ELSEVIER

Journal of Public Economics 71 (1999) 379–402

JOURNAL OF PUBLIC ECONOMICS

# ''Basket cases'': Tax incentives and international joint venture participation by American multinational firms

Mihir A. Desai[a], James R. Hines Jr.[b,c,*]

[a]*Morgan 363, Harvard Business School, Soldiers Field, Boston, MA 02163, USA*
[b]*University of Michigan Business School, 701 Tappan Street, Ann Arbor, MI 48109-1234, USA*
[c]*National Bureau of Economic Research, Cambridge, MA, USA*

Received 30 June 1997; received in revised form 31 March 1998; accepted 1 April 1998

**Abstract**

This paper examines the impact of the U.S. Tax Reform Act of 1986 (TRA) on international joint ventures by American firms. The TRA mandates the use of separate ''baskets'' in calculating foreign tax credits on dividends received from each foreign corporation owned 50% or less by Americans – which greatly reduces the attractiveness of joint ventures, especially those in low-tax foreign countries. Since the effect of the TRA on joint ventures varies with foreign tax rates, the country-level pattern of subsequent joint venture activity illustrates the sensitivity of organizational form to tax considerations. The evidence indicates that American participation in international joint ventures fell sharply after 1986, particularly in low-tax countries. Moreover, joint ventures in low-tax countries use more debt and pay greater royalties to their American parents after 1986, reflecting their incentives to economize on dividend payments. 

*Keywords:* Joint ventures; Foreign tax credit; Foreign direct investment; Organizational form

*JEL classification:* H87; F23; H25; L23

## 1. Introduction

There is increasing evidence of the importance of organizational form to business operations and of the influence of government policies on the forms that

*Corresponding author. Tel.: + 1-734-6474703; fax: + 1-734-9360279; e-mail: jrhines@umich.edu

0047-2727/99/$ – see front matter 
PII: S0047-2727(98)00074-7

businesses take. Tax systems often give firms incentives to adopt certain organizational forms at the expense of others. For example, the U.S. corporate income tax must be paid by corporations but not by unincorporated businesses. This, together with other U.S. tax provisions, appears to influence the organization of domestic business,[1] though its effect on international business is still poorly understood.

The purpose of this paper is to examine the effect of the U.S. Tax Reform Act of 1986 (TRA), which introduced new tax costs for American firms with international joint ventures. Since the 1986 law raises the cost of U.S. participation in joint ventures in some countries more than it does in others, the country-level pattern of responses after 1986 reflects the degree to which firms substitute one organizational form for another. Passage of the TRA coincides with a dramatic shift in the level and pattern of U.S. participation in international joint ventures, suggesting that the tax change significantly reduced American joint venture activity. The character of joint venture activity changes at the same time and in a way that is consistent with the incentives created by the legislation.

A growing body of literature documents the effect of tax policies on the location and behavior of multinational firms.[2] The experience of American joint ventures in the years after 1986 offers additional evidence that tax policies influence not only the magnitude but also the nature of international business activities.

Until the 1980s, there were increasing numbers of joint ventures between American multinational firms and foreign firms. Such arrangements offer American firms the prospect of obtaining footholds in rapidly growing markets while avoiding some of the market risks associated with wholly-owned ventures. International joint ventures are particularly popular in high-technology industries in which different firms may have proprietary assets – such as patents, trademarks, and know-how – that are complementary in production. International joint venture activity is limited by the moral hazard costs associated with split ownership, but in spite of this limitation, some observers forecast its continued expansion.[3]

The TRA contains a number of important new tax provisions, including a change to the taxation of dividends received from international joint ventures owned between 10% and 50% by Americans. This reform increases the tax cost of

[1]See the evidence presented in Gordon and MacKie-Mason (1994), Gentry (1994) and MacKie-Mason and Gordon (1997).

[2]See, for example, Slemrod (1990), Grubert and Mutti (1991), Hines and Rice (1994) and Hines (1996). This literature is reviewed by Hines (1997).

[3]See, for example, Hladik (1985), who documents the growth of international joint ventures between 1951 and 1984, Anderson (1990) and Geringer and Hebert (1991). Bleeke and Ernst (1993, p. 269) offer that, ''Organizations of the future have to seek partners who can share costs and swap skills and access to markets. In the fluid global marketplace, it is no longer possible or desirable for a single organization to be entirely self-sufficient. Collaboration is the value of the future. Alliances are the structure of the future.''

undertaking joint ventures, the effect being most pronounced for joint ventures in countries with low tax rates.

The joint venture provisions of the TRA had their origin in a much more sweeping proposal advanced by President Reagan (President of the United States, 1985, pp. 385–396), in which he urged Congress to alter the calculation of foreign tax credit limits by replacing the existing system, based on worldwide averages, with one that would calculate limits separately for each foreign country. Such a change would reduce the foreign tax credits that American multinational firms could claim, thereby increasing their U.S. tax liabilities. By the time that Congress passed the Tax Reform Act of 1986, this provision was removed due to its perceived arbitrariness and amid concern over its potential impact on American competitiveness abroad.

Congress decided instead to remove worldwide averaging only for categories of foreign income that it segregates into separate ''baskets''. The TRA creates a separate ''basket'' for dividends received from each so-called ''10–50 corporation'' – foreign corporations owned between 10% and 50% by Americans.[4] By segregating income in this way, the TRA greatly reduces the attractiveness to American investors of minority participation in international joint ventures, the effect being most pronounced for joint ventures in low-tax foreign countries. The reason is that the separate ''basket'' provisions prevent the use of excess foreign tax credits to eliminate residual U.S. tax liability on income from joint ventures in low-tax countries. Dividend receipts from majority-owned affiliates in low-tax countries do not trigger U.S. tax liability for American parents with excess foreign tax credits, since the parents are able to apply excess foreign tax credits from other operations.[5] Since most American firms had excess foreign tax credits in the years after 1986, American multinationals with joint ventures in low-tax countries faced strong incentives either to become majority owners of the ventures or to reduce or liquidate their minority positions.[6]

The evidence suggests that the TRA had a significant effect on the organization-

[4]The official explanation of this provision is that joint ventures in which Americans hold ownership stakes of 50% or less exhibit insufficient ''identity of interest with U.S. shareholders to treat nonmajority ownership positions as units of a worldwide business.'' (U.S. Congress, Joint Committee on Taxation, 1987, p. 868.) Congress's reasoning has been questioned by Tillinghast (1990), who argues that, since U.S. law deems 10% ownership to be sufficient for firms to claim foreign tax credits, it should also suffice to treat an affiliate as part of a worldwide group.

[5]The separate ''basket'' provisions of the TRA also made joint ventures in high-tax countries more expensive for American parent firms with deficit foreign tax credits. See Section 3.3 below.

[6]In legislation enacted in 1997, the United States again changed its tax treatment of international joint ventures, this time prospectively. Starting in 2003, American firms will be entitled to average together all of their dividend income from ''10–50 corporations'' in calculating foreign tax credit limits on that income. This change will reduce some (but not all) of the U.S. tax disincentives for joint venture participation.

al form of U.S. business activity abroad. Aggregate time series data reveal that American participation in minority joint ventures declined significantly after 1986. The country-level pattern is consistent with the incentives created by the TRA: joint venture activity fell most sharply in countries with low tax rates. Furthermore, the character of joint venture activity changed. By segregating dividends received from ''10–50 corporations'' into separate ''baskets'', the TRA raises the cost of equity financing of joint ventures, and thereby increases the attractiveness of joint ventures that economize on dividend payments to American partners. The evidence indicates that joint ventures in which American firms participate after 1986 exhibit higher debt/asset ratios and greater proclivity to pay royalties to American partners than before 1986, the difference being significantly more pronounced in low-tax countries than in high-tax countries. To the degree that royalty payments represent compensation for transfers of technology, the separate ''basket'' provisions of the TRA appear to influence the pattern of technology transfer by U.S. multinationals.

Since the joint venture provisions of the TRA, while reducing the attractiveness of joint ventures in all countries, have greater impact on operations in low-tax foreign countries than those in high-tax foreign countries, it is possible to identify their impact by relating changes in business activity after 1986 to local tax rates. The TRA did not introduce separate ''baskets'' for majority-owned affiliates, thereby creating a natural comparison group with which to measure its impact on joint ventures. Possible ways in which American firms respond to the TRA include converting joint ventures to majority-owned affiliates, relocating joint ventures to high-tax countries, changing the capital structures and payout policies of existing joint ventures, and avoiding altogether some otherwise-attractive joint venture opportunities. The available evidence does not clearly distinguish between all of these responses but does document the sensitivity of organizational form to tax considerations.

