
 (1977-1998, 2 digit level; minority includes 50-50 JVs)

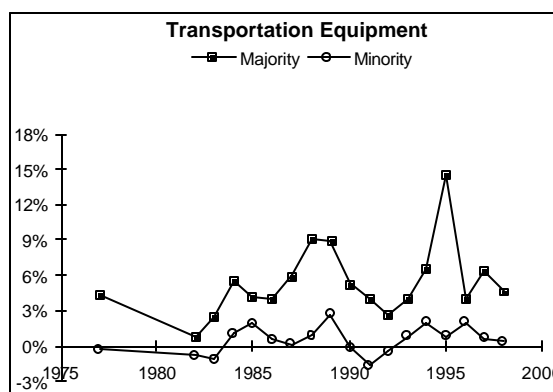
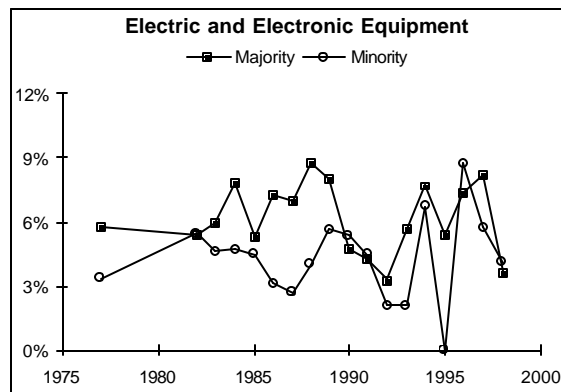
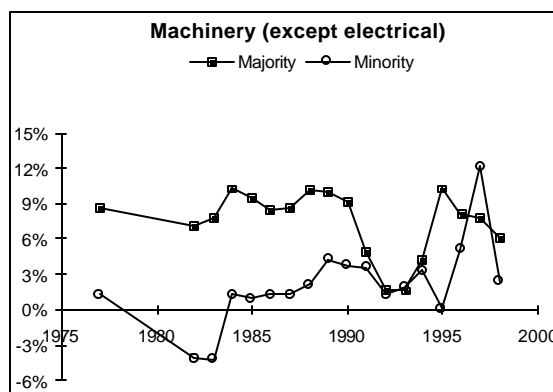
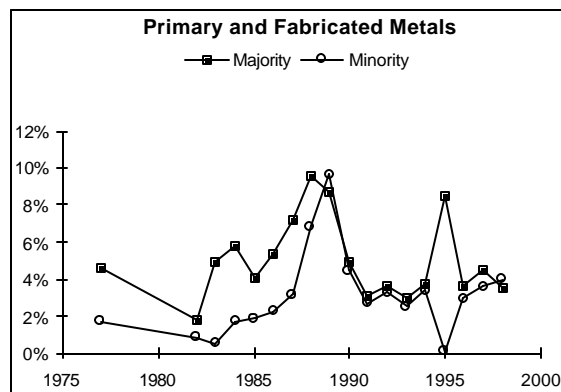
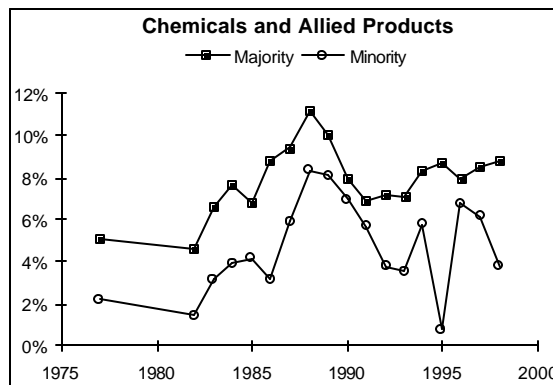
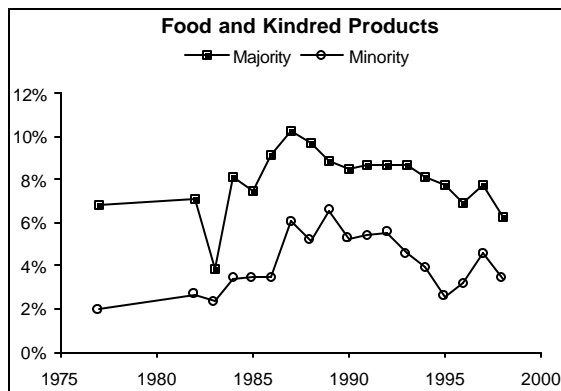


