Outline:
New Developments in the Effect of Taxes on Royalties and the Migration of Intangible Assets Abroad

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In the past 10 years, major changes in the tax planning strategies of U.S. multinational corporations (MNCs) have affected the likelihood that U.S. parents will receive royalties from their foreign affiliates or will increase their earnings abroad from exploiting intangible assets that they develop in the United States. Additionally, U.S. parents have found new ways to accomplish the relocation or migration of intangible assets abroad. These new strategies have implications for the way the return to U.S. R&D is reported to the IRS, as well as any incentive to relocate innovative activity outside of the United States. This paper explains key elements of those strategies and examines how they appear to have influenced measures of MNC activity reported by the Treasury, the Bureau of Economic Analysis, and the National Science Foundation.

The most important new tax planning development is the widespread use of hybrid entities. These are operations that are classified as incorporated subsidiaries by one country and transparent branches by another. Their use was greatly simplified by the issuance of the 'check-the-box' regulations in 1997. They are important because they can make inter-subsidiary payments invisible to the U.S. Treasury and therefore beyond the reach of the anti-abuse Controlled Foreign Corporation (CFC) provisions in subpart F of the Internal Revenue Code.

Thus, for example, a parent can capitalize a hybrid entity in a tax haven with equity and then have it lend to an operation in a high-tax location. The multinational company can report to the high-tax jurisdiction that the tax haven affiliate is a corporation while it elects to tell the U.S. Treasury that it is an unincorporated branch of the high-tax subsidiary. The high-tax subsidiary receives a deduction for the interest paid to the tax haven, but it is all one consolidated company to the United States. The income can therefore be deferred in the tax haven. Without the hybrid, a payment to a tax haven finance subsidiary would be subject to current U.S. tax under the CFC rules. Altshuler and Grubert (2005) found that these types of structures allowed U.S. multinational companies to lower their foreign taxes by $7.0 billion per year in 2002 compared to 1997.

The significance of hybrid entities in the current context is that they can be a tax saving vehicle for transferring intellectual property abroad. A tax haven entity can engage in a cost sharing agreement with the parent in which it shares in the cost of an R&D project in exchange for the right to exploit the technology abroad. Once the technology is developed the tax haven company can license an operating sibling in a high-tax location. The deductible royalty paid to the tax haven can be 'hidden' from current U.S. tax by the hybrid structure. Companies have apparently been able to

arrange favorable cost sharing agreements that permit them to leave abroad in a low-tax location a greater share of the return to the U.S. R&D. If that strategy is widely adopted, the growth in royalties received by U.S. parents can be expected to decline, and greater earnings retained in the tax haven company will grow more rapidly. Other possible hybrid structures also can be expected to result in fewer royalties reported by U.S. affiliates and lower effective tax rates on income retained abroad.

In addition to those changes in the way affiliate operations are reported, the popularity of cost sharing agreements combined with hybrid structures also suggest that there will be an increase in payments for technical services by U.S. subsidiaries to their parents relative to royalties. In the long run, however, the sum of these service payments should decline relative to foreign direct investment income abroad as more of the return to U.S. intangible assets is in the form of net income deferred abroad in low-tax locations.

Those predicted effects can be assessed empirically at two levels, one using data aggregated to the country or worldwide level, and one examining firm-specific practices. Verifying whether the determinants of affiliate royalty payments have remained the same as found in earlier work by Grubert (2001, 2003) is particularly relevant in addressing a current policy issue: the President's Tax Reform Panel recently recommended that the United States adopt a system that exempts from U.S. tax any dividends from active business income abroad,[1] and such a change is likely to reduce royalty payments made to U.S. parents because royalties would continue to be fully taxed.

The remainder of the paper proceeds by first providing a fuller explanation of hybrid structures, and then assessing whether their influence can be demonstrated in the relative importance of royalty payments from foreign affiliates to U.S. parents.

I. Alternative Ways of Utilizing a Hybrid Structure to Affect Payments for Technology

The example given in the introduction, where a finance affiliate located in a low-tax country claims for U.S. tax purposes that a related affiliate in a high-tax country is its branch, results in an outcome where the U.S. Treasury regards them as one consolidated entity. Figure 1 shows such a hybrid structure, which allows the low-tax affiliate to strip out income from the high-tax affiliate through interest payments that are a deductible expense in the high-tax country. From the perspective of the high-tax country, less income will be declared by the affiliate that operates there, and the host government will collected less tax revenue.