Section 2 of the paper reviews the determinants of international joint venture activity and traces the decline of U.S. international joint ventures after 1986. Section 3 analyzes the effect of the TRA on incentives to form international joint ventures. Section 4 presents regression results describing the effect of local tax rates on American participation in joint ventures before and after the 1986 tax change. Section 5 is the conclusion.

## 2. International joint venture activity

In undertaking joint ventures, firms cede control over operating and financial decisions in return for opportunities to benefit from other firms' intangible and tangible assets. There are many business situations in which the moral hazard, monitoring, and other costs associated with joint ventures so reduce their value to

potential participants that they outweigh the benefits of collaboration.[7] International joint ventures are probably even more costly than their domestic counterparts, since information is less readily obtained at great distance, monitoring is more expensive, and the ability to coordinate operations and finances to minimize taxes is of particular value to owners of foreign investments. At the same time, international joint ventures may provide opportunities to explore markets and share risks and complementary technologies at relatively low cost. Furthermore, the existence of potential spillovers means that parent firms may benefit from coordinated R&D activity in spite of the associated moral hazard problems.[8]

Empirical studies identify three primary motivations for joint venture formation. The first is learning on the part of resource-constrained firms. Kogut (1991) characterizes joint ventures as ''real options'' that provide firms with information they can use in forming subsequent plans – that may include acquiring their partners or dissolving their joint ventures. Similarly, Balakrishnan and Koza (1993) view joint ventures as intermediate forms between markets and hierarchies that permit firms to overcome informational asymmetries at low cost. The second motivation is to placate host governments. Franko (1989), Gomes-Casseres (1990) and Contractor (1990) argue that sole ownership is generally preferred but occasionally conceded in bargains with host governments. The third, and most often cited, motivation is to economize on transaction costs.[9] As outlined by Beamish and Banks (1987) and Gomes-Casseres (1989), joint ventures balance the benefits of combining complementary assets with costs that include managerial conflicts and shirking. Hennart (1991) argues that the cost of using market transactions to purchase other firms' intermediate inputs makes joint ventures particularly attractive. The U.S. Congress apparently concurs, citing the competitive importance of joint venture activities in its recent decision to rescind some of the joint venture provisions of the TRA.[10]

### *2.1. Data*

The available aggregate evidence on U.S. joint venture activity is reported by the Bureau of Economic Analysis of the U.S. Department of Commerce (BEA), which performs periodic benchmark surveys of the foreign operations of American multinational corporations. The two most recent surveys cover 1982 and 1989. U.S. Department of Commerce, Bureau of Economic Analysis (1985), (1992)

[7] See, for example, Holmstrom (1982), Grossman and Hart (1986), Hart and Moore (1990) and Legros and Matthews (1993).

[8] See Bhattacharya et al. (1992) and Gandal and Scotchmer (1993) for examples.

[9] These theories are reviewed in Caves (1996).

[10] ''The Congress believed that the joint venture can be an efficient way for American business to exploit its know-how and technology in foreign markets. If the prior-law limitation was discouraging such joint ventures or altering the structure of new ventures, the ability of American business to succeed abroad could be diminished. The Congress believed it is appropriate to modify the prior-law limitation to promote simplicity and the ability of American business to compete abroad.'' (U.S. Congress, Joint Committee on Taxation, 1997, p. 302.)

reports data on country and industry bases including details of income statements, balance sheets, employment patterns, and parent–affiliate transactions such as royalty and interest payments. In addition, U.S. Department of Commerce, Bureau of Economic Analysis (1985) tabulates responses to its 1982 survey of government-imposed ownership restrictions.[11]

BEA reports aggregate figures for countries in which there is substantial U.S. investment; to protect the confidentiality of survey respondents, BEA suppresses information for countries in which one or two American firms represent large fractions of total U.S. investment.[12] The BEA data distinguish activities of majority-owned foreign affiliates of American firms from activities of all affiliates owned at least 10% by American firms. Differences between these two categorizations represent the activities of affiliates owned between 10% and 50% by American firms. Throughout this paper we refer to such minority-owned affiliates as joint ventures.[13]

The tax treatment of multinational firms is discussed in detail in Section 3. Since American firms pay corporate taxes to foreign host countries but on occasion receive special treatment in the form of tax holidays and other local tax concessions, it is necessary to calculate tax rates specifically applicable to American investors. Hines and Rice (1994) report such tax rates for 1982, and Table 1 lists comparable tax rates for 1989.[14] In the statistical work, these tax rates

[11]The 1982 BEA survey asks firms to indicate whether host governments limit the proportion of equity American parents can hold in their affiliates. BEA reports the fraction of respondents in each country indicating that they face such restrictions. This fraction can then be used as an index of the severity of local restrictions on foreign ownership shares, as in Contractor (1990).

[12]These data supressions limit the available sample size for the statistical work presented in Tables 4 and 5. Countries in which joint venture activity falls to only one or two firms by 1989 are excluded from the sample, which reduces the chance of finding an effect of the U.S. tax change on joint venture activity. In addition, we follow Hines and Rice (1994) in excluding from the sample the major oil exporting countries in order not to confound the analysis with the special tax and regulatory issues that affect the oil industry. Adding data on oil exporting countries to the sample analyzed in the regressions reported in Tables 4 and 5 changes the results very little.

[13]U.S. joint venture activity is concentrated in affiliates owned between 10% and 50% by American firms. Data reported by Mataloni (1995) indicate that over 90% of the majority-owned foreign affiliates of American firms are 100% owned.

[14]Following Hines and Rice (1994), the income tax rates listed in Table 1 equal the smaller of the statutory corporate tax rate for 1989 reported in Price Waterhouse (1989) and the average tax rate paid by American firms in 1989. The total tax rates reported in Table 1 equal the sum of income tax rates and applicable withholding tax rates on dividend payments to the United States. Since firms repatriate dividends out of after-tax income, the relevant withholding tax rate is the product of the statutory withholding tax rate and one minus the corporate tax rate.

The average income tax rate is calculated as the ratio of income taxes paid by local affiliates of American firms to their local pre-tax income. No single variable precisely captures national differences in corporate tax burdens that stem from different provisions for tax deductions, depreciation rules, carryforwards and carrybacks, tax holidays, and nonstandard income concepts. Aggregate tax rates reflect the impact of many of these provisions, but may overstate tax rates because the data used to construct averages include firms with tax losses. Since statutory rates commonly represent upper bounds on effective tax burdens, the smaller of average and statutory rates reliably approximates tax rates that firms face.

Table 1
Tax rates

| Country, corporate tax rate, and total tax rate, 1989 | | | | | |
|---|---|---|---|---|---|
| Argentina | 0.33 | 0.45 | Japan | 0.50 | 0.55 |
| Australia | 0.37 | 0.46 | Luxembourg | 0.16 | 0.20 |
| Austria | 0.30 | 0.39 | Malaysia | 0.40 | 0.40 |
| Bahamas | 0.00 | 0.00 | Mexico | 0.35 | 0.35 |
| Belgium | 0.23 | 0.35 | Netherlands Antilles | 0.05 | 0.05 |
| Bermuda | 0.02 | 0.02 | Netherlands | 0.17 | 0.21 |
| Brazil | 0.42 | 0.57 | Panama | 0.03 | 0.13 |
| Canada | 0.37 | 0.43 | Peru | 0.35 | 0.45 |
| Chile | 0.10 | 0.33 | Philippines | 0.35 | 0.48 |
| Colombia | 0.30 | 0.44 | Portugal | 0.29 | 0.47 |
| Denmark | 0.36 | 0.39 | Singapore | 0.11 | 0.11 |
| Ecuador | 0.46 | 0.57 | South Africa | 0.50 | 0.58 |
| Finland | 0.38 | 0.41 | South Korea | 0.44 | 0.50 |
| France | 0.39 | 0.42 | Spain | 0.25 | 0.40 |
| Germany | 0.37 | 0.46 | Sweden | 0.37 | 0.40 |
| Greece | 0.40 | 0.68 | Switzerland | 0.08 | 0.22 |
| Hong Kong | 0.14 | 0.14 | Taiwan | 0.14 | 0.31 |
| India | 0.50 | 0.63 | Thailand | 0.25 | 0.40 |
| Ireland | 0.02 | 0.02 | Turkey | 0.48 | 0.48 |
| Israel | 0.29 | 0.47 | United Kingdom | 0.28 | 0.28 |
| Italy | 0.43 | 0.49 | U.K. Islands | 0.01 | 0.01 |
| Jamaica | 0.08 | 0.17 | Venezuela | 0.38 | 0.50 |