Figure 3
Return over Assets by US Ownership in Selected 3-digit Manufacturing Sectors
 (1977-1998, 3 digit level; minority includes 50-50 JVs)

Notes: See Table 1 for listing of averages for all 3-digit sectors
 Outlying data points above 30% or below -30% have been excluded

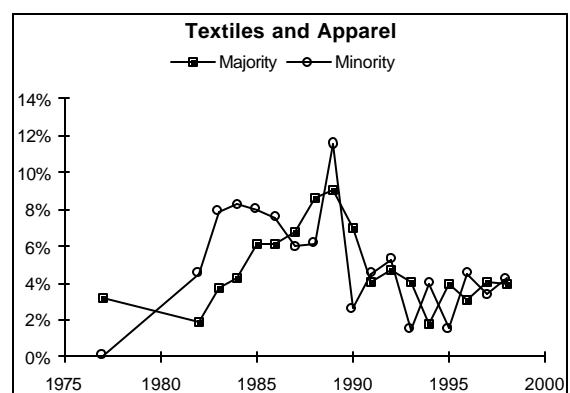
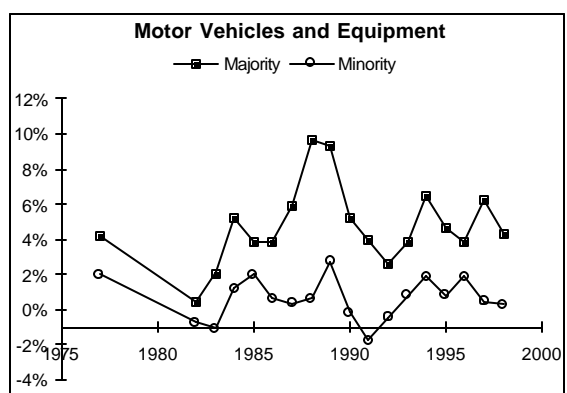
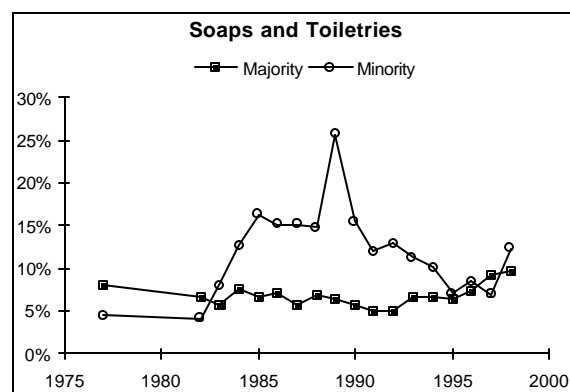
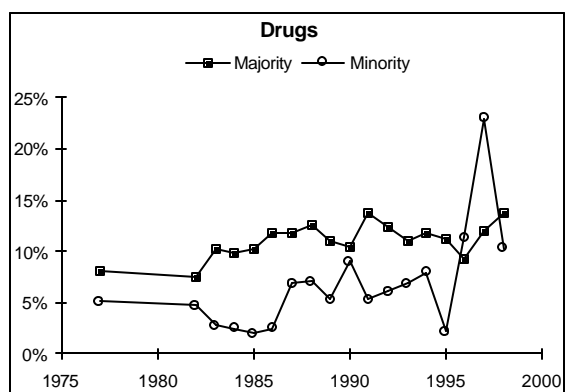
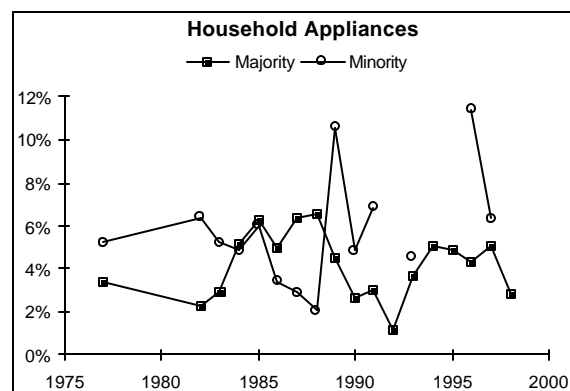
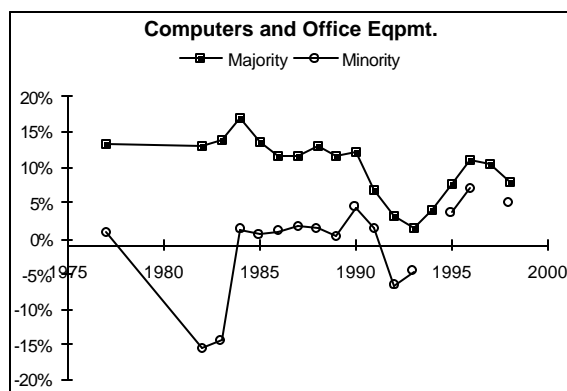