Similar benefits may arise under other hybrid structures, although the way such benefits will be reported to the U.S. Treasury changes. For example, an affiliate in a high-tax Country A may claim for U.S. tax purposes that a related affiliate in a low-tax Country B is its branch, and therefore the latter entity becomes invisible to the U.S. Treasury. If the high-tax affiliate in Country A pays a royalty to the low-tax affiliate in B, it is not recognized by the U.S. Treasury. The consolidated net income of the high-tax affiliate rises because the royalty is deducted against a high tax rate, but the higher income now earned by the low-tax affiliate can be retained in B and need not face the higher

[1] See, for example, Christopher Swann and Edward Alden, "Panel calls for simplified tax," *The Financial Times*, October 19, 2005, page 1.

tax rate in A. The Country A affiliate appears more profitable because the tax burden on a given dollar of income now is lower.

In the case of R&D cost sharing agreements, a key issue is the basis on which the affiliate is allowed to "buy in" to successful research carried out by the parent. If a parent's latest innovation builds on several previous generations of research, but the affiliate is able to pay a favorable price that places little value on those past expenditures, the strategy is particularly successful in allowing a migration of the intangible asset to the location abroad. New proposed regulations under the cost sharing provisions of Section 482 of the Internal Revenue Code, which deals with transfer pricing, are intended to address the "inappropriate migration of intangibles." Initial reaction to these proposed regulations suggest that they represent a major revision, which is more likely to require that such agreements reflect a price that would be set in an arms-length transaction. Under the more favorable terms currently allowed, a smaller ownership share of successful technological innovations is retained in the United States, and fewer royalties will be received by the parent in the future. While payments from the affiliate for technical services under the cost sharing agreement will result in an initial increase in parent receipts, over the longer run the parent will receive fewer payments for the utilization of its intangible assets abroad either in the form of royalties or in the form of cost sharing payments.

II. Indications of Changing Patterns of Royalty Payments at the Aggregate Level

As indicated above, the U.S. Treasury receives tax returns from U.S. controlled foreign corporations, which provide information about royalty payments, payments for technical services, and CFC earnings. Table 1 is based on compilations of information from the Form 5471, which is filed with the basic corporate return and reports on each controlled foreign corporation's transactions with its related parties. The table compares the values reported in 1996, before the "check-the-box" regime was adopted, and 2000. Because some of the hybrid arrangements and cost-sharing agreements described above may take time to design and implement, the patterns observed in 2000 may reflect incomplete adjustment to these new opportunities. The final version of the paper will use data from the 2002 tax returns, which are likely to show a greater response in royalties, earnings, and technical service payments.

Implications from Table 1 measures:

- The share of earnings in seven major low-tax countries grew much more rapidly than total earnings and profits of all U.S. subsidiaries, as shown on lines 1 and 2. Although part of this increase is due to the growth in dividends received from other CFCs (not hybrids), shown on line 3, the remainder reflects increased real activity and the effect of tax planning structures that leave the visible affiliate in a low-tax country.
- Lines 4 and 5 show further evidence of hybrid structures in which the high-tax company disappears from the perspective of the U.S. Treasury. The growth in tangible capital in five low-tax countries that serve as attractive locations for holding companies is seven times as great as for the total of all CFCs. Tangible capital reported in these 5 countries represents

about 15 percent of the total in 2000. However, the tangible capital need not be physically present in those countries, because it instead can be located in the invisible branch in a high-tax country.

- The bottom three lines of the table are based on transactions among related parties reported by the 7500 largest CFCs. Of the three measures shown, royalties paid to the parent grew most slowly, by 30%. Earnings and profits reported by affiliates grew 44%, while payments for technical and management services grew by 79%. This pattern is what the incentives cited above would predict: royalty payments decline in importance because payments from high-tax countries are likely to be invisible to the Treasury under the combination of a hybrid and a cost sharing agreement; earnings and profits of affiliates appear higher because more of the return to intangibles is recorded in that form; and payments for technical and management services will rise under cost sharing agreements.