Note: The first column presents corporate tax rates applicable to U.S. investors based on data in Price Waterhouse (1989) and U.S. Department of Commerce, Bureau of Economic Analysis (1992). The second column presents total tax rates paid by U.S. investors. Entries in the second column equal the sum of income tax rates and applicable withholding tax rates on dividend payments to the United States, in which the relevant withholding tax rate is the product of the statutory withholding tax rate and one minus the corporate tax rate.

are then truncated at 34% in order to reflect the U.S. tax costs of joint venture ownership by U.S. investors with excess foreign tax credits after 1986. National R&D intensities are reported in National Science Foundation (1991); since relative magnitudes are very stable over time,[15] only the 1988 cross-section is used. Mankiw et al. (1992) report real GDP growth rates for the period 1960–1985.

### *2.2. Patterns of joint venture activity*

Table 2 presents means and standard deviations of variables used in the subsequent analysis. Simple breakdowns of the data suggest that, quite apart from tax considerations, macroeconomic conditions influence the formation of joint ventures. Taking joint venture intensity to be the ratio of equity in minority-

[15]See Hines (1995, pp. 235–236).

Table 2
Variable means and standard deviations

| Variable | Mean | Standard deviation | No. obs. |
|---|---|---|---|
| Fraction of total affiliate | 0.2336 | 0.2208 | 40 |
| Equity in joint venture form, 1982 | | | |
| % Δ GDP, 1960–1985 | 0.0446 | 0.0174 | 40 |
| R&D intensity | 1.1700 | 0.9152 | 40 |
| Tax '82 | 0.2871 | 0.1095 | 44 |
| Tax '89 | 0.2741 | 0.1125 | 44 |
| Ownership restrictions | 0.0603 | 0.1051 | 43 |
| % Δ Affiliate equity, 1982–1989 | | | |
| Joint ventures | 1.4078 | 3.2135 | 44 |
| Joint venture – majority owned | 0.5215 | 3.4390 | 44 |
| Δ Royalty payments, 1982–1989 | | | |
| Joint ventures | −0.0017 | 0.0096 | 44 |
| Joint venture – majority owned | −0.0093 | 0.0164 | 44 |
| Δ Leverage Ratio, 1982–1989 | | | |
| Joint ventures | 0.0194 | 0.1969 | 44 |
| Joint venture – majority owned | 0.0376 | 0.2604 | 44 |

Note: ''% Δ GDP, 1960–1985'' is real GDP growth between 1960 and 1985 measured at international prices. ''R&D intensity'' represents R&D/GDP ratios in 1988. ''Tax '82'' is the 1982 tax rate applicable to U.S. investors (truncated at 34%); ''Tax '89'' is the corresponding 1989 tax rate. ''Ownership restrictions'' is the fraction of U.S. firms indicating that host governments limit their percentage ownership of local affiliates. Affiliate equity, royalty, and leverage variables are country-level aggregates reported in the 1982 and 1989 BEA Benchmark Surveys. ''% Δ Affiliate equity, 1982–1989'' is the growth rate of equity in U.S.-owned joint ventures and the difference between joint venture and majority-owned growth rates, between 1982 and 1989. ''Δ Royalty payments, 1982–1989'' is the change between 1982 and 1989 in royalty payments (normalized by affiliate equity) from U.S.-owned joint ventures and the difference between joint venture and majority-owned changes. ''Δ Leverage ratio, 1982–1989'' is the change between 1982 and 1989 in the debt/assets ratio of U.S.-owned joint ventures and the difference between joint venture and majority-owned changes.

controlled U.S. foreign affiliates to equity in all U.S. foreign affiliates,[16] the mean joint venture intensity among the eight rapid GDP growth, high R&D intensity countries in the sample is 31.8%, which compares to 17.1% among the 15 slow-growth, high R&D intensity countries. Similarly, the mean joint venture intensity among 11 high growth, low R&D intensity countries is 28.0%, which compares to 4.4% among five low-growth, low R&D intensity countries.[17] Joint

[16]There are other available measures of joint venture intensity, including those based on sales, assets, and property, plant and equipment. All exhibit similar patterns. Equity intensities offer the advantage of being less susceptible than are other measures to data problems associated with the financing subsidiaries of nonfinancial corporations.

[17]Low GDP growth countries consist of the half of the sample with annual GDP growth rates below 4% over the 1960–1985 period; low R&D intensity countries consist of the half of the sample with R&D/GDP ratios below 0.9% in 1988.

ventures are concentrated in rapidly-growing and technologically advanced countries. OLS estimates of the effect of GDP growth, R&D intensity, and other variables on joint venture activity are consistent with these mean values.[18]

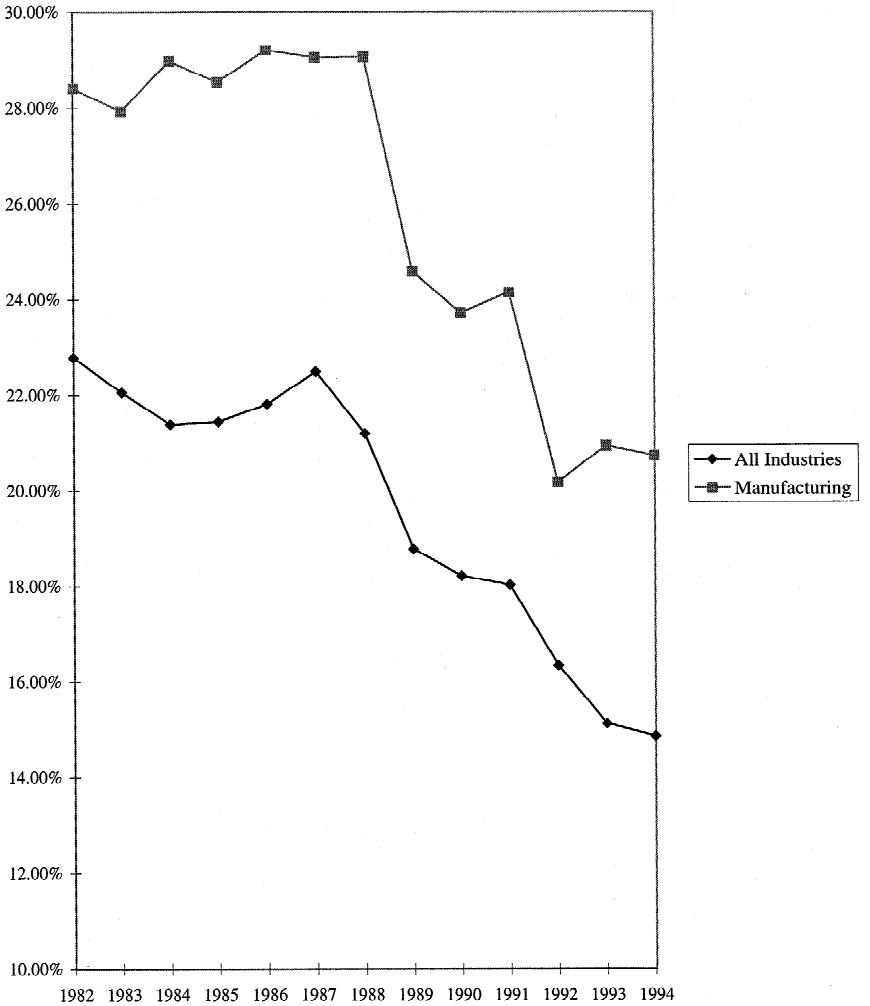


Fig. 1. Joint venture share of foreign affiliate assets, 1982–1994.
Source: U.S. Department of Commerce, Bureau of Economic Analysis. Note: The figure depicts the ratio of joint venture assets to assets of all U.S.-owned foreign affiliates.

[18]See Desai and Hines (1996), Tables 1 and 2. Ownership restrictions imposed by governments also appear to discourage joint venture formation, though it is noteworthy that the effect of R&D intensity and GDP growth appears in the subsample of countries without significant ownership restrictions.