Figure 4
Return over Assets by US Ownership in Selected Developed Countries and Regions
 (1977-1998, Manufacturing Affiliates; minority includes 50-50 JVs)

Notes: Outlying data points above 30% or below -30% have been excluded

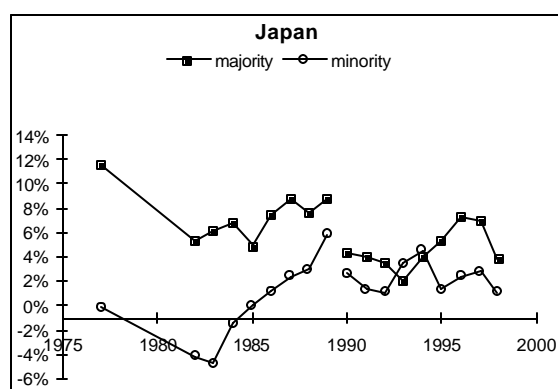
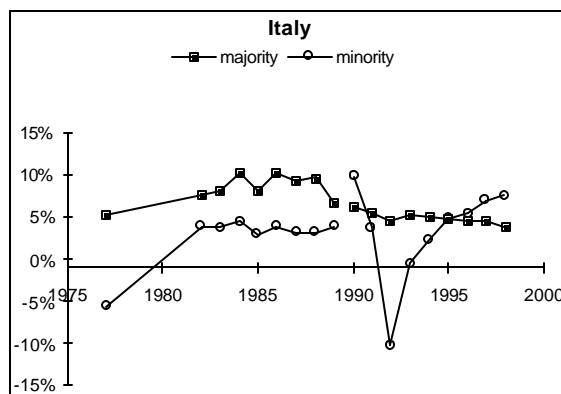
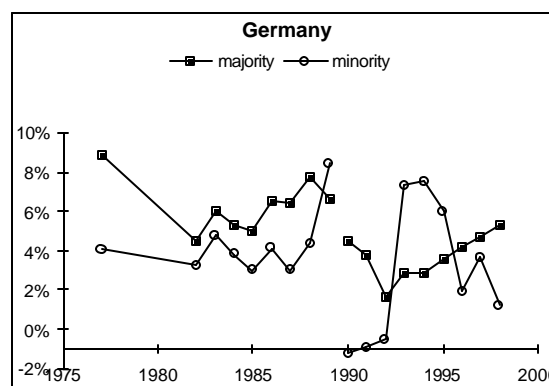
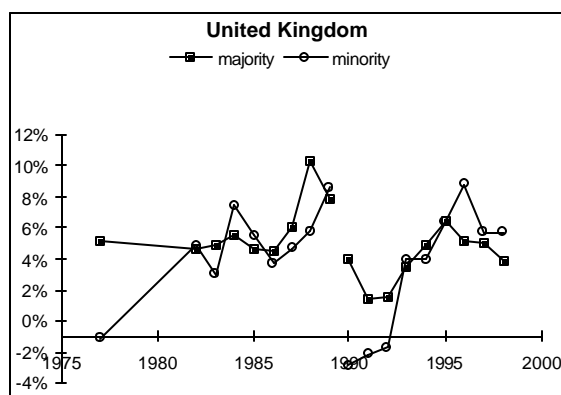
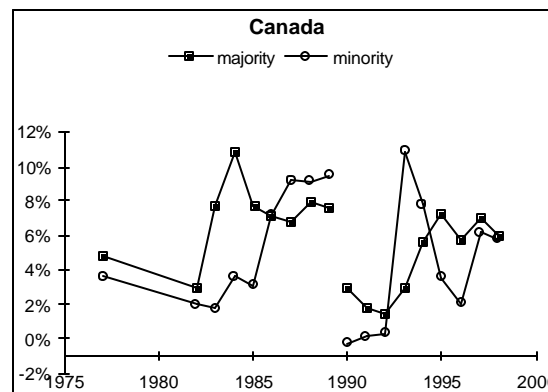
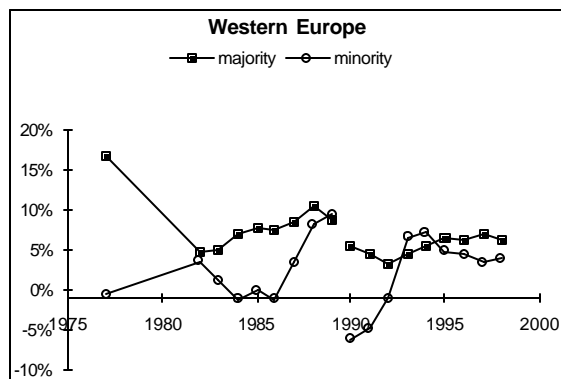