The Bureau of Economic Analysis publishes two other important sources of data on affiliate operations. One is the Annual and Benchmark Surveys of Direct Investment Abroad, which offers the advantage that information is collected for each affiliate, regardless of whether it operates as a branch or is incorporated in the foreign country. Thus, in contrast to the Treasury data, the disappearance of affiliates under a hybrid arrangement should not occur in the BEA data. Nevertheless, care is warranted in interpreting these data, too, because certain measures of affiliate activity, such as net income, may appear overstated due to double counting.[2] If net income is likely to be overstated, but royalties are not, then comparing the percentage changes in each of these items will not be a valid test of the firm's response to the tax incentives identified above.

For example, if a majority-owned foreign affiliate (MOFA) in country A receives a dividend from a majority-owned affiliate in country B, the U.S. parent will report the affiliate's earnings in Country B and also the remitted dividend as part of the income of the affiliate in Country A. The sum of income across all MOFAs will appear larger because of this double counting. As holding company operations expand, and fulfill the role of the Country A MOFA in the example above, the potential double counting becomes larger. While the trend toward greater use of holding companies can be observed from the 1980s onward, the shift from 1996 to 2004 is particularly large. As reported by Koncz and Yorgason (2005), the portion of the U.S. direct investment position abroad that they account for has roughly doubled, from 17 percent to 34 percent.[3] The direct investment position data calculated by BEA come from the U.S. international transactions accounts, which consider only the transactions of foreign affiliates with their U.S. parents. The direct investment income figure that follows from this approach does not include the double counting that can occur with the financial and operating data, because it is based on U.S. ownership and does not consider transactions among affiliates.

Those observations serve as useful background to interpret alternative measures of the operations of foreign affiliates reported in Table 2. The table shows relevant data by which to assess changes

[2] See Borga and Mataloni (2001), and Altshuler and Grubert (2005) for presentation of this issue. Altshuler and Grubert were interested in how much tax saving was possible through the growth of payments that presumably were deductible in high-tax locations.

[3] Luxembourg has been a particularly attractive location, because it exempts from corporate tax the dividends, interest and royalties received from a foreign source by the holding company. Exemption systems more typically do not tax dividends received from abroad, because they have born a corporate tax in the host country, but do not exempt payments that were deductible abroad.

in royalties paid, from benchmark surveys from 1989, 1994, and 1999. Some data can be added for a more recent year, 2003, but they do not give a complete picture of all affiliate operations, especially transactions from one affiliate to another.

Implications from Table 2 measures:

- Royalties paid by affiliates have continued to grow at a rate faster than most other indicators of MNC activity, such as sales, gross product, employment, and R&D, but not as fast as payments for other private direct investment services. Two measures for affiliate income are included in the table. The first is based on the sum of before-tax income reported by all MOFAs (which can include double counting described above). The second is based on the direct investment return to U.S. ownership (which should be free from the double counting described above) adjusted upward by the amount of foreign income tax paid. The increase in the former figure is particularly large, probably a reflection of the growth of holding company operations. The increase in the latter figure is slightly greater than that of royalty payments in the 1994-1999 period that spans the introduction of check to box.
- The rate of growth of royalty payments was even more rapid in the earlier 1989-1994 period, at a time when the growth in income was very slight. The opportunity to receive royalties free of any residual U.S. tax occurs when the U.S. parent has excess foreign tax credits, and it is likely that the higher average host country tax rates in this earlier period resulted in more parents with excess credits, creating a greater incentive to pay royalties. While the U.S. Tax Reform Act of 1986 reduced the U.S. corporate tax rate from 46 percent to 34 percent, and caused an initial increase in the share of U.S. parents that were in excess credit positions, that initial consequence was not a permanent change, because companies adjusted the types of payments they made and host countries reduced their corporate tax rates (Grubert, Randolph, and Rousslang 1996). Nevertheless, the incentive to pay additional royalties continued to operate in the decade of the 1990s, because the regulations that specified what royalty methods could be used under the provisions of 1986 act were not finalized until 1994. That standard was more stringent than existed prior to 1986. Also, in 1993 penalty regulations were adopted, which applied if royalties were understated. In short, there were several policy changes that could be expected to influence royalty behavior. We will test the importance of excess credits using firm-level data.
- While the rate of increase of royalty payments by affiliates to parents has declined, the growth rate of payments to other affiliates has increased sharply. Relative to the royalties paid to the parent, the proportion to other affiliates has risen from 15 percent to 25 percent. This pattern is consistent with the rising role of hybrid structures.
- Parent receipts of other direct investment service payments rose faster than royalties, 75 percent versus 50 percent from 1994-1999. Although royalty payments do not disappear in the BEA data to the extent that they do in the Treasury data, the larger increase in payments for other direct investment services in the BEA data is consistent with the rise of cost sharing agreements.