While the benchmark surveys offer the most comprehensive information on the activities of U.S. multinationals, BEA publishes limited annual supplements since 1982 in the Survey of Current Business. Fig. 1 uses these annual data to trace the joint venture intensities of U.S. affiliates in all foreign countries between 1982 and 1994, distinguishing affiliates in all industries from those in manufacturing.[19] The time series is relatively stable between 1982 and 1986, but features a significant break in 1987 or 1988. Joint ventures constitute 22.8% of the assets of U.S.-owned foreign affiliates in 1982, but only 18.8% by 1989, which represents an 18% decline. Joint ventures constitute only 14.9% of the assets of U.S.-owned foreign affiliates in 1994.

Numbers of U.S.-owned international joint ventures, and numbers of American parent firms with international joint ventures, show similar declines over the 1980s. These numbers are available only in the Benchmark surveys; Table 3 presents survey results for 1982 and 1989. The top panel of Table 3 indicates that the number of international joint ventures by U.S. firms fell by 12.3% between 1982 and 1989, while the number of majority-owned ventures rose by 7.3%. The bottom panel of Table 3 reports that the number of U.S. parent firms with international joint ventures fell by 11.4% between 1982 and 1989, while the number of U.S. parents with majority-owned affiliates rose by 6.9%. The information presented in Fig. 1 and in Table 3 suggests that, in the years around 1986, there was a significant reduction in international joint venture activity by American firms.

Table 3
U.S. joint venture activity by number of affiliates and parents, 1982–1989

| | 1982 | 1989 | % Change (1982–89) |
|---|---|---|---|
| Nonbank affiliates of all parents | | | |
| Minority-owned affiliates | 2868 | 2516 | − 12.27 |
| Majority-owned affiliates | 14 589 | 15 654 | 7.30 |
| Total affiliates | 17 457 | 18 170 | 4.08 |
| All parents of nonbank affiliates | | | |
| Parents with minority-owned affiliates | 778 | 689 | − 11.44 |
| Parents with majority-owned affiliates | 1931 | 2065 | 6.94 |
| Total parents | 2138 | 2209 | 3.32 |

Source: U.S. Department of Commerce, Bureau of Economic Analysis (1985), (1992)
Note: The top panel reports numbers of minority-owned and majority-owned foreign affiliates of U.S. firms in 1982 and 1989. The bottom panel reports numbers of U.S. parent firms with minority-owned and majority-owned foreign affiliates in 1982 and 1989. Column entries in the bottom panel do not sum to total due to parent firms with both minority-owned and majority-owned affiliates.

[19]The figures presented in Fig. 1 are ratios of joint venture assets to assets of all U.S. affiliates. Assets are used because BEA does not report equity figures on an annual basis. See, for example, Mataloni (1995). Alternative joint venture intensity measures calculated on the basis of employment or sales show patterns that are similar to that for assets depicted in Fig. 1.

## 3. The 1986 tax change

In order to identify the impact of the 1986 TRA on U.S. joint ventures in foreign countries, it is useful first to review the U.S. taxation of foreign-source income, second to consider the TRA provisions that affect joint ventures, and third to analyze the incentives created by the Act.

### *3.1. U.S. taxation of foreign-source income*[20]

The United States taxes income on a residence basis, meaning that American corporations and individuals owe taxes to the U.S. government on all of their worldwide income, whether earned inside the United States or outside the United States. The top U.S. corporate tax rate was 34% in 1989 and is now 35%. Since foreign profits are usually taxed in host countries, U.S. law is designed to avoid double taxation by providing foreign tax credits for income taxes (and related taxes) paid to foreign governments. Under U.S. law, an American corporation earning $100 in a foreign country with a 10% tax rate (and a foreign tax obligation of $10) pays only $25 to the U.S. government, since its U.S. corporate tax liability of $35 (35% of $100) is reduced to $25 by the foreign tax credit of $10. The foreign tax credit is, however, limited to U.S. tax liability on foreign income; if, in the example, the foreign tax rate were 50%, then the firm pays $50 to the foreign government but its U.S. foreign tax credit is limited to $35. Hence, an American firm receives full credits for its foreign taxes paid only when it has ''deficit foreign tax credits'', i.e., when its average foreign tax rate is less than its tax rate on domestic operations. A firm has ''excess foreign tax credits'' if available foreign tax credits exceed U.S. tax liability on its foreign income.[21]

Deferral of U.S. taxation of certain foreign earnings is another important feature of the U.S. international tax system. An American firm is taxed on a subsidiary's foreign income only when repatriated to the parent corporation; this type of deferral is available only to foreign affiliates that are separately incorporated as subsidiaries in foreign countries. The ability to defer home-country taxes may create incentives to delay repatriating dividends from foreign subsidiaries.[22] This

[20]Portions of this brief description of U.S. tax law are excerpted from Hines (1991).

[21]An American firm must own at least 10% of an affiliate in order to receive a credit for its foreign tax payments, and only those taxes that qualify as income taxes are creditable.

[22]See Hartman (1985) for an analysis. The incentive to delay repatriation of lightly taxed foreign earnings is greatly reduced by the Subpart F rules enacted by Congress in 1962. These rules apply to controlled foreign corporations, which are foreign corporations owned at least 50% by American firms or individuals holding stakes of at least 10% each. Under Subpart F, a subsidiary's passive income, and any income invested in U.S. property (though not investments in passive assets), are treated as if distributed to its American owners, thereby subjecting that income to immediate U.S. taxation. Controlled foreign corporations that reinvest their foreign earnings in active businesses can continue to defer their U.S. tax liability on those earnings.

incentive arises in those cases in which firms expect never to repatriate their foreign earnings, or those in which they anticipate that future years will be more attractive for repatriation (either because domestic tax rates will be lower or because future sources of foreign income will generate excess foreign tax credits that can be used to offset U.S. tax liability on the dividends).

Firms that repatriate funds from foreign affiliates in the form of royalties or interest do not receive foreign tax credits for income taxes paid to foreign governments, nor is it possible to defer U.S. taxes on royalty and interest receipts. Interest and royalty expenses are, however, generally deductible from the incomes of foreign affiliates in calculating foreign tax liabilities. Dividend, interest, and royalty payments from foreign affiliates to American parents are also generally subject to withholding taxes imposed by foreign governments on cross-border financial flows and for which American parent firms are eligible to claim foreign tax credits.

Firms are required to construct averages of their taxable incomes and taxes paid in all foreign operations when calculating foreign tax credits and foreign tax credit limits. As a consequence of this worldwide averaging, American investors in low-tax locations such as Singapore can avoid U.S. tax otherwise due upon repatriation of dividends if the firm has sufficient income from high-tax foreign locations such as Brazil with which the Singapore income and taxes can be averaged.

U.S. law limits worldwide averaging by requiring firms to calculate foreign tax credits separately for different sources of income, known as ''baskets''. An example is income from petroleum extraction, which is usually very heavily taxed by host countries, and with which Congress is unwilling to let firms average their other foreign income in calculating foreign tax credits. Consequently, petroleum income has its own ''basket'' and it is therefore possible for some companies to have excess foreign tax credits in the ''petroleum basket'' while having deficit foreign tax credits in the ''active basket'' (consisting of active foreign-source income).

### *3.2. The Tax Reform Act of 1986*

The Tax Reform Act of 1986 greatly increased the number of ''baskets'' used by American firms to calculate foreign tax credit limits. In particular, the TRA segregates dividends received from joint ventures owned 50% or less by Americans into distinct ''baskets'' – separate ''baskets'' for each venture – thereby preventing worldwide averaging of foreign tax credits.[23] Prior to 1986, there was no U.S. tax distinction between dividends received from joint ventures and dividends received from other foreign affiliates in which an American had at

[23]Other ''baskets'' introduced by the TRA include those for passive income, high withholding tax interest, financial services income, and shipping income.

least 10% ownership. The TRA did not create separate ''baskets'' for royalties or interest received from joint ventures, so American firms remain eligible to apply foreign tax credits from other active operations against U.S. tax liabilities on royalty and interest receipts from their foreign joint ventures.