Figure 5
Return over Assets by US Ownership in Selected Developing-Country and Regions
 (1977-1998, Manufacturing Affiliates; minority includes 50-50 JVs)

Notes: Outlying data points above 30% or below -30% have been excluded

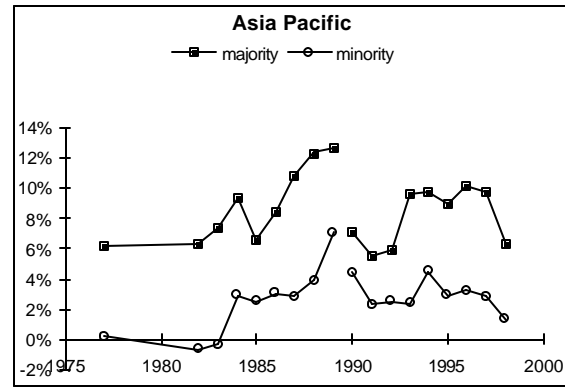
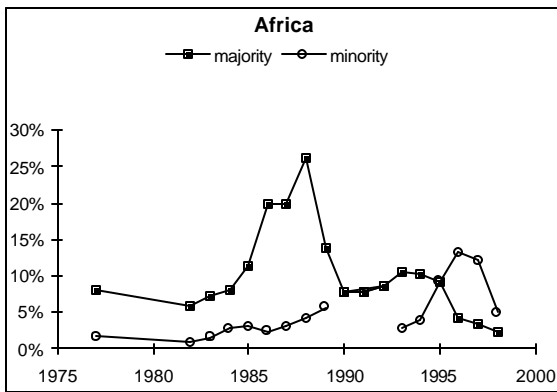
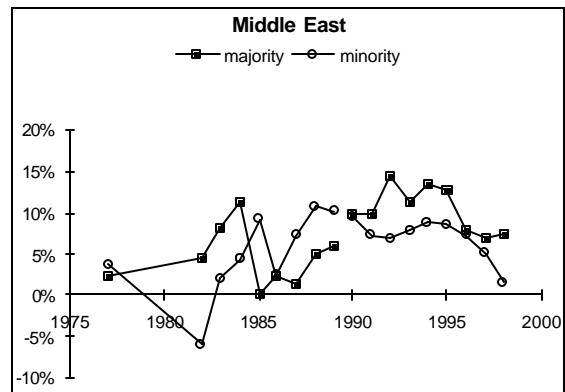
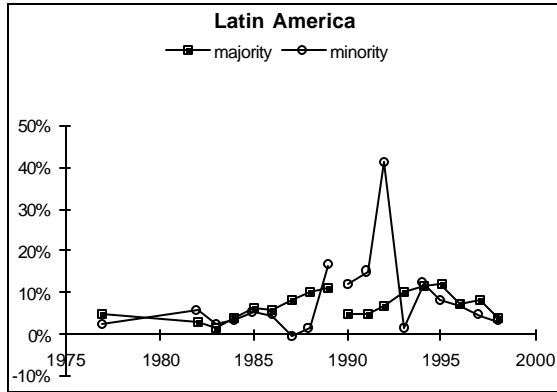