BEA data also show distinctions by country of origin of these payments by affiliates. The summary figures in Tables 3 and 4 demonstrate that the pattern of royalty payments is sensitive to tax incentives.

- From 1994 to 1999 a particularly large increase occurred in royalty payments from affiliates in Ireland and Singapore. In the case of Ireland, over the earlier five-year period (1989-94),

its share of all royalties received by U.S. parents from their MOFAs rose from 2.2 percent to 5.1 percent, but in the more recent period (1994-1999) that proportion increased to 15.0 percent. In the case of Singapore, the corresponding changes were from 1.6 percent to 3.2 percent and then to 4.6 percent. This pattern suggests that U.S. parents have found it profitable to locate intellectual property in low-tax countries, and from the additional revenue received there to pay additional royalties to the U.S. parent. This strategy will be particularly attractive if only a portion of the additional revenue is paid to the U.S. parent, and the rest is retained in the low-tax country. In the case of Ireland, royalties as a share of net income more than doubled from 1989-1994, and this ratio increased slightly from 1994 to 1999. Also, while before-tax income per dollar of sales rose for all affiliates from 6.1 percent to 6.5 percent between 1994 and 1999, in the case of Ireland this ratio fell slightly, from 25.9 percent to 22.9 percent. An increase in the latter ratio would be most consistent with the incentives explained above, although the much higher profit ratio reported in Ireland suggests that a substantial amount of additional income was shifted to Ireland. For other direct evidence of these incentives, note that royalty receipts from high-tax countries such as France, Germany or Japan have either declined or grown at rates much slower than the average. Those affiliates may still be paying royalties commensurate with their expanding sales, but they may not be paying them to the U.S. parent if hybrid structures have been created.

- In the case of royalty payments from one MOFA to another, the large increase in payments to other MOFAs cannot be easily assigned to specific countries. Although more rapid growth in payments from high-tax countries might be expected, that outcome cannot be convincingly demonstrated because of disclosure limitations in many cells in Table 4. Even if such data were reported, however, the expected pattern need not hold, because such a comparison does not control for the excess credit position of the parent firm. In the case of receipts of royalties, there is no clear evidence that they have increased most in low-tax countries or those with attractive holding company regimes, again because of the many disclosure limitations.
- Regarding the rapid increase in payments for other direct investment services (such as cost sharing agreements), the receipts by U.S. parents do not show such a dominant position for Ireland and Singapore as appeared in the case of royalties. Payments from those countries did grow at an above-average rate from 1994 to 1999, but the current values still represent a small share of the total. Note, however, that the combination of cost sharing agreements and hybrids means that a location such as Ireland or Singapore, where real production occurs, is no longer necessary to relocate intangible assets. A cost sharing agreement with an affiliate in the Cayman Islands, for example, which then licenses a branch in Germany to produce using the technology acquired, will accomplish the desired migration of the intangible to a low-tax location. Consistent with that new opportunity, payments from holding country destinations such as the Netherlands and Switzerland hardly rose at all. Cost sharing agreements take time to design and implement, and this observation period may simply not allow enough time for this influence to be more significant than the other determinants of such activity. Non-tax factors also play an important role in determining these payments, as evidenced by the fact that payments to high-tax countries such as Japan did rise at an above-average rate.