While it is possible to avoid the separate ''basket'' treatment of dividend receipts from joint ventures, the steps that must be taken to do so are often prohibitively costly. In publications directed at practitioners, Tillinghast (1990), Crawford and Hoke (1995), Skaletsky and Shackelford (1996) and Tuerff and Moreland (1998) describe the tax costs associated with the separate ''basket'' treatment of dividends received from joint ventures – particularly those in low-tax foreign countries – and some of the methods that might be used to avoid those costs. These methods involve either diluting the foreign partner's ownership through the purchase of stock or additional options in the joint venture, or reorganizing the ownership of the joint venture by setting up a separate entity to own the U.S. share in the foreign joint venture. The first alternative is costly from the standpoint of relations with foreign partners, while the second triggers additional U.S. taxes through Subpart F, leading Tillinghast (1990, p. 224) to conclude that ''in many cases... these techniques do not work''. A third alternative is to establish a foreign joint venture as a partnership rather than a separate corporation. Such an arrangement entails various legal and business costs and prevents American owners from deferring U.S. taxation of foreign income. There exist hybrid structures that are partnerships from the standpoint of U.S. law and corporations from the standpoint of foreign law, from which income is not subject to separate ''basket'' treatment. But deferral of U.S. taxation is not permitted with such structures, and U.S. regulations are such that McClellan et al. (1996, p. 2) find that ''Achieving hybrid treatment using these rules is often complex, expensive, and time consuming and can result in a structure that is commercially limited''. One indicator of the costliness of avoidance is provided by the U.S. Congress, Joint Committee on Taxation (1997, p. 303) which estimates that its partial removal of the separate ''basket'' provisions starting in 2003 will reduce corporate tax collections by $242 million per year by 2007.

The Tax Reform Act of 1986 introduced other important changes, notably reducing the statutory U.S. corporate tax rate from 46% to 34%. This rate reduction increased the number of U.S. multinationals with excess foreign tax credits.[24] The data presented below suggest that the confluence of these changes

[24]Grubert et al. (1996) report that firms with excess foreign tax credits received 33% of the foreign income of U.S. corporations in 1984, and 66% in 1990. They note that even this 66% figure is smaller than the 79% predicted right after passage of the TRA, and conjecture that contemporaneous foreign tax law changes along with endogenous behavior of American companies may account for the difference. They also note that the fraction of income received by firms with excess foreign tax credits appears to be falling over time, reaching 35% in 1992. Desai (1997) offers evidence that the rapid post-1986 growth of outbound foreign direct investment from the United States is partly attributable to these changes in aggregate excess foreign tax credit positions.

discourages the use of joint ventures in low tax countries as such investments became considerably more costly.

### *3.3. Incentives created by the TRA*

It is helpful to distinguish some of the possible reactions to the tax changes introduced by the TRA. For American parent firms with excess foreign tax credits from active operations after 1986, no U.S. tax is due on active foreign-source income other than dividends from joint ventures, since worldwide averaging permits such firms to apply excess foreign tax credits from one line of business against potential tax liabilities from others. Such firms also will not owe U.S. tax on income from joint ventures in high-tax foreign locations, since such income generates excess foreign tax credits in its own ''10–50 basket''. But firms with excess foreign tax credits that receive dividends from joint ventures in low-tax countries will owe U.S. taxes on their dividends.

American parent firms with deficit foreign tax credits from active operations are likewise prohibited from averaging joint venture income with other active income after 1986. Such firms that receive dividends from joint ventures in high-tax locations are unable to apply taxes in exess of the U.S. rate against U.S. tax liabilities on other foreign-source income. If the same highly taxed affiliate were majority owned by the American parent, then all of its foreign tax payments would be creditable against the U.S. tax obligations of the parent. Consequently, there are two situations – one in which an American parent has excess foreign tax credits in the ''active basket'' and a joint venture in a low-tax country, and a second in which an American parent has deficit foreign tax credits in the ''active basket'' and a joint venture in a high-tax country – for which the separate ''basket'' provisions of the TRA entail greater U.S. tax liability.

Since most American firms expected to have excess foreign tax credits in the years after 1986, the TRA is most likely to discourage joint venture operations in low-tax countries. American firms with excess foreign tax credits in the ''active basket'' that organize their foreign operations as joint ventures rather than majority owned affiliates pay additional U.S. tax equal to the difference between the U.S. tax rate and the local foreign tax rate – but only if this difference is positive. If the foreign tax rate exceeds the U.S. tax rate, then there is no additional U.S. tax obligation associated with organizing foreign operations as joint ventures. Accordingly, the foreign tax rates analyzed in the empirical work that follows are truncated at 34%, the U.S. corporate tax rate in 1989.

Heavier U.S. taxation of dividends from joint ventures after 1986 decreases the after-tax returns available to American investors, thereby reducing the attractiveness of joint venture activity. As a consequence, Americans are likely to reduce the number of joint ventures in which they participate. The cost of a higher rate of U.S. tax is not the same for all affiliates, since affiliates with higher debt ratios or greater royalty payments escape some of the effect of higher U.S. taxation. The

reason is that neither royalties nor interest received from joint ventures is subject to separate ''basket'' treatment. Parent firms with excess foreign tax credits from other active income sources are eligible to apply those foreign tax credits against royalty and interest receipts from joint ventures.

One expects, therefore, that in low-tax countries in which dividends received from joint ventures become more expensive after 1986, American firms will participate in fewer joint ventures. The joint ventures in which they do participate after 1986 should be more heavily leveraged, and if possible structured to compensate American investors with royalties instead of dividends.[25] Alternatively, if firms choose investment levels and organizational forms entirely on commercial or strategic grounds and without regard to tax costs, there should be no tax-related changes in the relative joint venture intensities of U.S. operations in low tax and high tax countries after 1986. Post-1986 patterns of joint venture activity therefore reflect the elasticity of investment and organizational form to tax costs.

### *3.4. Changes enacted in 1997*

The U.S. Congress revised the taxation of joint ventures in legislation passed in 1997. Effective in 2003, dividend income from all joint ventures owned by an American parent will be grouped into a single ''basket'' for purposes of calculating the foreign tax credit limit. While firms will still be required to segregate joint venture dividends from other active income in calculating foreign tax credits, thereby incurring additional tax costs in instances in which they have excess foreign tax credits in one ''basket'' and deficit foreign tax credits in the other, this change removes some of the current costs associated with applying foreign tax credit limits separately for each joint venture.

## 4. Responses to the 1986 tax change

This section investigates the extent to which the pattern of joint venture activity after 1986 is consistent with incentives that vary according to country tax rates.

[25]These implications follow from a model in which parent firms expect their joint ventures to be profitable, pay foreign taxes, that they will ultimately remit their profits as dividends, and that the separate ''basket'' treatment of income received from joint ventures will still be in effect at the time of repatriation. Desai and Hines (1996) analyze the properties of a model with these features. The timing of dividend payments does not influence the impact of separate ''basket'' treatment of joint ventures, since, as Hartman (1985) notes, the costliness of home country repatriation taxes is a function of the foreign tax credit status of the parent firm and not the timing of dividend payments.

### *4.1. Changes in investment patterns*

U.S. joint venture activity in low tax countries grew more slowly between 1982 and 1989 than did majority owned U.S. business activity, while the reverse is true in high tax countries. Fig. 2 depicts 1982–1989 growth rates of equity invested in U.S. joint ventures and majority owned foreign affiliates in low and high tax countries.[26] The figure illustrates a very rapid growth of U.S. investment in majority owned affiliates in low tax countries between 1982 and 1989, while joint venture investment in low tax countries grew modestly. In high tax countries, joint ventures grew at almost the same rate as did majority owned affiliates between 1982 and 1989. The patterns evident in Fig. 2 persist in subsamples distinguished by equity restrictions: U.S. joint ventures grew more slowly than did majority owned affiliates in low tax countries with few ownership restrictions, and such a difference does not appear in high tax countries with few ownership restrictions.