Figure 6
The Marginal Return to Capital

Return to the firm

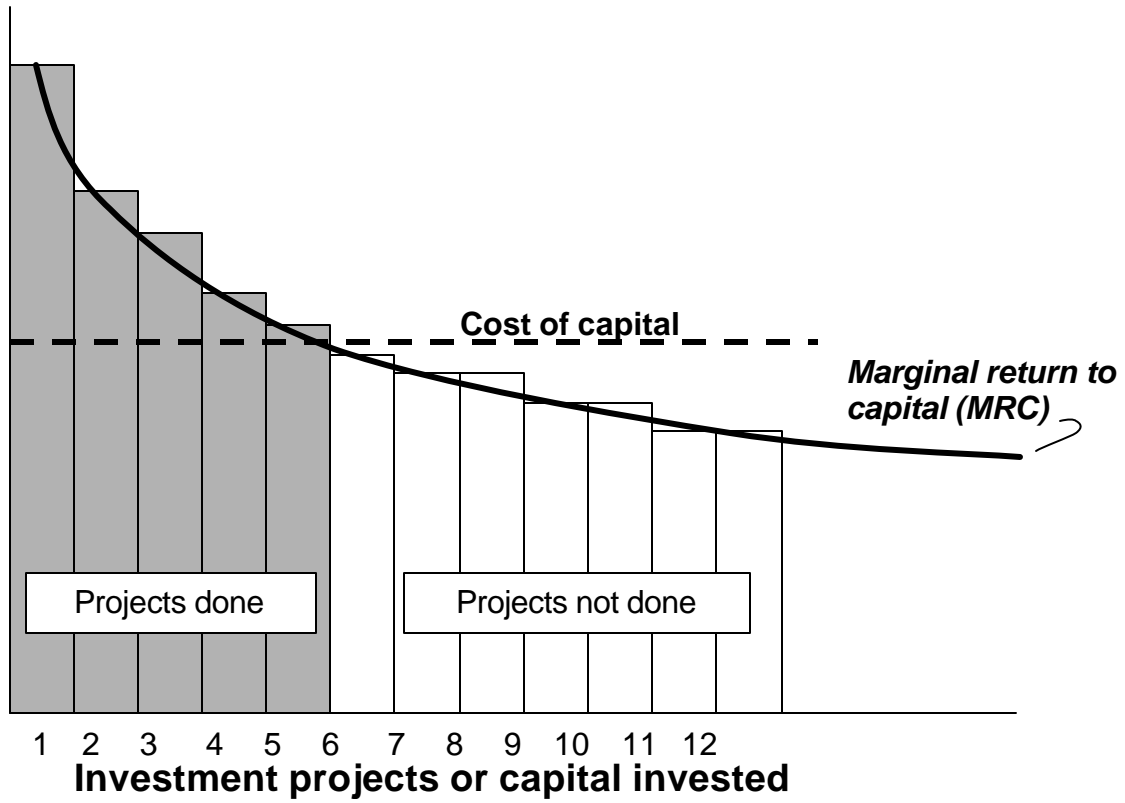