A further comparison between Treasury tax data and BEA data comes from looking at total royalty payments reported by U.S. corporations on Form 1118, the basis for claiming a foreign tax credit. In 2000, royalties were $75 billion. In the BEA international transactions data, total royalties received by all U.S. residents was $43 billion. MNCs may have a bigger tax incentive to characterize payments received from abroad as royalties, because that increases the foreign source income they receive and thereby increases the foreign tax credits they can claim (see Mutti and Grubert 1995 for discussion of the effects of different source rules).

A final issue to address at the aggregate level is the possible role of tax considerations in the location of R&D. The tax incentives for shifting R&D abroad are not straightforward, however. In a high-tax location the R&D would receive a valuable current deduction, as in the United States, but any income, including royalties, would be subject to the same high tax. If the company had reason to believe that the R&D project was likely to be very profitable, it might locate it in a tax haven because the value of the current deduction would become less important. This could be combined with a hybrid structure to facilitate the payment of royalties to the tax haven. On the other hand, the cost sharing structure described above may make the actual shift of R&D unnecessary.

The BEA measures of R&D performed by affiliates and by parents are reported in Table 5. The ratio of these two values is shown for two different measures, one based on the published figures measured in U.S. dollars at current exchange rates, and one based on an adjustment of the numerator to take account of changes in the real exchange rate that may affect the amount of research that can be performed for a given dollar expenditure. (See, for example, NSF, *National Patterns of Research and Development Resources: 2003* for a discussion of this issue.) The first set of figures suggests a small increase in the proportion of research activity carried out by affiliates. The adjustment for PPP indicates that this increase has been somewhat larger, because the dollar was undervalued in 1994 compared to 1999. Consequently, without making the PPP adjustment a given foreign currency expenditure on R&D in 1994 would translate into a larger number of dollars and a higher ratio of affiliate R&D effort. The BEA data allow some breakdown of these figures by country by broad industry categories, which will be examined in the paper to determine whether there are patterns that reflect any of the tax incentives identified above.

The annual National Science Foundation surveys give the share of total industrial R&D performed abroad by U.S. companies. The value for R&D abroad is smaller than the number reported by the BEA, while the value for R&D performed domestically is higher, given that it is not restricted to the value performed by U.S. corporations that have foreign affiliates. Therefore, the ratios found here are lower than those from the BEA calculated above. Figure 2 shows the comparable ratios for unadjusted and adjusted R&D effort by affiliates abroad relative to domestic R&D based on these data. The unadjusted series is quite volatile and exhibits no clear trend. The adjusted series is much more regular, and the trend line suggests that if the initial value of the series is 8.6 percent, the annual increase in this value will be slightly less than a tenth of a percentage point. The paper will consider whether this change is more pronounced for particular industries; the country detail on R&D performed abroad is fairly limited, and the only clearly tax motivated location shown is Puerto Rico.

III. Indications of Changing Patterns of Royalty Payments at the Firm Level

Firm level data allow a different examination of the changing relative importance of royalties, reported earnings, and cost sharing payments. A particular advantage is that it is possible to control for characteristics of the parent firm and the affiliate when observing the affiliate's transactions. Additionally, because parent firms report the earnings and profits (E&P) of each affiliate, and the E&P calculation is based on income as defined in the U.S. tax code, not the host country, making comparisons across countries is more straightforward in this data set. Aside from the benefits of consistency, the E&P measure is an approximation of financial book income. The Form 5471s filed for each affiliate and the related parent corporate tax return, Form 1120, are the basis for the firm level analysis.

With respect to important parent characteristics, a prime goal is to accurately represent the intangible assets that a parent has developed. Expenditures for advertising and R&D are two potentially important measures. The R&D measure comes from the research and experimentation tax credit claimed by the U.S. parent. This credit is restricted to research expenditures made within the United States, and the tax code specifies the ways in which such expenditures must differ from routine product maintenance and production. The parent's R&D intensity, measured as a share of sales, indicates its ability to contribute valuable technology to the affiliate.