The first two columns of Table 4 present OLS estimates of the impact of foreign tax rates on growth rates of equity in U.S. joint ventures between 1982 and 1989. The estimated effect of taxation is positive and significant in the regression

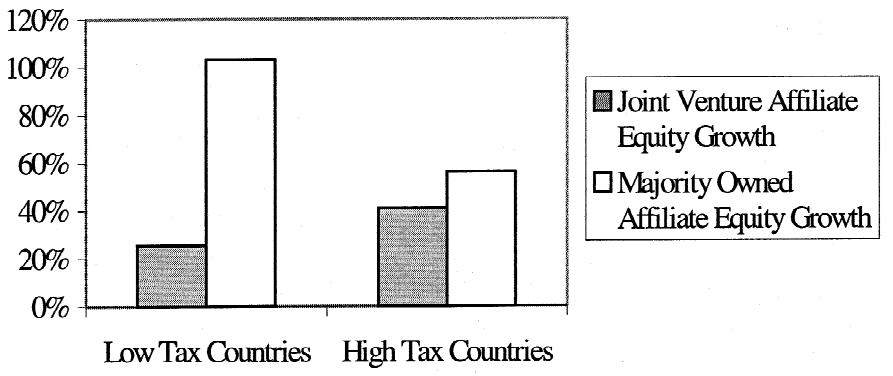


Fig. 2. Median % change affiliate equity, 1982-1989.

Note: the figure depicts 1982–1989 growth rates of equity invested in U.S. joint ventures and majority owned foreign affiliates in low and high tax countries. Low tax countries are those with combined corporate and divided withholding tax rates below 34%; high tax countries have combined rates in excess of 34%. The figure presents group medians; for example, the left most bar in Fig. 2 depicts the growth of U.S. equity in joint ventures in the country for which that value is the median among the 15 low tax countries in the sample.

[26]Low tax countries are those with combined corporate and dividend withholding tax rates below 34%; high tax countries have combined rates in excess of 34%. Fig. 2 presents group medians; for example, the leftmost bar in Fig. 2 depicts the growth of U.S. equity in joint ventures in the country for which that value is the median among the 15 low-tax countries in the sample. Mean values, presented in Desai and Hines (1996), Table 4, exhibit patterns that are similar to those of the medians.

Table 4
Investment and royalty payment growth by ownership status, 1982–1989

| | % Δ Affiliate equity, 1982–1989 Joint ventures | | % Δ Affiliate equity, 1982–1989 Joint ventures – majority owned | | Δ Royalty payments, 1982–1989 Joint ventures | | Δ Royalty payments, 1982–1989 Joint ventures – majority owned | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Constant | − 0.5504 | − 0.5554 | − 1.8974 | − 2.0696 | 0.0032 | 0.0037 | 0.0010 | 0.0014 |
| | (0.3211) | (0.3732) | (0.5350) | (0.6215) | (0.0023) | (0.0027) | (0.0020) | (0.0024) |
| Tax ’89 | 7.1426 | 8.1313 | 8.8234 | 10.4114 | − 0.0179 | − 0.0227 | − 0.0375 | − 0.0458 |
| | (2.5104) | (3.2322) | (2.8851) | (3.7568) | (0.0093) | (0.0109) | (0.0132) | (0.0158) |
| Ownership restrictions | | − 5.1349 | | − 4.7325 | | 0.0136 | | 0.0314 |
| | | (3.4688) | | (3.5064) | | (0.0106) | | (0.0249) |
| $R^2$ | 0.0625 | 0.0789 | 0.0833 | 0.0995 | 0.0437 | 0.0641 | 0.0660 | 0.0954 |
| # Obs. | 44 | 43 | 44 | 43 | 44 | 43 | 44 | 43 |

Note: The dependent variable in columns (1) and (2) is the growth rate of equity in U.S.-owned joint ventures between 1982 and 1989. The dependent variable in columns (3) and (4) is the difference between the joint venture growth rate and the growth rate of majority-owned affiliates for affiliate equity between 1982 and 1989. The dependent variable in columns (5) and (6) is the change between 1982 and 1989 in royalty payments (normalized by affiliate equity) from U.S.-owned joint ventures. The dependent variable in columns (7) and (8) is the difference between the joint venture change and the royalty payment change for majority-owned affiliates between 1982 and 1989. ‘‘Tax ’89’’ is the 1989 tax rate applicable to U.S. investors (truncated at 34%). ‘‘Ownership restrictions’’ is the fraction of U.S. firms indicating that host governments limit their percentage ownership of local affiliates. The columns report estimated OLS coefficients; heteroskedasticity-consistent standard errors are in parentheses.

reported in column 1, indicating that 1% lower foreign tax rates are associated with 7.1% slower growth of joint ventures over the seven years between 1982 and 1989. Since the mean tax rate in the sample is 27.4% and the mean growth rate of joint ventures is 140.8%, this corresponds to a $-1.39$ elasticity of joint venture growth with respect to tax costs. The regression in column 2 adds as an explanatory variable ownership restrictions in 1982, thereby capturing the effect of gradual ownership liberalizations during the 1980s.[27] The estimated tax coefficient remains positive and significant, and is somewhat larger than that reported in column 1, while the effect of ownership restrictions is negative (as expected) and insignificant.

In an effort to abstract from the effect of omitted country-specific variables that influence all business activity, columns 3 and 4 of Table 4 report coefficient estimates from regressions in which the dependent variable is the difference between joint venture growth and the growth of majority owned affiliates. The results indicate that foreign tax rates have positive and significant effects on this difference. The tax coefficient reported in column 4 indicates that 1% lower foreign tax rates are associated with 10.4% slower growth of joint ventures, relative to majority owned affiliates, between 1982 and 1989. Alternative specifications of these regressions produce similar results.[28]

The estimated joint venture growth elasticity – 1.39 and higher, depending on the specification – is roughly double the size of commonly estimated tax elasticities of foreign direct investment.[29] This is sensible because firms react to the tax change at two margins: by reducing their joint venture activity, and by

[27]The reason to include ownership restrictions as an explanatory variable is to avoid omitted variable bias that could arise if tax rates are correlated with changes in ownership restrictions during the sample period. Unfortunately, BEA did not ask U.S. firms about local ownership restrictions in its 1989 survey, so it is not possible to construct a variable equal to the *difference* between the fraction of U.S. firms required to limit their ownership of local affiliates in 1989 and the same fraction in 1982. Since ownership restrictions were generally liberalized in the 1980s, the 1982 fraction is a proxy for changes over the decade. An alternative method of controlling for changes in ownership restrictions is to limit the sample to countries with very few restrictions in 1982. The regressions reported in Tables 4 and 5 were re-run on this subsample, with results that are similar to those obtained with the larger sample.

[28]Regressions in which the dependent variable is redefined as the fraction of assets or property plant and equipment (instead of equity) held by U.S. joint ventures produce results that are similar to those reported in Table 4. Inclusion of GDP growth as an explanatory variable likewise changes the results very little.

Since not all U.S. multinational firms have excess foreign tax credits in 1989, it is useful to consider an alternative specification of the tax rate variable that captures the cost of separate ''basket'' treatment of joint ventures in high tax countries owned by parents with deficit foreign tax credits that are thereby unable to cross-credit tax payments made by their joint ventures in high-tax countries. The alternative definition of the tax variable is the *absolute value of the difference* between 0.34 and the local tax rate. The theory predicts that coefficients on such a tax variable in the equity growth equations should be negative, and regressions using this tax variable produce results (available from the authors) that are negative, significant, and of similar magnitude to those reported in Table 4.

[29]These estimates are surveyed in Hines (1997).

Table 5
Investment and royalty payment growth by ownership status, IV specification, 1982–1989

| | % Δ Affiliate equity, 1982–1989 Joint ventures | | % Δ Affiliate equity, 1982–1989 Joint ventures – majority owned | | Δ Royalty payments, 1982–1989 Joint ventures | | Δ Royalty payments, 1982–1989 Joint ventures – majority owned | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Constant | − 0.5682 | − 0.4800 | − 1.8517 | − 1.9683 | 0.0022 | 0.0024 | − 0.0004 | − 0.0007 |
| | (0.3058) | (0.3318) | (0.5813) | (0.6750) | (0.0019) | (0.0022) | (0.0018) | (0.0021) |
| Tax ’89 | 7.2075 | 8.0257 | 8.6567 | 10.0243 | − 0.0142 | − 0.0178 | − 0.0323 | − 0.0375 |
| | (2.3602) | (2.9293) | (2.9178) | (3.6687) | (0.0081) | (0.0095) | (0.0120) | (0.0144) |
| Ownership restrictions | | − 5.0507 | | − 4.6191 | | 0.0121 | | 0.0290 |
| | | (3.4166) | | (3.4199) | | (0.0107) | | (0.0253) |
| # Obs. | 44 | 43 | 44 | 43 | 44 | 43 | 44 | 43 |

Note: The dependent variable in columns (1) and (2) is the growth rate of equity in U.S.-owned joint ventures between 1982 and 1989. The dependent variable in columns (3) and (4) is the difference between the joint venture growth rate and the growth rate of majority-owned affiliates for affiliate equity between 1982 and 1989. The dependent variable in columns (5) and (6) is the change between 1982 and 1989 in royalty payments (normalized by affiliate equity) from U.S.-owned joint ventures. The dependent variable in columns (7) and (8) is the difference between the joint venture change and the royalty payment change for majority-owned affiliates between 1982 and 1989. ‘‘Tax ’89’’ is the 1989 tax rate applicable to U.S. investors (truncated at 34%) and is instrumented for with the 1982 tax rate. ‘‘Ownership restrictions’’ is the fraction of U.S. firms indicating that host governments limit their percentage ownership of local affiliates. The columns report estimated coefficients from instrumental variables regressions in which 1982 tax rates are used as instruments for 1989 tax rates; heteroskedasticity-consistent standard errors are in parentheses.

converting joint ventures to majority owned affiliates. Studies of the effect of taxation on foreign direct investment typically analyze situations in which taxes cannot be avoided by substituting one organizational form for another. In imposing an extra tax on joint ventures that does not apply to majority owned operations, the TRA makes it likely that observed behavioral responses will be sizable.