Figure 7
Marginal Return to Capital when MNC has Advantage over Local Firm

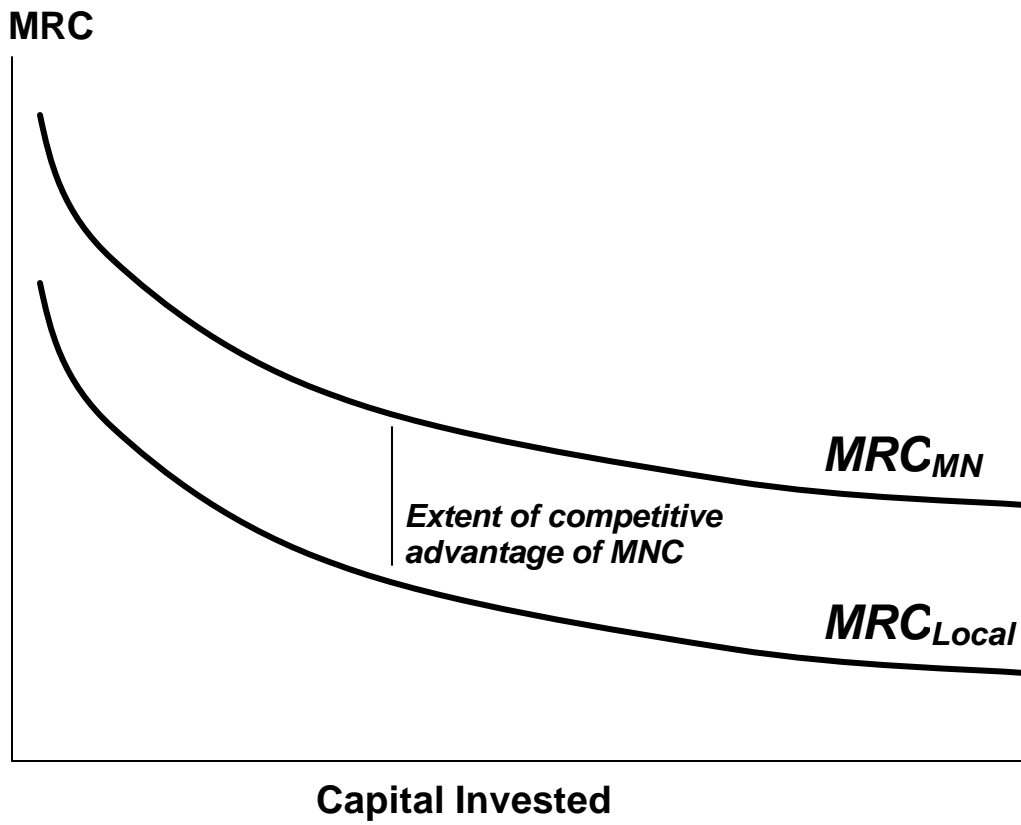