From such data, Grubert (1998) found that the return to the exploitation of U.S. R&D abroad was split about evenly between the parent in the form of royalties and the affiliate in the form of increased net profits. Preliminary analysis using data for all foreign affiliates with positive income in the year 2000 does not give this same outcome. Consider regressions that explain the dependent variables of royalties paid per dollar of affiliate sales, or earnings and profits per dollar of affiliate sales. The independent variables are parent characteristics (parent R&D/sales, parent advertising/sales), affiliate characteristics (affiliate age, and affiliate capital intensity as measured by real capital/sales), and host country characteristics (GDP per capita, the local statutory tax rate). While data for 1996 give nearly equal coefficients for parent R&D/sales in both the royalty equation and the earnings and profits equation, in the 2000 data the comparable coefficient in the royalty equation is now only half the value obtained in the earnings and profits equation. A larger share of the gain from parent technology appears to be received abroad.

In the case of payments for technical services, the Treasury totals cited above indicate substantial growth between 1996 and 2000. For the sample of CFCs engaged in manufacturing, the ratio of these payments to sales increased from 0.9 percent to 1.7 percent. In regression analysis of this sample, a variable that stood out was a dummy for operations in Luxembourg, the Cayman Islands, and Bermuda. While that tax haven dummy was insignificant in 1996, it was significant in 2000. Also, the parent R&D coefficient is significant in this regression, an indication that these technical service payments are related to the parent's development of valuable intangibles in the United States.

The paper will also update earlier estimates of the determinants of royalty payments by foreign affiliates to U.S. parents. Grubert (2001) identified two key factors. One is the parent company's excess foreign tax credit position. Royalties, which are deductible abroad and only bear a (usually low) withholding tax in the host country, can absorb excess credits originating with highly taxed dividends. (In the past, about 75 percent of royalties have been shielded by credits.)

Companies in an excess credit position therefore have a greater incentive to pay greater royalties because they are deductible abroad and exempt on the margin at home. But the value of this deduction abroad depends on the foreign statutory tax rate. Even if the parent does not have excess credits, it may still prefer to pay royalties as opposed to local taxes on net equity income if the tax rate abroad is higher than the U.S. rate.

In addition, Grubert (2003) demonstrated the importance of R&D based intangible assets like patents, which provide companies the opportunity to locate income in low-tax countries. Indeed, the shifting of intangible income and the location of debt each explain about half of the difference in profitability between high-tax and low-tax countries. Intangible income may be shifted through trade in goods and services with related parties or by the payment of an inadequate royalty. An open question is whether this shifting of profits to low-tax countries is at the expense of domestic U.S. income or at the expense of foreign high-tax countries.

Considering whether the location of intangible assets has become more sensitive to tax considerations is a logical extension of the analysis of tangible assets. For example, based on Treasury data at the country level, Altshuler, Newlon and Grubert (2001) found that the location of real capital became more sensitive to host country tax rates in the 1990s than it was in the 1980s. Does a similar result hold for intangible capital, or is there less reason for it to respond now, given the existence of hybrids? Measuring intangible capital is not straightforward, and therefore this effort will attempt to measure this effect through the examination of royalties, cost-sharing payments and earnings and profits.

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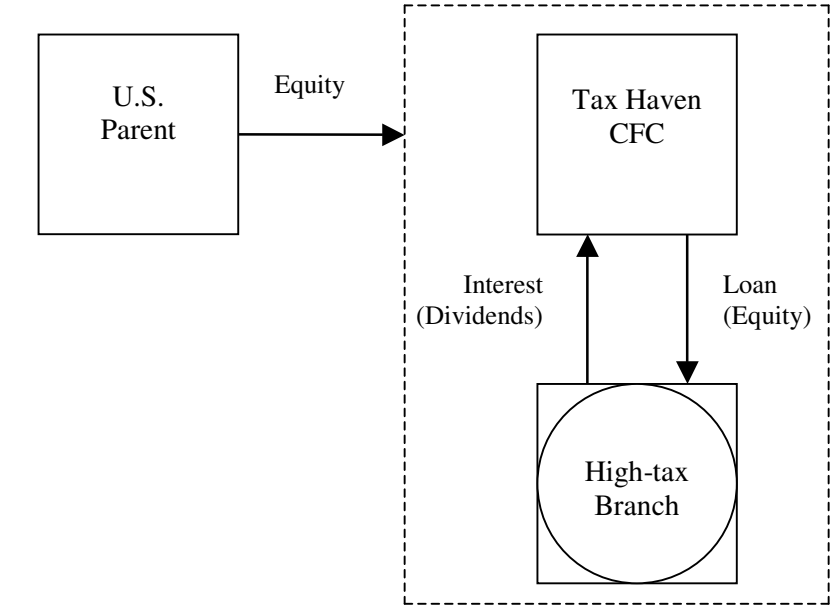
Mutti, John and Harry Grubert.