The tax rate variable used in the regressions reported in Table 4 is potentially endogenous to changes in the form of U.S. investment, as it is based on average tax rates that may differ between joint ventures and majority owned affiliates. In order to explore the sensitivity of the results to this consideration, the regressions reported in Table 4 were re-run as IV regressions, using 1982 tax rates as instruments for 1989 tax rates. The results, which are reported in Table 5, differ little from those obtained running the same equations as OLS on 1989 tax rates.[30]

### *4.2. Changes in royalty payment patterns*

Columns 5–8 of Table 4 analyze changes between 1982 and 1989 in royalties (defined as the ratio of royalties paid to U.S. parents to total affiliate equity) paid by joint ventures.[31] Columns 5 and 6 present regression results for royalty payments by joint ventures, in which foreign tax rates have negative and significant effects on royalties. The dependent variable in the regressions reported in columns 7 and 8 is the difference between the change in royalties paid to U.S. owners by joint ventures and the change in royalties paid by majority owned affiliates. The results indicate that foreign tax rates significantly influence this difference. The point estimate of the tax coefficient reported in column 8 indicates that 1% lower foreign tax rates are associated with 0.046% higher royalty payments by joint ventures than by majority owned affiliates. These differences are consistent with U.S. owners' incentives to transfer – or at least to report that they transfer – technology rather than capital after 1986 to their joint ventures in countries with low tax rates, thereby substituting royalties for dividends.[32]

[30] Alternative OLS specifications in which 1982 tax rates are used in place of 1989 tax rates generate results that are very similar to those reported in Table 4. Removing four major tax havens (the Bahamas, Bermuda, the Netherlands Antilles, and the U.K. Islands) from the sample likewise produces results (available from the authors) that are very similar to those reported in Table 4.

[31] Similar results appear when the dependent variable is redefined as the ratio of royalty payments to affiliate assets. Results are also similar when royalty payments in *both* 1982 and 1989 are normalized by 1982 equity.

[32] Another possibility is that firms substitute royalty payments for dividends in response to the tax incentives without changing the amount of transferred technology. Kopits (1976), Hines (1995) and Grubert (1995) estimate the responsiveness of royalty payments to tax incentives. Since technology transfers are unobservable, it is not possible to distinguish completely technology substitution from adept accounting with the available data. But government regulations that require royalty payments to correspond to technology transfers add credence to the interpretation that U.S. firms respond to higher tax costs of dividends at least in part by investing technology rather than capital in their affiliates.

Columns 5–8 of Table 5 report the very similar results obtained by re-running these regressions using 1982 tax rates as instruments for 1989 tax rates.

### *4.3. Changes in capital structure*

In raising the tax cost of dividends received from joint ventures in low tax countries, the TRA encourages affiliates to substitute borrowing for equity. While a number of studies investigate the influence of the TRA on borrowing patterns,[33] there is little consideration of its impact on affiliates of different organizational types. Defining leverage ratios as ratios of debt to total assets,[34] the data indicate that median leverage ratios of U.S.-owned joint ventures in low tax countries rose by 7.4% between 1982 and 1989, while leverage ratios of joint ventures in high tax countries fell by 1.6%. Leverage ratios of majority owned U.S. affiliates show the opposite pattern: the median leverage ratio in low tax countries fell by 5.0%, while leverage ratios in high tax countries fell by 0.4%. A regression in which the dependent variable is the difference between changes in the leverage ratios of joint ventures and majority owned affiliates yields a coefficient on foreign tax rates that is negative and significant, the point estimate implying that 1% lower foreign tax rates are associated with 0.81% higher ratios of debt to assets in joint ventures than in majority owned affiliates. Both the mean leverage ratios and the regression results are consistent with incentives introduced in 1986 to economize on dividend payments from joint ventures in countries with low tax rates.

## 5. Conclusion

The evidence indicates that American multinational firms sharply reduced their joint venture activity after 1986, and that the character of joint ventures changed in other ways that are consistent with incentives created by the Tax Reform Act of 1986. While it is difficult to distinguish withdrawal from overseas joint ventures from substitution of majority (or 100%) ownership for joint venture participation, it is clear that Congress's effort to create separate ''baskets'' for foreign joint ventures succeeded in significantly reducing American joint venture activity after 1986. Previous theoretical and empirical work emphasizes the role of joint ventures in exploring new markets and in high technology industries. To the extent that joint ventures provide important and unique opportunities, the separate ''basket'' provisions of the TRA significantly weaken the competitive positions of U.S. firms in foreign markets. Such an outcome certainly was not President

[33]See Collins and Shackelford (1992), Altshuler and Mintz (1995) and Froot and Hines (1995).

[34]The numerator of the leverage ratio is long-term debt plus current liabilities other than trade accounts and payables. Desai and Hines (1996) report sample statistics of changes in leverage ratios, as well as leverage-related OLS regression results, in Tables 4 and 7.

Reagan's intention in first proposing tax reform in 1985 and probably was not Congress's in passing the TRA.

This evidence suggests that the organization of international business is very sensitive to its tax treatment. In their survey of U.S. taxation of international income, Ault and Bradford (1990) note the importance of 10% and 50% ownership distinctions in the U.S. tax treatment of foreign-source income, and conjecture that these distinctions reflect notions of control and ''competitiveness'' that underlie some of U.S. economic policy. The changed U.S. tax environment after 1986 made it more difficult for foreign firms, particularly those in low tax countries, to attract and keep U.S. partners. In response, successful joint ventures became more heavily leveraged and made greater use of royalties to compensate U.S. investors – even though U.S. owners are minority participants in the ventures. These reactions suggest that the traditional concept of control as stemming from ownership stakes of greater than 50% may inadequately describe relationships between joint owners.

The effect of the TRA on joint venture activity offers useful information about the impact of alternative methods of allowing taxpayers to claim credits for taxes paid to other jurisdictions. This paper examines the repercussions of changing the foreign tax credit calculation for one type of business organization but not for others. The evidence indicates that activity levels, financing, and organizational forms are highly sensitive to tax rules. These results carry implications for the likely effects of any subsequent tax reforms, and for ongoing debates about the appropriate design of foreign tax credit systems.

## Acknowledgements

We thank Richard Caves, Dennis Encarnation, Kevin Hassett, James Poterba, Bernard Yeung, and the referees for helpful comments on earlier drafts of this paper. Financial support to the first author from the Olin Foundation and to the second author from the National Science Foundation (Grant No. SES-9209373) is gratefully acknowledged.

## References

Altshuler, R., Mintz, J.M., 1995. U.S. interest-allocation rules: Effects and policy. International Tax and Public Finance 2 (1), 7–35.

Anderson, E., 1990. Two firms, one frontier: On assessing joint venture performance. Sloan Management Review 31 (2), 19–30.

Ault, H.J., Bradford, D.F., 1990. Taxing international income: An analysis of the U.S. system and its economic premises. In: Razin, A., Slemrod, J. (Eds.), Taxation in the Global Economy. University of Chicago Press, Chicago, pp. 11–46.

Balakrishnan, S., Koza, M.P., 1993. Information asymmetry, adverse selection, and joint-ventures: Theory and evidence. Journal of Economic Behavior and Organization 20 (1), 99–117.