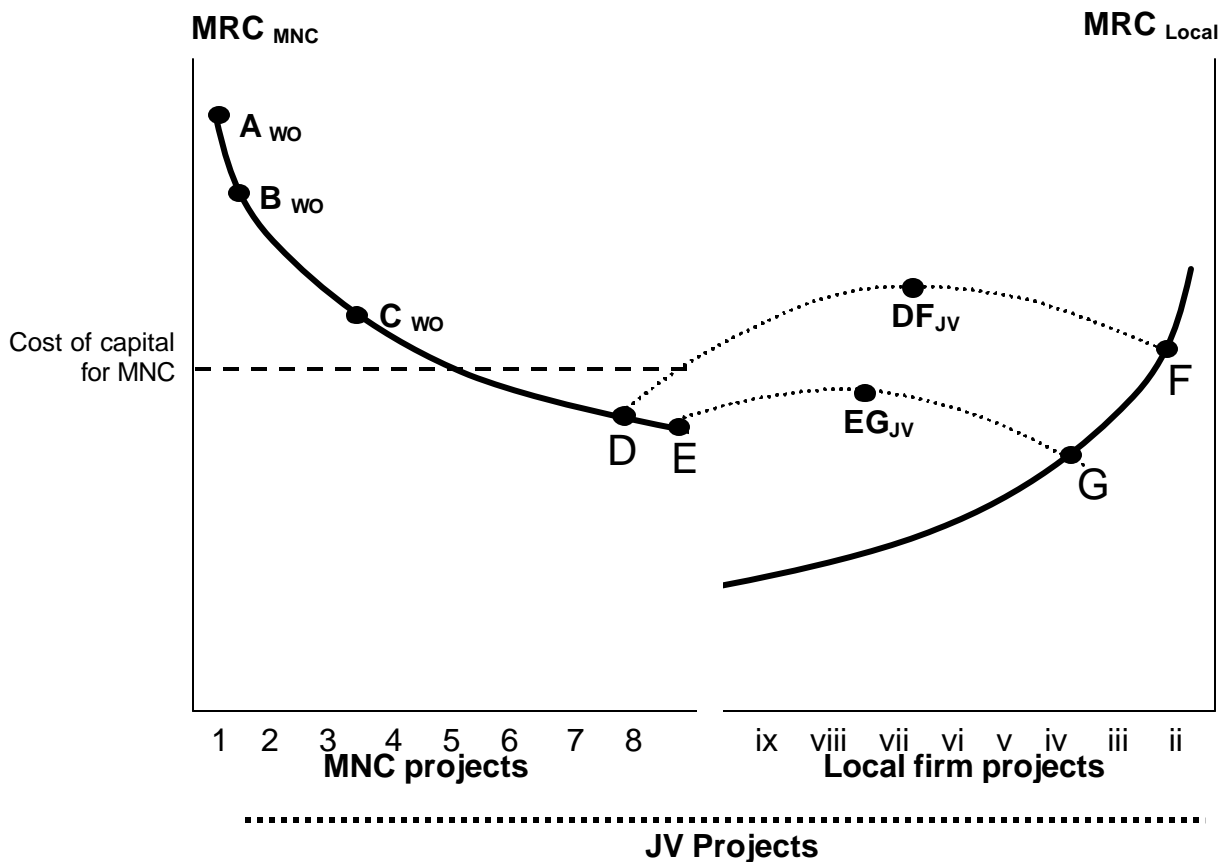
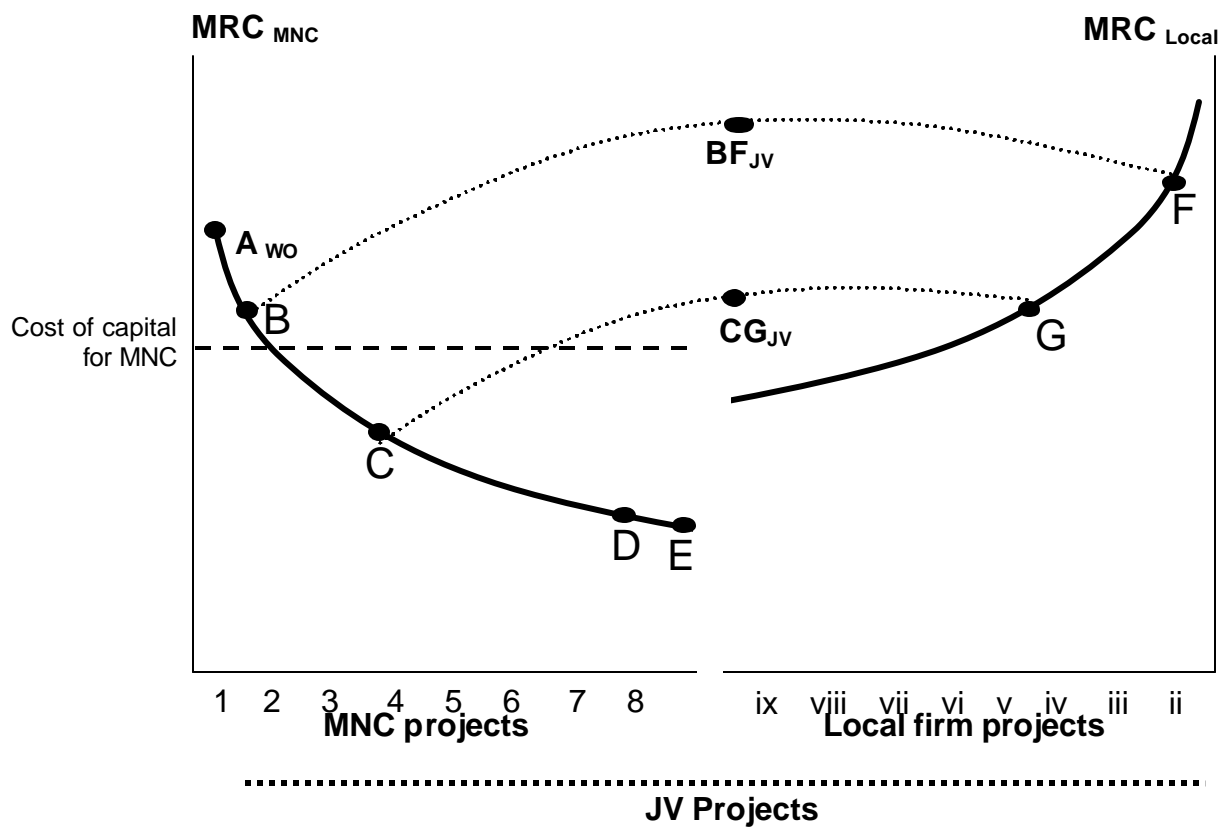