Figure 1
A Possible Hybrid Structure



= disregarded entity from U.S. perspective

= consolidated company from U.S. point of view

Table 1

Tabulations from the 1996 and 2000 Form 5471 Files
(in billions of dollars)

	1996	2000	Growth
All CFCs			
1. Total pre-tax earning and profits	$160.8	$231.1	44%
2. Earnings and profits in seven major low-tax countries (Ireland, Singapore, Bermuda, Cayman Islands, Netherlands, Luxembourg and Switzerland.)	36.5	82.5	126
3. Dividends received in the seven major low-tax countries	6.4	19.8	209
4. Total tangible capital (net plant & equipment plus inventories)	767.5	982.4	28
5. Tangible capital in five major holding company low-tax countries (Bermuda, Cayman Islands, Netherlands, Luxembourg and Switzerland)	51.7	145.9	182
6. Earnings and profits of CFCs with parents in finance in the seven major low-tax countries	5.1	5.6	10
Top 7500 CFCs			
7. Earnings and profits	139.8	201.1	44
8. Compensation for technical and management services (cost-sharing)	13.2	23.6	79
9. Royalties paid to parents	22.4	29.1	30

Source: Treasury tax files.

Table 2

Aspects of Affiliate Activity from BEA Benchmark Measures

Measure	1989	1994	1999	2003	Growth, 89-94	Growth, 94-99
Affiliate net income before tax	105.4	110.4	207.8		5%	88%
Before-tax Direct Inv. Income	86.6	87.6	145.2		1%	66%
Property, Plant & Equipment	248	350	593		41%	69%
R&D	7.0	11.9	18.1	22.3	70%	52%
Gross Product	320	404	566	705	26%	40%
Employees	5,114	5,924	7,766	8,364	16%	31%
Sales	1,020	1,436	2,219	2,906	41%	55%
Royalties	12.5	22.0	35.8		76%	63%
Royalties to US parent	9.8	16.7	25.0		70%	50%
Royalties to Oth. Foreign Aff.	1.5	2.6	6.0		73%	131%
Other Direct Investment Services to Parent	7.1	11.8	20.6		66%	75%

Table 3
U.S. Parent Transactions with Affiliates

		1989	1994	1999	2003
		Benchmark III.X.1, III.X.4	Benchmark III.Z.1, III.Z.4	Benchmark, III.AA.1, III.AA.3	9/2004,p.117
Royalties,	received	9,839	16,744	25,045	30,876
Europe		6,330	10,627	d	16,784
France		984	1,428	1,777	
Germany		1,159	2,019	1,950	
Ireland		215	859	3,761	
Netherlands		635	1,397	d	
Switzerland		259	446	d	
United Kingdom		1,462	1,873	2,270	2,739
Asia		2,280	3,991	5,732	
Japan		1,434	2,242	2,864	
Singapore		158	542	1,150	
Royalties,	paid	54	368	2,200	2,541
Europe		43	270	d	1,332
France		9	26	70	
Germany		6	43	25	
Ireland		d	4	16	
Netherlands		0	20	d	
UK		25	56	151	176
Asia		7	58	170	
Japan		1	25	73	
Singapore		1	2	19	
Other Direct Investment Services received		7,101	11,780	20,600	27,674
Europe		3,981	6,133	10,143	14,196
France		235	737	1,000	
Germany		431	673	1,589	
Ireland		121	316	738	
Netherlands		412	1,236	1,246	
Switzerland		166	510	506	
United Kingdom		1,733	1,681	3,187	4,704
Asia		902	2,167	4,369	
Japan		246	554	1,220	
Singapore		d	490	1,103	
Other Direct Investment Services paid		3,810	6,477	14,939	18,605
Europe		1,938	3,521	8,472	10,811
France		290	529	715	
Germany		479	644	767	
Ireland		d	48	335	
Netherlands		197	186	269	
Switzerland		74	155	233	
United Kingdom		600	1,514	4,915	5,891
Asia		1,085	1,753	3,262	
Japan		881	1,119	765	
Singapore		d	152	1,025	