Beamish, P.W., Banks, J.C., 1987. Equity joint ventures and the theory of the multinational enterprise. Journal of International Business Studies 18 (2), 1–16.

Bhattacharya, S., Glazer, J., Sappington, D.E.M., 1992. Licensing and the sharing of knowledge in research joint ventures. Journal of Economic Theory 56 (1), 43–69.

Bleeke, J., Ernst, D., 1993. Postscript. In: Bleeke, J., Ernst, D. (Eds.), Collaborating to Compete: Using Strategic Alliances and Acquisitions in the Global Marketplace. Wiley, New York, pp. 269–270.

Caves, R.E., 1996. Multinational Enterprise and Economic Analysis, 2nd ed. Cambridge University Press, Cambridge, UK.

Collins, J.H., Shackelford, D.A., 1992. Foreign tax credit limitations and preferred stock issuances. Journal of Accounting Research 30 (Supplement), 103–124.

Contractor, F.J., 1990. Ownership patterns of U.S. joint ventures abroad and the liberalization of foreign government regulations in the 1980s: Evidence from the benchmark surveys. Journal of International Business Studies 21 (1), 55–73.

Crawford, R.W., Hoke, W.D., 1995. Nonmonetary capitalizations and strategic alliances – using existing property. Tax Notes International 11 (26), 1757–1771.

Desai, M.A., 1997. Mass transit and exodus: Multinational responses to the Tax Reform Act of 1986. Manuscript, Harvard University.

Desai, M.A., Hines Jr., J.R., 1996. ''Basket'' cases: International joint ventures after the Tax Reform Act of 1986. National Bureau of Economic Research Working Paper No. 5755.

Franko, L.G., 1989. Use of minority and 50–50 joint ventures by United States multinationals during the 1970s: The interaction of host country policies and corporate strategies. Journal of International Business Studies 20 (1), 19–40.

Froot, K.A., Hines Jr., J.R., 1995. Interest allocation rules, financing patterns, and the operations of U.S. multinationals. In: Feldstein, M., Hines Jr., J.R., Hubbard, R.G. (Eds.), The Effects of Taxation on Multinational Corporations. University of Chicago Press, Chicago, pp. 277–307.

Gandal, N., Scotchmer, S., 1993. Coordinating research through research joint ventures. Journal of Public Economics 51 (2), 173–194.

Gentry, W.M., 1994. Taxes, financial decisions and organizational form: Evidence from Publicly Traded Partnerships. Journal of Public Economics 53 (2), 223–244.

Geringer, J.M., Hebert, L., 1991. Measuring performance of international joint ventures. Journal of International Business Studies 22 (2), 249–263.

Gomes-Casseres, B., 1989. Ownership structures of foreign subsidiaries: Theory and evidence. Journal of Economic Behavior and Organization 11 (1), 1–25.

Gomes-Casseres, B., 1990. Firm ownership preferences and host government restrictions: An integrated approach. Journal of International Business Studies 21 (1), 1–22.

Gordon, R.H., MacKie-Mason, J.K., 1994. Tax distortions to the choice of organizational form. Journal of Public Economics 55 (2), 279–306.

Grossman, S.J., Hart, O.D., 1986. The costs and benefits of ownership: A theory of vertical and lateral integration. Journal of Political Economy 94 (4), 691–719.

Grubert, H., 1995. Royalties, dividends, and R&D. In: Proceedings of the Eighty Seventh Annual Conference on Taxation. National Tax Association, Columbus, OH, pp. 13–24.

Grubert, H., Mutti, J., 1991. Taxes, tariffs and transfer pricing in multinational corporation decision making. Review of Economics and Statistics 73 (2), 285–293.

Grubert, H., Randolph, W.C., Rousslang, D.J., 1996. Country and multinational company responses to the Tax Reform Act of 1986. National Tax Journal 49 (3), 341–358.

Hart, O., Moore, J., 1990. Property rights and the nature of the firm. Journal of Political Economy 98 (6), 1119–1158.

Hartman, D.G., 1985. Tax policy and foreign direct investment. Journal of Public Economics 26 (1), 107–121.

Hennart, J.-F., 1991. The transaction costs theory of joint ventures: An empirical study of Japanese subsidiaries in the United States. Management Science 37 (4), 483–497.

Hines Jr., J.R., 1991. The flight paths of migratory corporations. Journal of Accounting, Auditing, and Finance 6 (4), 447–479.

Hines Jr., J.R., 995. Taxes, technology transfer, and the R&D activities of multinational firms. In: Feldstein, M., Hines Jr., J.R., Hubbard, R.G. (Eds.), The Effects of Taxation on Multinational Corporations. University of Chicago Press, Chicago, pp. 225–248.

Hines Jr., J.R., 1996. Altered states: Taxes and the location of foreign direct investment in America. American Economic Review 86 (5), 1076–1094.

Hines Jr., J.R., 1997. Tax policy and the activities of multinational corporations. In: Auerbach, A.J. (Ed.), Fiscal Policy: Lessons from Economic Research. MIT Press, Cambridge, MA, pp. 401–445.

Hines Jr., J.R., Rice, E.M., 1994. Fiscal paradise: Foreign tax havens and American business. Quarterly Journal of Economics 109 (1), 149–182.

Hladik, K.J., 1985. International Joint Ventures: An Economic Analysis of U.S. Foreign Business Partnerships. Lexington Books, Lexington, MA.

Holmstrom, B., 1982. Moral hazard in teams. Bell Journal of Economics 13 (2), 324–340.

Kogut, B., 1991. Joint ventures and the option to expand and acquire. Management Science 37 (1), 19–33.

Kopits, G.F., 1976. Intra-firm royalties crossing frontiers and transfer-pricing behaviour. Economic Journal 86 (344), 791–805.

Legros, P., Matthews, S.A., 1993. Efficient and nearly efficient partnerships. Review of Economic Studies 60 (3), 599–611.

MacKie-Mason, J.K., Gordon, R.H., 1997. How much do taxes discourage incorporation?. Journal of Finance 52 (2), 477–505.

Mankiw, N.G., Romer, D., Weil, D., 1992. A contribution to the empirics of economic growth. Quarterly Journal of Economics 107 (2), 407–437.

Mataloni, Jr., R.J., 1995. U.S. multinational companies: Operations in 1993. Survey of Current Business 75 (6), 31–51.

McClellan, A., Rieu, E., Conlon, R., 1996. ''Check the box'' – proposed US entity classification rules open tax-planning opportunities. World Tax News (Deloitte Touche Tohmatsu International, New York) 7(4), 1–3.

National Science Foundation, 1991. International Science and Technology Data Update: 1991. NSF 91-309. National Science Foundation, Washington, DC.

President of the United States, 1985. The President's Tax Proposals to the Congress for Fairness, Growth, and Simplicity. U.S. Government Printing Office, Washington, DC.

Price Waterhouse, 1989. Corporate Taxes: A Worldwide Summary. Price Waterhouse, New York.

Skaletsky, M.S., Shackelford, D.A., 1996. U.S. tax deferral considerations and strategies. Tax Notes International 12 (2), 125–153.

Slemrod, J., 1990. Tax effects on foreign direct investment in the United States: Evidence from a cross-country comparison. In: Razin, A., Slemrod, J. (Eds.), Taxation in the Global Economy. University of Chicago Press, Chicago, pp. 79–117.

Tillinghast, D.R., 1990. International tax simplification. American Journal of Tax Policy 8(2), 187–247.

Tuerff, T.T., Moreland, K.J., 1998. U.S. multinationals and international joint ventures. Tax Notes 78 (6), 725–748.

U.S. Congress, Joint Committee on Taxation, 1987. General Explanation of the Tax Reform Act of 1986. U.S. Government Printing Office, Washington, DC.

U.S. Congress, Joint Committee on Taxation, 1997. General Explanation of Tax Legislation Enacted in 1997. U.S. Government Printing Office, Washington, DC.

U.S. Department of Commerce, Bureau of Economic Analysis, 1985. U.S. Direct Investment Abroad: 1982 Benchmark Survey Data. U.S. Government Printing Office, Washington, DC.

U.S. Department of Commerce, Bureau of Economic Analysis, 1992. U.S. Direct Investment Abroad: 1989 Benchmark Survey Data, Final Results. U.S. Government Printing Office, Washington, DC.