Figure 8
Marginal Returns and Joint Ventures when MNC has Advantage



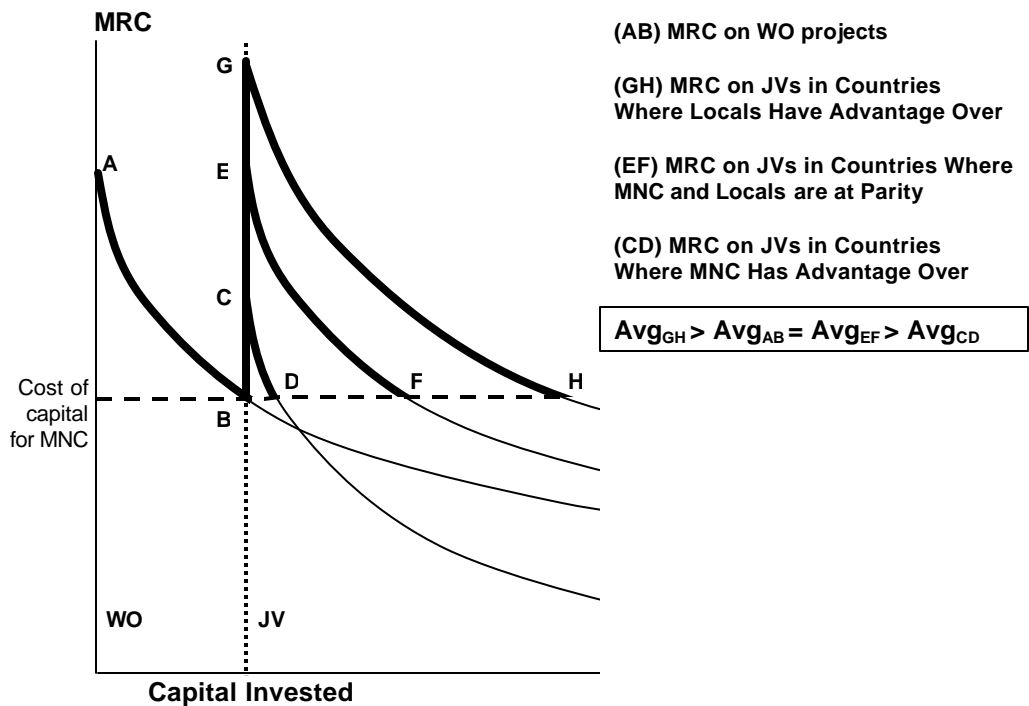
Note: Solid-line horizontal scales apply to the wholly-owned projects shown; the JV projects fall on a different scale, shown here with a dashed line.

Figure 9
Marginal Returns and Joint Ventures when Local Firm has Advantage



Note: Solid-line horizontal scales apply to the wholly-owned projects shown; the JV projects fall on a different scale, shown here with a dashed line.

Figure 10
Modified MRC with Different Ownership Structures and Relative Advantages



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