Table 4

Royalties received and paid by Affiliates

	1989, III.I.7	1994, III.J.7	1999, III.J.7
Royalties received			
Total	1,461	2,581	9,241
From affiliated persons	710	1,464	6,456
from US parent	54	368	2,200
from other for aff	656	1,096	4,256
Europe	462	799	d
France	31	45	173
Germany	44	314	725
Ireland	d	d	d
Netherlands	66	76	105
Switzerland	87	87	106
UK	117	234	928
Asia	127	254	251
Japan	d	d	65
Singapore	d	d	8
From unaffiliated	750	1,116	2,785
Royalties paid			
Total	12,472	22,039	35,846
by Europe	7,871	14,708	19,949
by Ireland	469	1,496	4,640
by Asia	2,574	4,641	8,889
by Singapore	76	555	2,844
To affiliated persons	11,327	19,358	31,073
to US parent	9,839	16,744	25,045
to other for affiliates	1,488	2,615	6,029
by Europe	938	2,153	d
France	188	118	242
Germany	130	d	725
Ireland	251	d	395
Netherlands	82	537	d
UK	127	187	578
Asia	157	249	2,216
Japan	68	105	205
Singapore	d	75	d
To unaffiliated	1,145	2,681	4,773

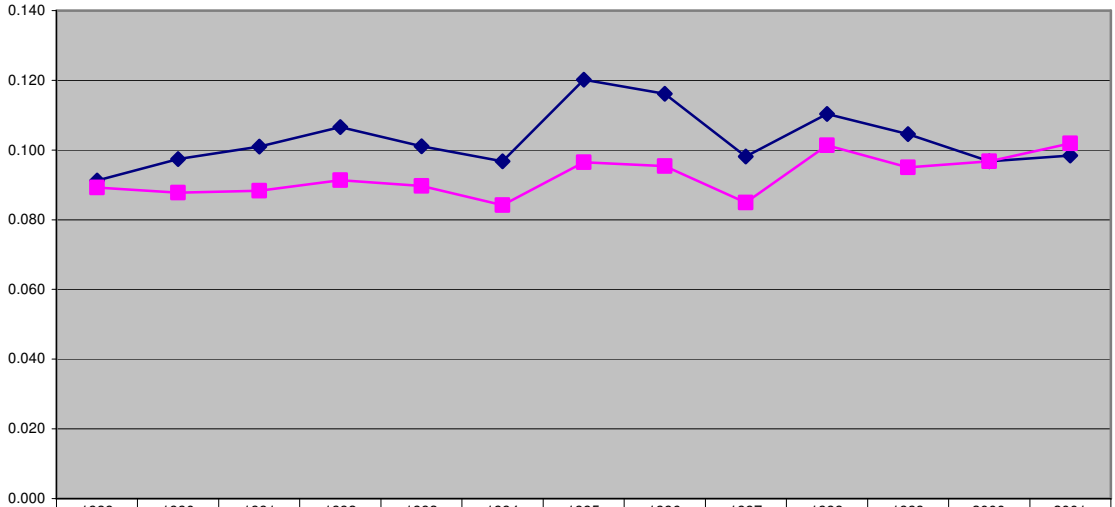
Table 5

BEA R&D Comparison, Proportion by Affiliate

		1994	1999	2003
Affiliate		11877	18144	22328
Parent		90913	126291	140103
Ratio		0.131	0.144	0.159
adjust for PPP		0.114	0.131	0.152
Soures:	III.L.1 III.J.1 Benchmark	III.M.1 III.J.1 Benchmark	SCB Jul-05 p.22	

Figure 2

Compare NSF R&D Measures



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Nominal ratio, affiliate/parent	0.091	0.097	0.101	0.107	0.101	0.097	0.120	0.116	0.098	0.110	0.105	0.097	0.098
Adjusted real ratio	0.089	0.088	0.088	0.091	0.090	0.084	0.096	0.095	0.085	0.101	0.095	0.097	0.102

Source: NSF, Research and Development in Industry, various issues, and IMF, real effective exchange rate for the United States, based on unit labor costs